KLINa

CLIMATE CHANGE ROADMAP FOR NAVARRE 2017-2030-2050

SUMMARY

Navarre's contribution
to the international commitment
to combat Climate Change

Nafarroako Gobernua
Gobierno de Navarra

Index

Nafarroako Gobernua Gobierno de Navarra

Climate Change Roadmap for Navarre 2017-2030-2050
CCRN - Acronym
KLINa: Klima & Navarra (Communication)

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PRESENTATION

Climate change (CC) is the biggest environmental challenge faced by humanity. In fact, the United Nations Framework Convention was approved in 1992, but humanity has evaded since then its responsibility to confront the problem and to provide a coherent response that will guarantee a habitable planet for our descendants. A global agreement was reached in Paris in December 2015 to establish the Greenhouse Gas Emissions (GGE) reduction measures required to prevent the increase of the planet average temperature from exceeding 2ºC.

The Government of Navarre has developed a Roadmap to combat climate change, CCRN-KLINA, which meets the need to approve and implement an integrated and cross-sectorial environmental strategy in Navarre. It also addresses the commitments taken on by Navarre regarding climate change and undertakes, among others, the international objectives of the Strategy of the European Union, the Convention of Parties in Paris (COP21) and the UN Sustainable Development Goals (SDG), encouraging the transition towards a low-emission economy and a sustainable and resilient territory.

Mitigation measures aimed at reducing Greenhouse Gas Emissions are required in order to achieve these objectives, as well as adaptation measures aligned with the expected climate effects in order to moderate the foreseeable impacts, increasing the adaptation environment's capacity and reducing its vulnerability through the best practices that have been identified in Navarre concerning the production of renewable energies, the conservation and exploitation of resources and environmental management.

The Roadmap is a comprehensive tool that requires the coordination of the Government's sectorial policies, all territorial stakeholders working together and the Navarre society´s awareness and commitment to sustainability in order to achieve its objectives. CCRN should help us to remain alert with an active and adaptable attitude that stimulates on-going improvements and corrects the inertia that has brought us to this situation, with a cross-sectorial vision and basing our stance on shared commitments and responsibility with the planet.

The Roadmap sets forth short-, medium- and long-term deadlines (2020-2030-2050). It starts with the targets established by the various international bodies for 2020 and 2030 to guide Navarre towards a new energy, economic and social sustainable model by 2050. These objectives are ambitious and a great effort is required to change the trend which, according to the latest data regarding GGE in 2015-2016 linked to the financial upturn, still reflects inertia in a system that does not support the fight against climate change.

This document is a SUMMARY of the Roadmap, available on:

http://gobiernoabierto.navarra.es/es/gobernanza/planes-y-programas-accion-gobierno/hoja-ruta-del-cambio-climatico-acciones

VISION

Navarre commits to sustainability and the fight against climate change, towards a new socioeconomic and energy model with a low-carbon economy adapted to climate effects, so that it can be a reference for sustainable development and an environmentally responsible territory that uses resources efficiently, with a compromise between people, their activities and the environment in which they are sustained, in line with the Smart Specialisation Strategy (S3) and the Government of Navarre's social policies. All of this will be in direct link with the United Nations (UN) Agenda 2030.

PRINCIPLES

Navarre shares the Principles that govern the Paris Agreement such as equity, sustainable development and efforts to reduce poverty. On a regional scale, it collaborates and is governed by the following principles:

1 SUSTAINABILITY
"Navarre: a reference point in 2050 as a sustainable territory"

Sustainability as an action point for society, respecting and highlighting the natural environment of Navarre, protecting natural resources and promoting their efficient use with the aim of maintaining and improving environmental quality so that Navarre can move forwards to become a region with minimal fossil fuels consumption in 2050, maintaining its leadership at an international level in the sector of renewable energies and committing to energy efficiency and the management and valuing of natural resources as the main territory transformation axis.

2 THE CROSSCUTTING NATURE OF POLICIES
"Climate change in the shared spotlight"

Action against climate change is comprehensive and requires the Government of Navarre to have a dynamic drive adopting coherent and proactive cross-sectorial policies in a coordinated and collaborative way between all departments. The mitigating measures will operate in key economic and productive areas - energy, industry, transport, residential and services, primary sector- and, together with the adaptation measures on the natural, rural and urban environment, water, health, tourism, services and infrastructure, they will affect all policies: economic, social, healthcare, environmental and territorial planning.

This coordinated action enforces the consideration and coherence of the objectives in all the Government's Plans and Strategies. Cross-sectorial activities also include gender and equality perspectives. The climate effects on human societies and their mitigation and adaptation ability are determined by social factors such as gender. The most vulnerable sectors in society are identified and considered regarding the impacts of climate change, such as elder people or those with fewer resources.

3 COOPERATION NETWORK
"Getting organised for a challenge of international dimensions"

Action against climate change involves society as a whole and requires the commitment of every stakeholder, both public and private, at every level - from international to local planning, with the engagement of all citizens. To this end, we need to move forwards in establishing a cooperative network, with the public administration as a reference point for best practice, and passing this on to all territorial and business stakeholders, local action groups, and research and knowledge centres.

4 FLEXIBILITY AND RESILIENCE
"Extend the adaptation throughout the territory and in territorial planning"

Climate change is dynamic and changeable and requires an appropriate response through research lines and knowledge, as well as through open and adaptable planning. The past few decades have shown the challenge of providing a suitable international (and regional by extension) response to a phenomenon of the scale of climate change which involves uncertainty. This situation will probably be repeated in the coming decades, and, since we are working with long-term plans from now to 2050, we need to consider strategic plans with committed and yet flexible measures that allow varying the response according to the evolution of knowledge.

5 CULTURAL CHANGE
"Sharing cultural change that evolves towards a new model"

Achieving the target of implementing a sustainable and adaptable territory in Navarre requires adopting measures that have an impact on climate change knowledge, from education and training to joint responsibility, communication and dissemination, in order to improve the perception of the challenge by the society as a whole, to increase awareness and bring about a definitive cultural change that will affect people´s interpretation of their interaction with the environment, and the economic and energy model, so as to respond in a decisive and effective manner.

6 KNOWLEDGE AND INNOVATION
"Learning and innovating for climate change"

Climate change leads us to a new economic and energy model, and requires the involvement of science, technology and innovation to create innovative solutions for the short and long term, which will open up new knowledge and employment opportunities in fields such as energy, bio-economy, circular economy, the cities of the future - smart cities - or the primary sector, including ecological agriculture, bio-technology and sustainable production in the food chain.

CCRN (KLINA) CONTENTS SUMMARY

This document starts with a general PRESENTATION and the explanation of the VISION AND PRINCIPLES OF THE CCRN.

C.1 It then refers to the INTERNATIONAL AND EUROPEAN FRAMEWORK (Chapter 1). Greenhouse Gas Emissions derived from human activities are the most probable principal cause of the global climate changes that are occurring according to the Intergovernmental Panel on Climate Change (IPCC). The Paris Agreement proposes to limit the increase of the planet average temperature to 2ºC by the end of the century with respect to pre-industrial levels.

C.2 NAVARRE`S STARTING POINT (Chapter 2). The climate change issue in Navarre has gradually been included within the different sectorial plans in this latest period (2015-2017), mainly in the field of energy, waste, housing and the primary agricultural sector. Its immediate inclusion continues in other key areas as the strategic sectorial plans are developed (water, transport, etc.). The evolution of GGE emissions has followed a descending trend linked to the financial crisis, with an upturn in the last two years (2015-2016) in parallel to economic growth. As a result, Navarre shows a reduction in total emissions of 19% in 2016 compared to 2005. A study of the evolution of the climate and climate projections in Navarre is included. With regard to adaptation, the main associated weaknesses to address this issue constitute an improvement challenge which is included within this CCRN.

C.3 THE OBJECTIVES (Chapter 3). Following international guidelines in terms of mitigation objectives, Navarre is committed to reducing its total GGE by 45% in 2030 compared to 2005 levels, and by 80% in 2050, keeping its short-term target at 20% by 2020. Mitigation actions are described for energy sectors, closely linked to the Navarre Energy Plan 2030, and for non-energy sectors, mainly for the primary sector and waste, related to the Rural Development Plan (PDR 2014-2020) and the Navarre Waste Plan (PRN 2017-2027).

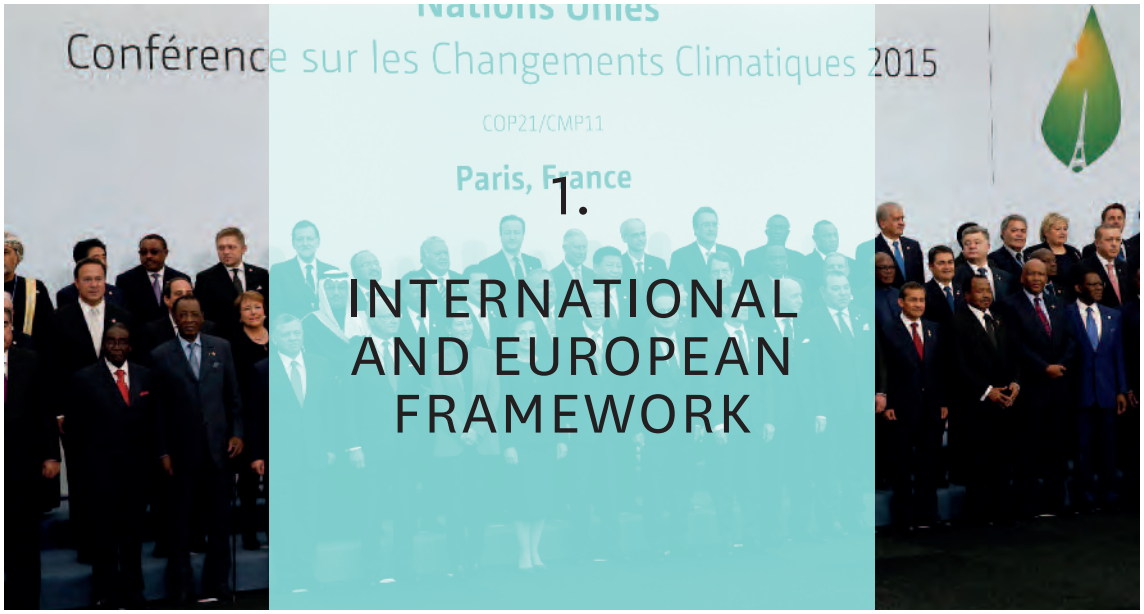
The CCRN includes a study of GGE previsions by 2030, which analyses the GGE evolution to date, and how they would evolve if no action were taken. However, the most interesting aspect is the estimation of the emissions evolution with already programmed measures that are included in the CCRN in order to calculate the effort needed to change the trend and the current inertia. The CCRN`s Adaptation objective is to turn Navarre into a territory that is “Resilient” to the effects of CC. This entails adapting natural, social and economic systems as much as possible so that the ecosystems are able to resist changes.

C.4 AREAS, LINES OF ACTIVITY AND MEASURES (Chapter.4). The CCRN describes the areas, lines of activity and short and mid-term measures that Navarre will implement to achieve the GGE reduction and adaptation objectives set by the Government of Navarre. This effort must be maintained over time and guaranteed by reviewing, updating and following-up the scope of the objectives defined. The list of measures is not exclusive and will be completed depending on the implementation dynamic of the sectorial plans and on the application of the defined principles. The CCRN proposes a cross-sectorial area of action to face this global challenge: "Navarre, a sustainable and resilient territory" focused on networking cooperation, innovation and knowledge transfer. In terms of mitigation, the areas of action are identified in electricity generation, industry, transport, housing-services, primary sector and waste. In terms of adaptation, action will be taken in the areas of the natural environment, the rural and the urban setting, integrating water, forests, agriculture, healthcare, infrastructures and land planning. 25 lines of action and 63 main measures have been defined for all areas: 10 cross-sectorial, 9 for mitigation and 44 for adaptation.

C.5 SUPPORT IN PROGRAMMING MEASURES (Chapter 5). The CCRN establishes a programme that guides the measures needed to fulfil the objectives set for 2020 and 2030, with 2050 as the reference. 2030 is the main target date, coinciding with that of the Energy Plan, and 2020 is the first milestone date. Regarding mitigation, the emissions reduction will be achieved in great measure thanks to improved efficiency in all the sectors, with the consequent reduction in energy consumption, but, especially, it will focus on the evolution of an energy model involving an increased use of renewable energy against fossil fuels. In terms of adaptation, the measures will focus at the first target date 2020 on establishing the foreseeable scenarios that will frame the appropriate adaptation thresholds, and executing demonstration projects in the field of agriculture and livestock farming, water, landscape, natural environment, land planning and efficient rehabilitation. 2030 will be reached in line with the LIFE-IP NAdapta-CC project (2017-2025), which allows a programme of measures and projects suitable for the mid to long term.

C.6 FINANCIAL COMMITMENT OF THE CCRN (Chapter 6). The estimated economic availability based on the sectorial plans upon which the CCRN is supported has been compiled, which will reach an adjudicated budget of €226,372,617 by 2020 for renewable energies, housing and services, waste and the primary sector. Further €15,565,090 from the LIFE-IP NAdapta-CC project (2018-2025), 60% of which is funded by the EC, must be added to this estimation.

C.7 GOVERNANCE AND MONITORING (Chapter 7). Establishing bodies and governance tools that will help us to completely integrate the fight against climate change into the different policies, overruling the sectorial vision of traditional policies, is key for the CCRN implementation. A Multi-agent platform will be created, integrating social agents with advisory functions.



1. INTERNATIONAL AND EUROPEAN FRAMEWORK

Greenhouse Gas Emissions derived from human activities are the most probable principal cause of the global climate changes that are occurring according to the Intergovernmental Panel on Climate Change Group (IPCC). Therefore, there is evidence that global warming is an unquestionable fact and many of the changes observed since the 1950s had no precedent in the previous decades or millennia according to the IPCC. The atmosphere and the ocean have warmed up, the volumes of snow and ice have reduced, and the sea level has risen.

The Paris Agreement adopted on 12th December 2015 sets as its primary objective preventing the average global temperature increase from exceeding 2°C by the end of this century, with respect to pre-industrial levels, and it aspires to limit this increase to 1.5ºC. The Agreement also considers adaptation to climate change to have the same level of importance as the mitigation of emissions and urges countries to implement strategies that will enable to reduce the climate change consequences.

EUROPEAN ROADMAP TOWARDS A LOW-CARBON ECONOMY

- → 40% reduction in greenhouse gas emissions by 2030, in comparison to 1990.
- → 60% reduction in greenhouse gas emissions by 2040, in comparison to 1990.
- → 80% reduction in greenhouse gas emissions by 2050, in comparison to 1990.

2.

NAVARRE'S STARTING POINT

In this latest period (2015-2017), the issue of climate change in Navarre has been included into the different sectorial plans, mainly in the field of energy, waste, housing and the primary agricultural sector. In terms of MITIGATION, the evolution of GGE has followed a descending trend linked to the financial crisis, with an upturn in the last two years (2015-2016). In this respect, Navarre's position reveals a 19% reduction in 2016 compared to 2005, and a 3.4% increase compared to the previous year, 2015. The link between emissions and the economic production (GDP) reflects a drop of -34.5% compared to 2005.

In terms of ADAPTATION, its definitive integration within the strategic planning is required, and it constitutes a substantial improvement included within this CCRN, whose measures are based on the European LIFE-IP NAdapta CC project (2017-2025).

On 27th April 2016, the Government of Navarre approved the initiation of the drafting of the"Climate Change Roadmap for Navarre", opening up a reflection and debate process within the Government, as well as a dialogue with civil society. This process culminated with its approval in January 2018 by the Government of Navarre.

2018. CCRN: a Global Strategic tool

The CCRN is a global tool, based on the coordination of the Government's sectorial policies, the cooperation between the territorial agents and the evolution of a committed Navarran society that is sensitive to sustainability. It establishes a new benchmark strategic planning tool for the coming years, which is more integrated within policies as a whole, improving on previous programmes.

The final content of the CCRN has a double component:

1) Strategic, defining objectives, principles and a vision of the future 2020, 2030, 2050.
2) Operational, identifying Lines of Action and short and mid-term measures, as well as budget commitments which comprise a programme of action.

From 2018 on, a new phase of monitoring and application of the defined measures has begun, as well as of the results and reductions expected in the base of its strategic and operative content. The expected advances are:

→ The progressive implementation of the governance system to ensure social participation and the highest efficiency in the application of the CCRN through the effective integration of the different strategic plans.

→ Creation of three-year working programmes (CCRN development instruments), which allow a greater concretion of actions and budget availability.

→ Annual (or biennial) monitoring of the CCRN measures with reference to the milestones of 2020 and 2030, and the definition of new efforts to reach the targets.

→ Monitoring of the evolution of the key parameters in the fight against climate change: balance of emissions, climate scenarios, etc.

→ Continuation of the participative dynamics that allow a better integration of territorial agents; accompanying actions to facilitate the achievement of objectives; and the cultural change needed to meet them.

→ Development of a Regional Law of Climate and Energy Transition.

Mitigation of emissions

Direct emissions vs. total emissions

In terms of the Navarre Emissions Inventory, a distinction is made between direct and total GGE emissions. Direct emissions are those that take place within the Autonomous Community territory of Navarre. Total emissions also include emissions associated with electricity that is imported or exported to fulfil the annual electric demand.

TOTAL EMISSION CALCULATION FORMULA				
TOTAL EMISSION	=	DIRECT EMISSIONS	+	IMPORTED ELECTRICITY EMISSIONS
			−	EXPORTED ELECTRICITY EMISSIONS

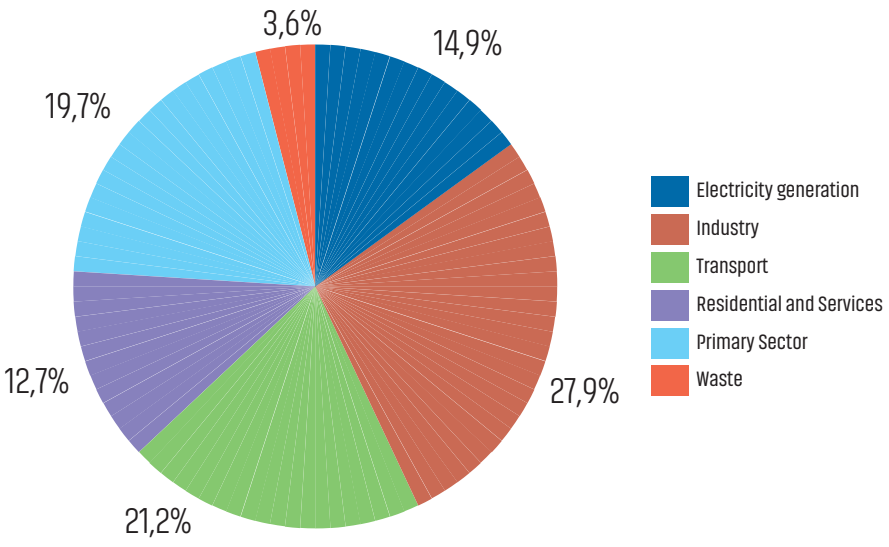
Total Greenhouse Gas Emissions (GGE) of Navarre

In Navarre, the sector with the highest emissions, when looking exclusively at total emissions, is industry followed by transport, the primary sector, the generation and consumption of electricity, the residential sector and services and, lastly, waste management.

2008 was the inventoried year with the highest emissions, with 7,323,824 t CO2e and 6,758,275 t CO2e in direct and total emissions respectively. A more or less stable descending trend was followed since then which changed in 2015 and 2016, mainly due to the increase in the generation and consumption of electricity.

It is observed that Industry is the sector that most contributes to GGE emissions, followed by transport and the primary sector at a certain distance, which are considerably above housing and the generation and consumption of electricity, and with waste being minimal.

Total GGE in 2016 by emitting sector



Source: Government of Navarre, 2017

Climate evolution in Navarre

Navarre is a community with strong thermic and precipitation contrasts due to its climatic diversity. Three biogeographic areas (Alpine-Pyrenean, Atlantic and Mediterranean) and different climates (oceanic, Mediterranean and mountainous) converge in Navarre. These contrasts become most marked on either side of the Cantabrian-Mediterranean water divide, a line of peaks that separates the north of Navarre from the Middle Zone and the Ribera, which also marks a separation between areas with hugely different climates.

The Territorial Delegation of the State Meteorological Agency (AEMET) in Navarre has carried out a study of the evolution of some climatic variables based on standardised data from diverse meteorological stations in the Autonomous Community of Navarre using 1961-1990 as a reference period.

GENERAL CONCLUSION

The specific study carried out for the region of Navarre seems to agree with trends found in other studies and evolution forecasts analysed on a greater scale, such as at a national, European and global level. The climatic studies that will be conducted to obtain regionalised scenarios suggest a clear increase in the average temperatures, the number of heat waves, warm days and nights, a drop in the number of frosty days, as well as a "Mediterraneanisation" of the rainfall regime (more variability in the time patterns and rain types), though it seems that annual levels of rainfall will remain constant or slightly lower (5-10%).

Main sectorial policies

Navarre has also backed the application of the United Nations Agenda 2030 in the region, which shows a major interaction with the action policy against climate change. Consequently, the development and adaptation of the Sustainable Development Goals (SDG) in Navarre greatly contributes to the drive of this CCRN.

Within the sectorial planning developed in recent years by the Government of Navarre with focus on CC, those plans targeting the energy, primary and waste sectors stand out the most for their greater repercussion on the mitigation and adaptation of these sectors to climate change. In any case, climate change is mainly included from the perspective of mitigation, and in much less degree from adaptation, which constitutes an advance for the proposal of the new Navarran planning in this matter.

In addition to the sectorial plans mentioned (energy, primary sector, waste), it would be advisable to monitor the plans in other relevant areas such as the new Smart Specialisation Strategy in Navarre S3, the Navarre Industrial Plan 2020, transport (Logistics Strategy and Sustainable Mobility Director Plan, Sustainable Urban Mobility Plans, all being created), the new Water Strategy with the integral water cycle Plan for urban and industrial uses (in process) and the river restoration and fight against floods programmes, the housing sector with the Social Housing Programme, and services such as the Tourism Plan, as well as programmes for local quality products.

3. OBJECTIVES OF THE CCRN

Navarre defines its efforts in coherence with: the social commitment that represents the fight against climate change in the region; its contribution to the world challenge within its field of competencies; and the tools available to trigger a shift to a zero-carbon socio-economic model. It is well aware that it can only develop by forging agreements and collaboration pacts with agents, companies, collectives and social groups that are prepared to commit and act as catalysts to change this model.

Mitigation targets

The set objectives aim at stimulating and speeding up as much as possible the transition to a zero-carbon economic, social and environmental development model.

CCRN-MITIGATION TARGETS
Following the guidelines set forth at an international and European level, Navarre commits to reducing its total greenhouse gas emissions in comparison to the situation in 2005:
by 35% in 2020
by 45% in 2030
by 80% in 2050

OBJECTIVES by 2020, 2030 and 2050

Technical Appendix 2 (TA2) presents the study of GGE projections by 2030. The set of relevant measures from the main Plans and Strategies, such as the 2030 Energy Plan of Navarre (PEN-2030), Rural Development Plan (PDR), Navarre Waste Plan (PRN) or the Housing Plan amongst others, have been included in the modelling.

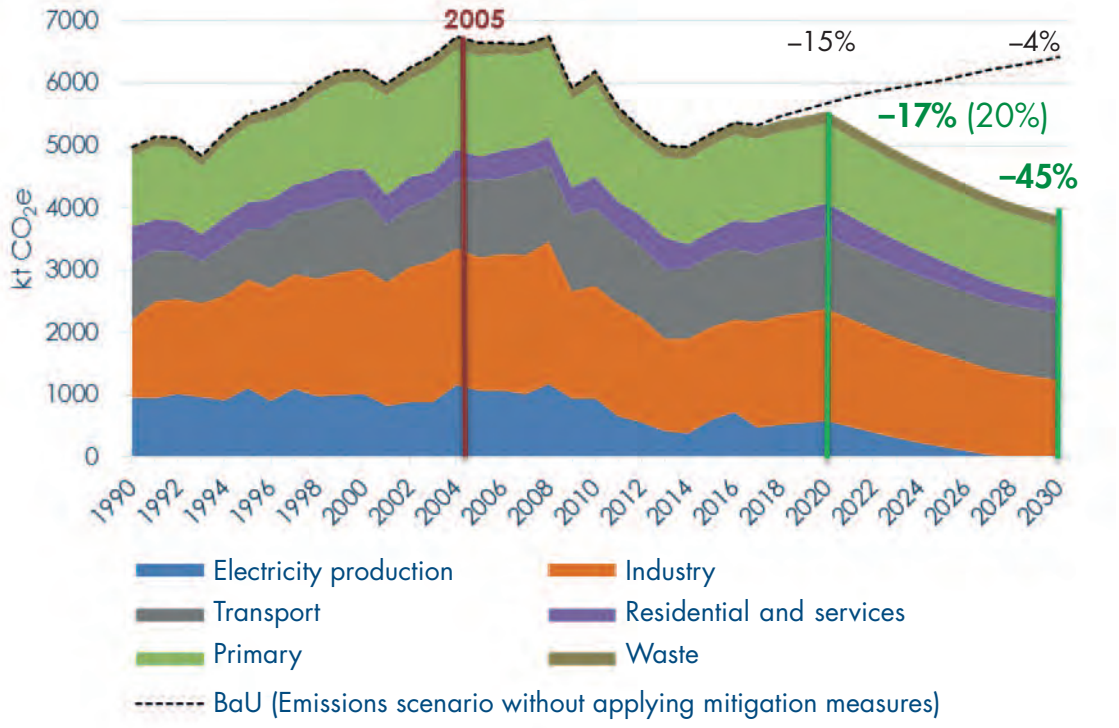
As a result, the objective to reduce GGE by 17% in 2020 compared to 2005 levels is considered realistic. However, an additional commitment to achieve a 20% reduction is proposed, indicating the fields where this can be met.

The modelling considers an ambitious reduction objective of 45% by 2030, taking into account the achievements envisaged with the progressive implementation of the set of measures included in the said Plans.

The effort must continue beyond 2030, upholding a future reduction commitment that will enable Navarre to keep on the reduction route set on at a European level by 2050 and reaching a level of neutral GGE contributions to the atmosphere.

The Figure displays the expected results in comparison with the situation if the programmed measures are not applied (BAU scenario).

Climate Change Roadmap for Navarre



Source: own creation

Adaptation targets

HCCN-ADAPTATION TARGETS

The following targets have been set according to the European Strategy for Adaptation to Climate Change (2013), adapting them to our situation and territorial scale:

- → Maximising and facilitating administrative coordination in the fight against the effects of climate change.
- → Adjusting the scenarios to the situation of Navarre: significant vulnerabilities, evaluation of risks and cross-sectorial analysis at a regional and local level.
- → Reducing the effects of climate change in the areas of action of natural, urban and rural environment, and in their relation with water, forestry, health, infrastructure, and territorial planning.
- → Raising awareness, doing research and helping Navarre to become a resilient territory.

SPECIFIC TARGETS INCLUDED IN THE MAIN ADAPTATION PROJECT: LIFE-IP NADAPTA-CC (2017-2025)

LIFE-IP NADAPTA-CC: SPECIFIC TARGETS

Implement a series of actions with a multiplying effect (best practices, demonstration and pilot) in the 6 identified areas:

1. Monitoring of climate change: to define climate change indicators in Water, Forestry, Agriculture and the Human Environment areas in order to establish control and alert systems that will enable a quick decision-making processes.
2. Adaptive water management: to thoroughly analyse the variations in water resources availability resulting from climate change in order to improve the management of the demand and to implement an action plan to facilitate floods and droughts management.
3. Forests: to define new forest growth models in the most vulnerable areas to climate change in Navarre in order to preserve the ecological value and to improve forest productivity.
4. Agriculture: to implement innovative techniques for the adaptation of soils to climate change and ensure a suitable use of irrigation water and pastures in order to guarantee agriculture quality and livestock health.
5. Health: to define new adaptation measures associated with climate-related illnesses (for example, against increasingly frequent and intense heat waves, or to prevent the arrival of invasive vectors which transmit emerging viral illnesses, such as the Asian tiger mosquito).
6. Infrastructures and territorial planning: to define adaptation measures for urban and rural settings. Pilot projects for housing, public buildings and economic activity areas.

4.

AREAS, LINES OF ACTIVITY AND MEASURES

In order to systematize the management of actions against climate change, priority areas of action are identified in this CCRN and lines of action and measures (actions) are established to develop them.

The set of areas and measures identified in this section marks the main action for the fulfilment of the CCRN objectives. However, this is not an exclusive list, and it will be completed depending on the implementation dynamic of the sectorial Plans and the application of the principles defined, which make up the action field in this global strategy.

The areas and lines of action are developed through more specific measures, which are detailed in the Technical Appendices (TA).

In accordance with the outline, different types of Areas and Lines of Action are defined:

- Cross-sectorial. Navarre as a sustainable and resilient region (TR). The measures are detailed in TA1.
- Mitigation of energy sectors closely linked to the 2030 Energy Plan of Navarre (PEN-2030). The emission scenarios are detailed in TA2 and the collection of measures (without sheets) is displayed in TA3.
- Mitigation of non-energy sectors (Primary Sector and Waste). The emission scenarios are detailed in TA2 and the measures with sheets in TA3.
- Adaptation of natural, rural and urban settings. This is completed with measures from the LIFE-IP NAdapta-CC Project in monitoring, forests, water, agriculture, healthcare, infrastructures and territorial planning. The measures are detailed with sheets in TA4.

TABLE 1. Climate Change Roadmap for Navarre. Overview of Action Areas and Lines of Action

	Action Areas	Lines of Action		Appendix
		CROSS-SECTORIAL (TR)		
TERRITORY	NAVARRE: A SUSTAINABLE AND RESILIENT TERRITORY (TR)	TR-L1 Sustainable and resilient territory		AT1
		TR-L2 Cooperation in international and national networks		
		TR-L3 Innovation and transfer of knowledge on climate change		
		MITIGATION (MI)		
ENERGY 2030	GEN ELECTRICITY (EL)	MI-L1 Renewable energy	PEN 2030	AT2-AT3 MITIGATION MEASURES- PEN 2030
	INDUSTRY (IN)	MI-L2 Final consumption of energy		
		MI-L3 Proportion of thermal renewable energies in final energy consumption (Industry)		
		MI-L4 Proportion of electricity in final energy consumption		
		MI-L5 Proportion of natural gas in the consumption of fossil fuels		
	TRANSPORT (TR)	MI-L6 Renewal of the fleet of vehicles with low-emission vehicles		
		MI-L7 Introduction of second-generation biofuels in transport		
		MI-L8 Promotion of public transport and zero-emissions vehicles		
	HOUSING-SERVICES (HS)	MI-L9 Improvement in energy efficiency of buildings (new and refurbishment)		
		MI-L10 Replacement of boilers and fossil-fuel hot water circulation systems with renewable and electric systems		
	PRIMARY SECTOR (PR)	MI-L11 Proportion of thermal renewable energies in final energy consumption (Primary)		
		MI-L12 Promotion of energy saving and efficiency in farms		
NON ENERGY	PRIMARY SECTOR (PR)	MI-L13 Agri-environment and climate	PDR	AT3 -MITIGATION MEASURES-SHEETS
		MI-L14 Waste recovery		
		MI-L15 Energy efficiency		
	WASTE (W)	MI-L16 Selective collection and separation	PRN	
		MI-L17 Preparation for re-use		
		MI-L18 Recycling and recovery		
ADAPTATION		**ADAPTATION (AD)**		
	NATURAL ENVIRONMENT (NE)	AD-L1 Recovery and conservation		AT4-ADAPTATION MEASURES-SHEETS
		AD-L2 Prevention and management of climate emergencies (Natural Environment)		
	RURAL ENVIRONMENT (RE)	AD-L3 Agri-environment and climate		
		AD-L4 Water management and flood prevention		
	URBAN ENVIRONMENT (UE)	AD-L5 Reduction of exposure		
		AD-L6 Reduction of sensitivity and vulnerability		
		AD-L7 Prevention and management of climate emergencies (Urban Environment)		

TABLE 2. Cross-Sectorial Measures (TR): Navarre: A Sustainable and Resilient Territory	
TR-L1 Sustainable and resilient territory	
TR1	Include the fight against climate change in territorial planning, landscape and urban planning in collaboration with municipalities (Linked to Measure A10 for adaptation)
TR-L2 Cooperation in international and national networks	
TR2	Presence and cooperation with international and national networks
	TR2-E3. Networking with other projects (LIFE)
TR3	Platforms and working forums in the field of climate change
	TR3-A2. Establishment of a multi-stakeholder platform (LIFE)
TR4	C1.2 Adaptive management of the local environment, type Mayors' Agreement for the Climate and Energy (LIFE)
TR5	C7.2: Coordination with other Funding Mechanism(s) (LIFE)
TR-L3 Innovation and Knowledge Transfer CC	
TR6	C1.1 Indicators monitoring system for the effects of climate change in Navarre, through a specific dashboard of the Territorial Indicator System of Navarre (Linked to Measure A15 for adaptation) (LIFE)
TR7	Regionalised climatic projections in Navarre (Linked to Measure A16 for adaptation)
TR8	Communication Plan about climate change in Navarre and the CCRN process
	TR8-E2. Communication and dissemination tools for methodologies and results of CC (LIFE)
TR9	E4. CC information point and communication events (LIFE)
TR10	Training in climate change
	TR10-C7.1. Building of strategic capacities (LIFE)

The cross-cutting area of action is the general action framework that provides coherence and completes the set of measures. Achieving a sustainable and resilient region requires acting on all the principles so that they are materialized: promoting sustainability as the pivot for action within society; crosscutting policies through the monitoring and coordination of the Government of Navarre's strategic plans; organising a collaboration network between the agents involved; extending adaptation and resilience both within the region and in the planning tools available.

The regional development model pursued for Navarre should progress towards sustainability and the capacity of adaptation to the changing dynamics that will arise. Environmental planning along with territorial planning constitute the framework to provide the expected resilience to the region, as it operates by coordinating sectorial policies and by identifying an integral and sustainable model.

Mitigation measures tables. Energy and non-energy areas (M)

TABLE 3. MITIGATION MEASURES – GREENHOUSE GAS EMISSIONS – Measures contained in the 2030 Energy Plan of Navarre (PEN 2030) (APPENDIX TA3)
GENERATION OF ELECTRICITY (EL)
MI-L1 Renewable energy
Promote renewable energy generation, particularly for self-consumption.
INDUSTRY (IN)
MI-L2 Final consumption of energy
Develop a tax policy that promotes energy saving, energy efficiency and the use of renewable energies, applying these practices across all sectors.
Energy efficiency programme in accordance with Royal Decree 56/2016. Regulatory control of audits.
Energy efficiency programme in Industry.
MI-L3 Proportion of thermal renewable energies in final energy consumption (Industry)
Install facilities that use biomass and support companies specialising in the industrial production of the different varieties of biomass.
Support for companies specialising in the production and industrial use of biogas in its different varieties.
Production and consumption or storage cooperatives in nearby points.
New tax deductions for investment in renewable energy facilities.
Allowances for primary processing industries and for forestry companies.
R&D&I projects promoting renewable energy (various projects).
MI-L4 Proportion of electricity in final energy consumption
Strengthen the business and industrial fabric in the field of new energy technologies through applications adapted to the needs of the region, related to the local economy and training.
Achieve a greater self-supply of energy, backing energy generation distributed in facilities near the consumption points in order to reduce losses during the distribution.
Improve the electrical transport infrastructure (various projects).
R&D&I projects promoting renewable energy (various projects).
MI-L5 Proportion of natural gas in the consumption of fossil fuels
Promote natural gas, replacing more emitting fossil fuels

TABLE 3. MITIGATION MEASURES – GREENHOUSE GAS EMISSIONS – Measures contained in the 2030 Energy Plan of Navarre (PEN 2030) (APPENDIX TA3)
TRANSPORT (TR)
MI-L6 Renewal of the fleet of vehicles with low-emission vehicles
New regulation for electric vehicles / Administration.
Annual renewal of the administration's fleet with electric vehicles.
Install public access normal charge points. Interconnection and mobility corridors / Iberdrola + Ingeteam + STARDUST project.
Promotion of charge points in shopping centres, companies, rotating public parking areas, taxis, rural holiday homes, etc. / MOVEA + Iberdrola + Ingeteam.
Install 10 high-power charge points in the Pamplona area / Iberdrola + Ingeteam.
Install 10 high-power charge points in the rest of Navarre (Alsasua, Estella, Liédena, Tafalla, Tudela, etc.) / Iberdrola + Ingeteam.
MOVELE / MOVEA benefits (taxis and MCP) and tax deductions of up to 30%.
MOVELE / MOVEA benefits (privately-owned cars) and tax deductions of up to 30%.
Benefits for electric motorbikes and tax deduction of up to 30%.
Integration of electric vehicles (EV) in self-consumption (mobile phone philosophy). Tax deductions of up to 30%.
Information, awareness and diffusion of EV.
Reduction (or exemption) from tolls on motorways for EV.
75% reduction on the circulation tax for EV.
Connected charge points. Smart Cities.
Improvement of the electrical transport infrastructure (various projects).
R&D&I projects to improve technology for EV (various projects).
MI-L7 Introduction of second-generation bio-fuels in transport
Biogas cars: Adaptation of cars and use at the place of origin / Regional Area of Pamplona, livestock holdings.
Various projects to keep encouraging the production and use of biofuels.
R&D&I projects promoting renewable energy (various projects).
MI-L8 Promotion of public transport and zero-emissions vehicles
Use of electric buses for some routes passing through the centre of Pamplona.
Allowances for "First Movers" + innovative projects, taxis and bus fleets.
Promote labour transport contracts within companies.
Encourage investment in heavy vehicles and coaches that use more efficient fossil fuels. Euro 6 and subsequent. Vans N1 and N2.
Management and renewal of electric fleets / Councils.
Acquisition or hiring of electric bikes for public workers.
Modal shift. Shared transport. Public e-car-sharing.

TABLE 3. MITIGATION MEASURES – GREENHOUSE GAS EMISSIONS – Measures contained in the 2030 Energy Plan of Navarre (PEN 2030) (APPENDIX TA3)
HOUSING-SERVICES (HS)
MI-L9 Improvement in energy efficiency of buildings (new and refurbishment)
New Energy Efficiency and Renewable Energies Act / Administration.
New act for energy cooperatives / Administration.
Energy audit programmes for street and building lighting.
Allowances for renovating urban heating networks with energy efficiency criteria.
Creation of Regulations for public developments. District heating.
Production and consumption or storage cooperatives in nearby points.
Smart management. Smart networks and cities. Distributed generation.
Rehabilitation of buildings and homes. Electrical regeneration in neighbourhoods.
Define and apply bio-climatic criteria for the design and construction of buildings.
Energy efficiency and demand management. Development of efficient cold and heat production systems and use of residual heat.
Develop advanced power electronic conversion systems and energy management for renewable energy and electric micro-networks.
Develop technologies to make progress towards zero-emission buildings.
R&D&I projects for energy efficiency and demand management (various projects).
Energy management programme and a drive for energy services in the Administration of the Autonomous Community of Navarre.
MI-L10 Replacement of boilers and fossil-fuel hot water circulation systems with renewable and electric systems
New act for Biomass / Administration.
New act for Self-Consumption / Administration.
Allowances for local entities and non-profit entities that invest in thermal facilities that use biomass fuel.
Install biomass boilers in the Department of Education buildings (Roncal Project).
Install biomass boilers in the Department of Health buildings.
Install biomass boilers in the Department of Culture, Sport and Youth buildings.
Install biomass boilers in the Heritage agencies.
Improving the electrical transport infrastructure (various projects).
Propose a Micro-network with biomass pilot project.
Smart Cities and integration with renewable energies.

TABLE 3. MITIGATION MEASURES – GREENHOUSE GAS EMISSIONS – Measures contained in the 2030 Energy Plan of Navarre (PEN 2030) (APPENDIX TA3)
PRIMARY SECTOR (PR)
MI-L11 Proportion of thermal renewable energies in final energy consumption (Primary)
New tax deductions for investments in renewable energy facilities.
Production and consumption or storage cooperatives in nearby locations.
MI-L12 Promotion of energy savings and energy efficiency in farms
Develop a tax policy that promotes energy saving, obtaining energy efficiency and the use of renewable energy, supporting these practices across all the sectors.
Energy efficiency and demand management. Development of efficient cold and heat production systems and use of residual heat.
New Energy Efficiency and Renewable Energies Act / Administration.
New act for energy cooperatives / Administration
Production and consumption or storage cooperatives in nearby locations.
R&D&i projects in energy efficiency and demand management (various projects).

TABLE 4 MITIGATION MEASURES NON-ENERGY SECTORS	
WASTE (W)	
MI-L16 Selective collection and separation	
M1	Promote the standardisation of the selective collection of bio-waste
MI-L17 Preparing for re-use	
M2	Progress in the reduction of waste generation and in the re-use and recycling of domestic waste
MI-L18 Recycling and recovery	
M3	Progressively adapt the treatment capacities to the amounts of organic material collected
M4	Adapt the plants for the processing of the remaining portion and the plants for selecting and classifying packaging
PRIMARY SECTOR (PR)	
MI-L13 Agri-environment and climate	
M5	Promote sustainable agricultural practices that minimise erosion and preserve the organic matter of the soil
M6	Promote sustainable forestry practices for land conservation and carbon storage
M7	Promote ecological production
MI-L14 Waste recovery	
M8	Improve livestock waste processing and its application
MI-L15 Energy efficiency	
M9	Encourage the application of Best Available Practices to promote energy savings and efficiency on agricultural and livestock farms

TABLE 5. ADAPTATION MEASURES (A) (APPENDIX TA4)	
NATURAL, RURAL AND URBAN ENVIRONMENT	
NATURAL ENVIRONMENT (NE)	
AD-L1 Renovation and conservation	
A1	Monitor the most important parameters that link climate change to the natural environment (linked to measures A15 and TR7 for adaptation).
A2	Define intervention measures to create protective green infrastructures and incorporate them into management plans of natural spaces.
A3	Promote payment schemes for environmental services to support the conservation of natural spaces.
AD-L2 Prevention and management of climatic emergencies (Natural Environment)	
A4	Define intervention measures in order to improve the control of plagues and fires in the natural (and rural) environment
RURAL ENVIRONMENT (RLE)	
AD-L3 Agri-environment and climate	
A5	Define and diffuse new practices throughout the primary sector aligned with changes in the climate.
A6	Preserve local varieties and breeds in order to promote agrarian diversity in Navarre, as a measure to reduce the sensitivity of the sector against climate change.
AD-L4 Water management and flood prevention	
A7	Include the consequences of the new climate change future scenarios within the studies that are being carried out for Phase II of the Navarre Channel (and irrigation studies in Navarre).
A8	Promote practices that ensure the correct use of water resources in the agrarian sector, within a context of climate change.
A9	Identify and outline temporary water storage areas for floodwater so that they can be used during severe weather episodes.
URBAN ENVIRONMENT (UE)	
AD-L5 Reduction of exposure	
A10	Include adaptation to climate change in territorial planning, landscape and town planning in collaboration with the municipalities (linked to measure TR1 for adaptation).
AD-L6 Reduction of sensitivity and vulnerability	
A11	Improve adaptation conditions of housing and energy services in the municipalities in order to reduce the sensitivity of the population to climate change.
A12	Improve water services in the municipalities in order to reduce the sensitivity of the population to climate change.
AD-L7 Prevention and management of climatic emergencies (Urban Environment)	
A13	Adapt the sanitary intervention protocols associated to extreme climatic events and infectious vectors that could worsen due to climate change.
A14	Improve the population's resilience to the consequences of the foreseen extreme climatic events.
CROSS-SECTOR (TR) (FOR ADAPTATION)	
TR-L3 Innovation and transfer of knowledge on climate change (Adaptation)	
A15	Indicator System for monitoring the effects of climate change in Navarre, through a Specific Dashboard for the Territorial Indicator System in Navarre. (Linked to Measure TR6 for adaptation)
A16	Navarre-specific climate projections. (Linked to Measure TR7 for adaptation)

LIFE-IP NADAPTA-CC. CC PROJECT, ADAPTATION

LIFE-IP NADAPTA-CC PROJECT. "TOWARDS AN INTEGRATED, COHERENT AND INCLUSIVE IMPLEMENTATION OF CLIMATE CHANGE ADAPTATION POLICY IN NAVARRE."

The Government of Navarre leads the LIFE-IP NAdapta-CC project, within the framework of the LIFE Community Programme, as an integrated action project for the climate, 2016 tender. The Action for the Climate sub-programme offers a new and unique opportunity to support the execution of the EU climate policy due to its demonstrative nature for other regions.

The Government of Navarre is the Project's coordinator and works along with the partners: Instituto Navarro de Tecnologías e Infraestructuras Agroalimentarias, S.A. (INTIA); Gestión Ambiental de Navarra, S.A. (GAN); Navarra de Suelo y Vivienda, S.A. (NASUVINSA); Navarra de Infraestructuras Locales, S.A. (NILSA); Universidad Pública de Navarra (UPNA).

The action period runs from October 2017 to December 2025. In this way, its integration within this CCRN is guaranteed.

The main objective of the LIFE-IP NAdapta-CC project is to radically increase the resilience of Navarre to climate change, with the specific aim of contributing to execute the CCRN. It pursues to facilitate corporate work between the different Government of Navarre departments and public companies so that they contribute to the implementation of strategies and so that the different sectorial policies incorporate the fight against climate change within their policies.

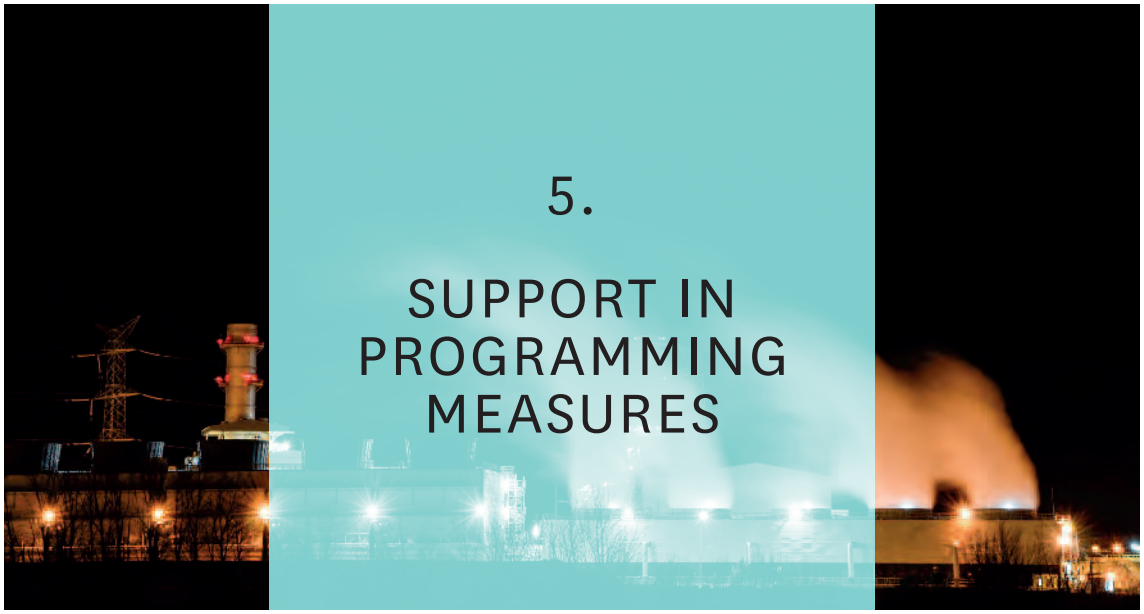
Six strategic lines of action have been identified: Monitoring, Water, Forests, Agriculture, Health, Infrastructures (Housing) and Territorial Planning. There is a wide range of actions/measures (AD) in these areas, which are included within the CCRN and are related to the main adaptation (A) measures for the natural, rural and urban settings, as well as to cross-sectorial measures (TR). In order to differentiate them, the sheets are displayed including the code of the actions/measures of the LIFE project (C, E).

It should be highlighted that this is the second Integrated LIFE Project in Spain (2017) and the first in the field of CLIMATE. On a European level, it is the third Integrated LIFE Project on CLIMATE and the first one to implement a Comprehensive Climate Change Adaptation Strategy within an entire regional territory.

The European Commission has a particular interest in its monitoring and results due to two fundamental reasons: the coordinated and coherent implementation of the Climate Change policies and those of other spheres (Agriculture, Healthcare, Water, Housing, Forests, Energy, etc.), and the potential for replicating the project in other European regions. The LIFE-IP NAdapta-CC measures are considered to comprise a strategic framework with the aim of achieving the objectives established within the European and global framework: Paris Convention and European Directives.

TABLE LIFE-IP NADAPTA-CC ACTIONS	
C1- CC MONITORING	
C1.1	Monitoring of territorial indicators of climate change in Navarra
C1.2	Adaptive management of the local environment, type Mayors' Agreement for the Climate and Energy
C2- WATER	
C2.1	Development of an early warning system facing possible environmental emergencies produced in waste-water treatment plants
C2.2	Development of a monitoring network for Combined Sewer Overflows (CSO) and diagnosis of its environmental impact
C2.3	Adaptation of the urban sewerage networks through the implementation of sustainable drainage systems in urban areas
C2.4	Flood risk warning and automatic alert generating software platform
C2.5	Promotion of self-protection plans facing local entities flooding
C2.6	Drafting of river space recovery projects / preliminary projects as a strategy of conservation and reduction of the flooding impact.
C2.7	Evaluation of hydric resources, derived from climate change scenarios and from demand exploitation model. Demand management plan (supply, irrigation, etc.)
C3- FORESTRY	
C3.1	Identify and map the most vulnerable forest territories aiming at setting out action priorities. Vulnerability models
C3.2	Selection of autochthonous seed sources adapted to the environment
C3.3	Analyse management comprehensive models in Mediterranean agroforestry systems to increase its ecologic value minimising risks
C3.4	Analysis of planning tools to incorporate adaptive management measures for the different types of masses
C3.5	Develop and apply models of forestry growth under different CC scenarios to be able to evaluate the productivity changes in the forestry masses.
C4- AGRICULTURE	
C4.1	Optimization of the adaptability of agrosystems to climate change through organic matter, crops and soil management strategies
C4.2	Adaptation in water management in the agricultural sector
C4.3	Environmental adaptation to climate change of vegetative material
C4.4	Plague and emerging diseases Warning System Terminal
C4.5	Adaptation to the animal emerging diseases due to the climate change
C4.6	Pastures, livestock and silvipastoralism management to fight against fires

TABLE LIFE-IP NADAPTA-CC ACTIONS	
C5- HEALTH	
C5.1	Development of new surveillance and information systems, analysing the consequences of climate change on human health.
C5.2	Surveillance of working conditions and climate change consequences; extreme temperatures on workers' health
C5.3	Improvement of the air quality surveillance and evaluation tools about the effects on health
C5.4	Improve the surveillance of emerging risks as result of the climate change
C5.5	Development of a surveillance to detect invasive vectors of human diseases
C5.6	Improve the surveillance of pollen composition and variation of pollination periods regarding the climate change
C6- INFRASTRUCTURES AND TERRITORIAL PLANNING	
C6.1	Landscape adaptive management
C6.2	Adaptation of the built environment to the climate change
C6.3	Adaptation to the climate change of the public built heritage
C6.4	Pilot project to adapt the public residential building to the climate change
C6.5	Roadmap of innovative management models to be adapted to the climate change. Energy regeneration in urban and rural areas
C6.6	Analysis of vulnerability of key infrastructures within the transport sector, potentially threatened by climate change
C6.7	Pilot project to adapt the public equipment to the climate change
C6.8	Pilot project of district energetic regeneration in urban areas
C6.9	Pilot project of rural environments energetic regeneration
C6.10	Pilot project of energetic regeneration of vulnerable economic activity areas
C6.11	Review of scenarios in built environments



5.

SUPPORT IN PROGRAMMING MEASURES

The CCRN establishes a programme, which, with the reference of 2050, guides the measures needed to fulfil the objectives set for 2020 and 2030. The main target date is 2030, coinciding with that of the Energy Plan, and 2020 is the first milestone date.

Concerning MITIGATION, the reduction of emissions will be achieved in great measure thanks to efficiency improvement in all sectors, with the consequent reduction in energy consumption, but it will particularly focus on the evolution of an energy model involving an increased renewable energy use against fossil fuels.

In terms of ADAPTATION at the first target date 2020, the measures will focus on establishing the foreseeable scenarios that will frame the appropriate adaptation thresholds and on the execution of demonstrative projects in the field of agriculture and livestock farming, water, landscape, natural environment, territorial planning and efficient rehabilitation. 2030 will be reached in line with the LIFE-IP NAdapta-CC project (2017-2025), which allows a programme of measures and projects suitable for the mid to long term.

6. FINANTIAL COMMITMENT OF THE CCRN

COMMITTED BUDGETS

During the management of the CCRN, progress will be made in identifying committed budgets required to achieve the CCRN objectives. The exercise carried out till now, based on the major programmes, reflects a committed budget of €226,372,617 for 2020 in Renewable Energies, Housing and Services, Waste and the Primary Sector.

Further €15,565,090 corresponding to the LIFE-IP NAdapta-CC project must be added to this budget for a period of 8 years (2018-2025).

CCRN COMMITTED BUDGETS	TOTAL 2017-2020
S3 – RENEWABLE ENERGY AND RESOURCES. 05 REDUCING THE CONSUMPTION OF FOSSIL ENERGIES S3 Navarre Smart Specialisation Strategy – GGE Mitigation Measures	€43,375,000
HOUSING-SERVICES (HS)	€28,565,875
WASTE (W)	€11,866,000
PRIMARY SECTOR (PR)	€142,565,742
TOTAL	**€226,372,617**

7. GOVERNANCE AND MONITORING

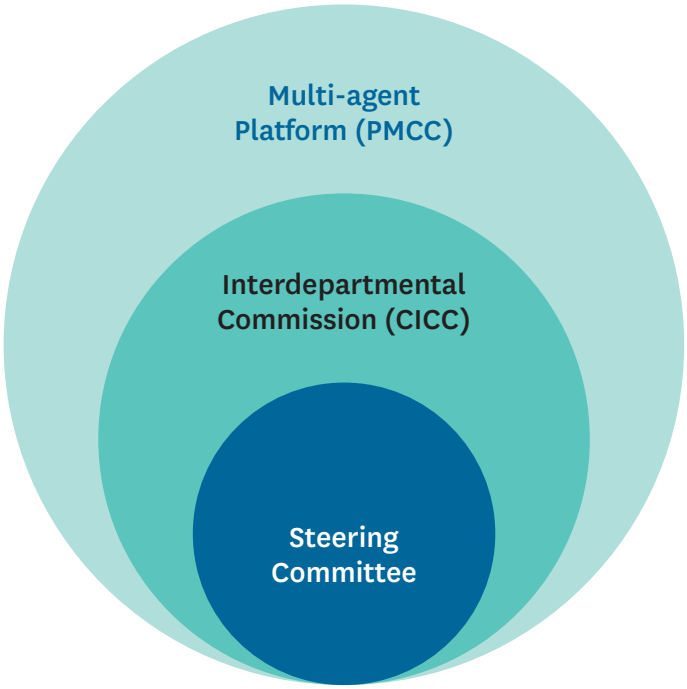
It will be necessary to establish governance bodies and tools that will allow a broad and consensual implementation of the action in CC due to its urgent need and complexity.

Given its cross-cutting and inclusive nature, implementing the CCRN is complex and calls for the knowledge and coordination of the many agents and plans involved. A governance system is proposed in different spheres, which:

- Favours the participation of social and economic agents in the monitoring and implementation of the CCRN.
- Drives forward the full integration of the climate change mitigation and adaptation strategies in sectorial policies, plans, programmes, public funding, granting of aids, taxation, etc.
- Promotes the adoption of measures and the carbon footprint calculation of the units within the regional administration, and plans to reduce it.

The systems established in the Navarre Waste Plan, the Smart Specialisation Strategy (S3), and the 2017 Women and Men Equality Programme of the Administration of the Autonomous Community of Navarre have all been taken as governance benchmarks. In any case, the governance system will be shaped accordingly during the development of the CCRN.

CCRN Governance System



Technical coordination team (ETCC)

It will be implemented gradually	
Multi-agent platform	
Government of Navarre Interdepartmental Commission	Interdepartmental technical board
	Working groups
	Climatic environmental units in each department
	CC Technical Secretaries Board
Steering committee	
Technical coordination team	

Navarre defines its efforts in coherence with: the social commitment that represents the fight against CC in the region; its contribution to the world challenge within its field of competencies to trigger a shift to a zero-carbon socio-economic model. It is well aware that it can only truly develop through forging collaboration agreements and pacts with agents, companies, collectives and social groups that are prepared to commit and act as catalysts to change this model.

Technical Appendices (TA)

TA1. Cross-sectorial Measures (TR)

TA2. Greenhouse Gas Emissions projections by 2030

TA3. Mitigation Measures (M)

TA4. Adaptation Measures (A), (AD)

Nafarroako Gobernua

Gobierno de Navarra