DOCUMENT IV.

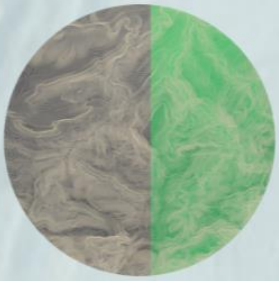
EXECUTIVE SUMMARY

SECAP FOR THE MUNICIPALITY OF MONCOFA

Ajuntament de Moncofa

Covenant of Mayors for Climate & Energy EUROPE

TECHNICAL ASSISTANCE:



OFFSET TRAIL

Proyectos Medioambientales y Huella de Carbono COOP.V

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1. Global strategy

The Moncofa City Council approved in November 2019 its adherence to the Covenant of Mayors for Climate and Sustainable Energy, demonstrating its commitment to the fight against climate change and its consequences.

This initiative, promoted by the Environment Area, includes the commitment to draw up an Action Plan for Climate and Sustainable Energy (PACES) that includes the actions that have been developed in this area in Moncofa, as well as other new ones that contribute to reduce the emission of greenhouse gases, mitigating the effects derived from climate change, and that allow a fair and equitable adaptation to the impacts that may occur from this change.

The long-term vision for Moncofa is to achieve a future with a sustainable municipality, where local natural environments are protected, and with access to sustainable, safe, affordable energy, and resilient to the effects of climate change, which provides its inhabitants a good quality of life.

Table 1. SECAP objectives for Moncofa for the year 2030. Source: own elaboration.

MITIGATION OBJECTIVES			
2022 REI Results	**Objective regarding the REI**	**2030 Objective**	**Magnitude of objective**
43.883,78 tCO_2	Reduction of 40% of GHG emissions	26.330,27 tCO_2	Reduction of 17.553,51 tCO_2
164.628,87 MWh		98.777,32 MWh	Reduction of 65.851,55 MWh
	Energy consumption reduction of 27%	120.179,08 MWh	Reduction of 44.449,80 MWh
0 MWh	Production of 27% renewable energy	44.449,80 MWh	Production of 44.449,80 MWh with renewable energy
ADAPTATION OBJECTIVES			
Ensure population adaptation to climate change.			
Promote a local economy based on sustainable development.			
Improve and advance in a responsible management of resources.			
Increase the resilience of Moncofa against the threats and impacts of Climate Change.			

With the main objective of making the political commitment signed by the Moncofa City Council a reality, during the development process of the SECAP and its subsequent application, collaboration and coordination between the different areas of the City Council will be necessary, as well as the participation and collaboration of the local population and interested parties, taking into account all relevant points of view both in the process of developing the Action Plan and in its application, monitoring and follow-up.

That said, it is from the Territory and City Area's Environment Service that the development of this Action Plan for Climate and Energy is mainly promoted, due to its direct relationship with the objectives of mitigating climate change and improving the environmental sustainability of the municipality. The other services and areas of the City Council will also be involved due to the implications of climate change in all areas and the need to adapt to the impacts produced by it, under the coordination of the City Council and the Environmental Sustainability Service.

In this sense, the City Council will have the specific administrative structures in its local authority, destined to the execution of the action plan within the framework of the SECAP initiative, favoring

the necessary resources for the execution of the Plan and acting as a Follow-up Commission during the different phases of its development.

To carry out the economic estimation of the Action Plan, economic estimation procedures have been taken into account depending on market prices and according to the ratios established in the Valencia Provincial Council's own methodology for the elaboration of Action Plans for Climate and Sustainable Energy. It should be noted that, before carrying out each of the SECAP measures, their depth will be specified depending on the time they are carried out and a more exact calculation must be made, since the SECAP must be seen as a guide. The sources of financing that will be available will be two, the council's own municipal funds and different lines of aid to municipalities from regional, state and European organizations.

Table 2. Financial estimate of the SECAP in each area of action. Source: own elaboration.

MITIGATION PLAN	
AREA	**ESTIMATED INVESTMENT FOR THE DURATION OF THE PLAN (€)**
Areas that depend directly on the City Council	
Municipal equipments and infrastructure	1.789.692,10
Public lighting	680.746,00
Public and municipal transport	361.800,00
TOTAL	**2.832.238,10**
Areas that do not depend directly on the City Council	
Terciary sector equipments and infrastructure (not municipal)	210.500,00
Residential buildings (domestic)	108.089.426,48
Industry sector	Variable
Private and commercial transport	172.000,00
Local energy production	Variable
Waste management	21.400,00
TOTAL	**108.493.326,48**
TOTAL MITIGATION	**111.325.564,58**
ADAPTATION PLAN	
SECTOR	**ESTIMATED INVESTMENT FOR THE DURATION OF THE PLAN (€)**
Water	2.147.235,00
Health	13.000,00
Biodiversity	37.000,00
Waste	51.000,00
Energy	110.000,00
Transversal actions	60.000,00

TOTAL ADAPTATION	**2.358.235,00**
TOTAL MUNICIPALITY	**113.683.799,58 €**

2. Climate change mitigation.

In 2022, the year in which the greenhouse gas emissions monitoring inventory was carried out in the municipality of Moncofa, there was a total consumption of 164.628,87 MWh, which meant emissions of 43.883,78 tCO_2 in the town. The sector that caused the most emissions is private and commercial transport, followed by the domestic and tertiary sectors, respectively.

Table 3. Results of the GHG Emission Inventory from the year 2022. Source: own elaboration.

	Consumption (MWh)	Emissions (tCO_2)
Areas that depend directly on the City Council	**3.047,10**	**803,68**
Municipal buildings, equipment and infrastructure	**585,61**	**145,21**
Electricity consumption *Natural gas consumption* *Diesel C consumption* *Petrol* *Biomass consumption*	*419,44* *135,74* *26,00* *4,43* *0*	*113,25* *24,27* *6,61* *1,08* *0*
Public lighting	**2.287,18**	**617,54**
Municipal transport	**174,30**	**41,03**
Electricity consumption *Petrol consumption* *Diesel consumption*	*0* *7,54* *166,76*	*0* *1,77* *39,26*
Areas that do not depend directly on the City Council	**161.581,77**	**43.080,78**
Residential sector	**20.572,40**	**5.554,55**
Electricity consumption *Natural gas consumption* *LPG consumption* *Diesel C consumption*	*20.572,40* *N/A* *N/A* *N/A*	*5.554,55* *N/A* *N/A* *N/A*
Terciary sector	**47.972,83**	**12.952,66**
Electricity consumption *Natural gas consumption* *LPG consumption* *Diesel C consumption*	*47.972,83* *N/A* *N/A* *N/A*	*12.952,66* *N/A* *N/A* *N/A*
Private transport	**93.036,54**	**24.572,89**
Electricity consumption *Petrol consumption* *Diesel consumption* *LPG consumption* *CNG consumption*	*0* *14.208,20* *78.828,34* *0* *0*	*0* *3.544,66* *21.028,23* *0* *0*
TOTAL FOR THE MUNICIPALITY	**164.628,87 MWh**	**43.883,78 tCO_2**

This Mitigation Action Plan is made up of a total of 45 actions divided among all the existing sectors in the municipality (three in municipal areas and five in non-municipal areas), which seek to modify both the structural environment of the buildings, as well as the establishment of new habits and forms of transport, taking legal, management, technological and even training and awareness actions.

Table 4. Summary of proposed mitigation actions. Source: own elaboration.

Proposed actions	Term	Estimated investment (€)	Emissions reduction (tCO_2/año)	Energy savings (MWh/año)
Municipal buildings, equipment and infrastructure (M.A.)				
M.A.1. Energy audit of municipal buildings	Short term	48.372,5	No direct effect	No direct effect
M.A.2. Energy rating in municipal buildings	Short term	28.344	No direct effect	No direct effect
M.A.3. Photovoltaic solar energy installations	Medium term	503.325,6	11,32	41,94
M.A.4. Solar thermal energy installations	Medium term	567.000	9,57	38,65
M.A.5. Identification and application of criteria for sustainable construction and rehabilitation of municipal buildings	Short term	Variable	Variable	Variable
M.A.6. Municipal energy manager	Medium term	150.000	40,18	152,35
M.A.7. Study and cataloguing of the main municipal points of diesel consumption.	Short term	7.500	N/A	N/A
M.A.8. Inclusion of self-sufficiency and energy efficiency criteria in new municipal constructions.	Medium term	Variable	Variable	Variable
M.A.9. Optimization of computer equipment consumption	Short term	Variable	3,54	13,11
M.A.10. Program 50/50	Short term	No cost	0,22	0,83
M.A.11. Diversification to more efficient fuels in boilers of municipal buildings	Medium term	60.000	0,86	N/A
M.A.12. Renovation of interior lighting in municipal buildings	Short term	5.277	3,39	12,58
M.A.13. Presence control for indoor lighting	Short term	2.750	2,12	11,62
M.A.14. Energy training courses for municipal employees	Medium term	21.000	No direct effect	No direct effect
M.A.15. Purchase of certified green energy	Short term	396.123,00	91,35	N/A
Public lighting (M.B.)				

M.B.1. Public lighting audit	Medium term	30.000	No direct effect	No direct effect
M.B.2. Replacement of luminaires with more efficient ones	Medium term	650.746	50,17	185,83
Municipal transport (M.C.)				
M.C.1. General manager of the vehicle fleet	Long term	150.000	No direct effect	No direct effect
M.C.2. Efficient driving courses for municipal and public transport employees	Short term	12.000	1,03	4,35
M.C.3. Speed limiters in public cars	Short term	1.800	0,41	1,74
M.C.4. Use of biodiesel in the municipal fleet	Long term	Variable	2,62	N/A
M.C.5. Replacement of vehicles with more efficient ones	Medium term	195.000	7,26	Variable
M.C.6. Promotion of bicycle use and walking for municipal employees	Medium term	3.000	No direct effect	No direct effect
Residential sector (M.D.)				
M.D.1. Awareness and sensitization	Short term	6.000	No direct effect	No direct effect
M.D.2. Home Energy Assessment Visits	Medium term	Variable	No direct effect	No direct effect
M.D.3. Lighting renovation	Short term	594.550	475,64	1.974,85
M.D.4. Renovation of appliances	Medium term	19.025.600	203,34	713,46
M.D.5. Renovation of insulation and enclosures	Medium term	47.564.000	515,27	1.783,65
M.D.6. Purchase of green energy	Medium term	21.395.276,48	694,32	N/A
M.D.7. Sustainable Construction and Energy Efficiency of Buildings Ordinance	Medium term	Variable	No direct effect	No direct effect
M.D.8. Replacement of diesel C boilers by biomass boilers	Medium term	2.380.000	226,69	N/A
M.D.9. Renovation of air conditioners	Medium term	17.124.000	128,43	513,72
M.D.10. Tax credits on building permits for energy efficiency improvements	Short term	Variable	134,84 / 577,90	499,42 / 2.140,38
Terciary sector / services (M.E.)				
M.E.1. Small energy audits in the sector	Medium term	207.500	No direct effect	No direct effect

M.E.2. Purchase of green energy	Short term	3.000	560,89	N/A
Private and comercial transport (M.F.)				
M.F.1. Efficient driving training	Short term	120.000	819,10	2.325,91
M.F.2. Renewal of the vehicle fleet and promotion of vehicles using non-conventional fuels	Short term	Variable	625,61	N/A
M.F.3. Tax incentives for the use of alternative fuels and electric vehicles	Medium term	Variable	No direct effect	No direct effect
M.F.4. Network of electric vehicle charging points	Medium term	52.000	Variable	Variable
Industry (M.G.)				
M.G.1. Encourage auditing	Medium term	Variable	No direct effect	No direct effect
M.G.2. Promoting the use of cogeneration	Long term	Variable	Variable	Variable
Local energy production (M.H.)				
M.H.1. Study of the possibilities of development of local energy communities in the municipality	Short term	Variable	No direct effect	No direct effect
M.H.2. Implementation of energy communities in the municipality	Medium term	Variable	Variable	Variable
Waste management (M.J.)				
M.I.1. Actions related to the recycling and separation of the organic fraction	Short term	10.000	No direct effect	No direct effect
M.I.2. Increase the number of containers and clean points	Short term	11.400	No direct effect	No direct effect

3. Climate change adaptation.

Adaptation is the necessary process so that the different systems can face Climate Change in the best conditions, minimizing the negative aspects and enhancing the positive ones. The sectors of Moncofa that are most affected by Climate Change are the following, in this order:

- Water
- Biodiversity
- Health
- Energy
- Waste

According to the environmental, social and economic characteristics of Moncofa, the scenarios foreseen by climate change and the vulnerability and risk analysis carried out are considered priority areas of action, from the point of view of adaptation to climate change, the reduction of exposure to risks, which allows for the anticipation to the foreseen events, the increase in resilience, which allows to reinforce the starting situation, both to the expected and unforeseen impacts, thus reducing the final consequences, as well as the increase in education, perception and early warning to the different types of events that are about to occur.

In these sectors, the risks that are most likely to occur and to have consequences are:

- **Increase in temperature**, which poses a risk to both local biodiversity and people, with a special impact on domestic infrastructure and energy poverty.
- **Extreme temperatures and heat waves.** It is estimated that tropical nights will increase to 107 per year. In addition, it is estimated that by the end of the century the heat waves in Moncofa might last more than two months.
- **Decrease in rainfall and drought.** These are the impacts that can cause the greatest consequences in the municipality due to the limitation in the availability of water in the region. A reduction in 35 rainy days per year is estimated by the end of the century, where it is expected that the average annual rainfall can be reduced by 68 liters, compared to the current average.
- **Forest fires.** The decrease in rainfall, the increase in temperatures, as well as longer periods of drought, favor conditions for the appearance of fires in the natural environment.
- **Pests and diseases**, whose incidence can affect both citizens and natural biodiversity, and the agricultural and livestock sectors of the municipality.

According to the climate models studied, the trend is for an increase in all risks, both in intensity and frequency. These variations lead to seasonal changes, effects on crops and loss of biodiversity as direct consequences.

The rest of the risks, as well as the consequences that may arise, must also be taken into account in the action strategies, due to the interrelation between them, and the possibilities of triggering the so-called "domino effect".

Table 5. Summary of risk evaluation. Source: own elaboration.

Type of climate risk	Current risk level	Expected intensity change	Expected frequency change	Term	Risk indicators
Extreme heat	High	Increase	Increase	Short term	Number of warm nights. Duration of heat waves.
Extreme rain	Intermediate	Increase	Increase	Medium term	Liters per hour. Number rainy days.
Floods	Intermediate	Increase	Increase	Long term	Streets flooded or cut off.
Drought	High	Increase	Increase	Short term	Number of consecutive days without rain. Plant decay.
Thunderstorms	Low	Increase	Increase	Medium term	Number of lightning strikes per hour.
Bushfires	High	Increase	Increase	Short term	Number of ignitions and fires. Wooded area affected. Deforested area affected.
Diseases	Intermediate	Increase	Increase	Medium term	Citizens affected. Number of medical visits.
Pests	Intermediate	Increase	Increase	Short term	Crops and livestock affected. Affected crop area. Number of livestock holdings affected.

Based on the analyses carried out in this document, it is possible to establish a classification of the sectors and impacts in order of importance. That said, the inherent difficulty of comparing different impacts and how they affect very different actors and sectors must be taken into account when interpreting this information.

The table on the next page reflects in an aggregate way the climate impacts that imply greater vulnerability of the sectors under study in the four periods analyzed: the historical record, present time and near future, mid-century and end of the century. As can be seen, at present the impacts that cause greater vulnerability are temperature and different extreme events. Although if we look at the end of the century, we observe that annual rainfall is positioned, along with temperature, as the main impacts against which the municipality of Moncofa would have greater vulnerability.

Table 6. Classification of climate impacts according to the level of associated risk, in descending order and by time period. Source: own elaboration.

	1975-2020	2021-2039	2040-2069	2070-2100
1	Temperature	Rainfall	Temperature	Temperature
2	Rainfall	Temperature	Rainfall	Rainfall
3	Other extreme events	Other extreme events	Other extreme events	Other extreme events
4	Pests and diseases	Torrential rain	Pests and diseases	Pests and diseases
5	Torrential rain	Pests and diseases	Torrential rain	Torrential rain

If we reverse the scope, we can make a classification of the sectors studied based on their level of vulnerability to climate impacts in the different periods analyzed. As we observed, biodiversity remains the most vulnerable sector throughout the periods analyzed, followed by water and health.

Table 7. Classification of sectors according to their global level of vulnerability to climate impacts, in decreasing order and by period. Source: own elaboration.

	1975-2020	2021-2039	2040-2069	2070-2100
1	Biodiversity	Water	Biodiversity	Biodiversity
2	Water	Biodiversity	Water	Water
3	Health	Energy	Health	Health
4	Energy	Health	Waste	Energy
5	Waste	Waste	Energy	Waste

The Adaptation Plan of Moncofa is composed of a total of 36 actions, which are presented below.

Table 8. Summary of the proposed adaptation measures. Source: own elaboration.

Proposed measures	Term	Estimated investment (€)	Avoided impacts	Affected vulnerabilities	Areas it affects
Water and hydrological resources (A.A.i.)					
A.A.1. Improvement of the use of Water in municipal facilities and equipment	Short term	1.100.000	Decrease in rainfall, drought. Increase in temperatures, heat waves.	Energy, water, agriculture and forests, environment and biodiversity.	Water and energy
A.A.2. Awareness campaigns in improving the domestic use of Water	Short, intermediate and long term	3000 - 5000	Rainfall decline, drought, temperature increase, heat Waves.	Energy, water, agriculture and forests, environment and biodiversity, education, CI, society and community.	Water
A.A.3. Specific training and awareness campaigns on water consumption in the agriculture and farming sector	Short, intermediate and long term	3000 - 5000	Rainfall decrease, drought, temperature increase, heat waves.	Energy, water, agriculture and forests, environment and biodiversity, education, CI, society and community.	Water
A.A.4. Optimization of the maintenance of fountains, springs and artificial ponds	Short-intermediate term	5.000 - 15.000	Drought, heat waves, decrease in rainfall, torrential rain.	Water, agriculture and forests, environment and biodiversity, health and tourism.	Water and health
A.A.5. Improvement of irrigation of green areas	Short-intermediate term	522.235	Decrease in rainfall, drought, heat waves, increase in water needs.	Water, agriculture and forests, environment and biodiversity.	Water and biodiversity
A.A.6. Improvement of urban blue infrastructure	Intermediate and long term	Variable	Decrease in rainfall, droughts, torrential rain, heat waves.	Water, agriculture and forests, environment and biodiversity and health.	Water and biodiversity
A.A.7. Recovery of rainwater in public buildings for use in irrigation	Intermediate and long term	25.000 / building	Decrease in rainfall, Increase in temperatures, drought, heat waves and torrential rain.	Water, agriculture and forests, environment and biodiversity.	Water and biodiversity
A.A.8. Renovation of the municipal supply network	Intermediate and long term	9.200.000	Reduction of rainfall, drought, Increase of temperatures and heat waves.	Water, agriculture and forests, environment and biodiversity.	Water

A.A.9. Renovation of the municipal sanitation network	Intermediate and long term	Variable	Reduction of rainfall, drought, Increase of temperatures and heat waves.	Water, agriculture and forests, environment and biodiversity.	Water
A.A.10. Adaptation of the WWTP to the new European regulation	Short term	2.5M – 3M	Increase in temperature, decrease in rainfall and extreme events.	Enviroment, biodiversity and waste	Water and waste.
Health (A.B.i.)					
A.B.1. Training in pests such as tiger mosquitoes	Short term	3.000 - 5.000	Increase in temperatures, extreme rainfall, pests and diseases.	Health, education, CI, society, community.	Health
A.B.2. Review and improvement of communication protocols in emergency situations	Short term	5.000 – 6.000	Extreme events, droughts, heat waves, extreme rains, forest fires, pests and diseases.	Health, civil protection and emergencies, education, CI, society, community.	Health
A.B.3. Conducting municipal drills of emergency situations	Short, intermediate and long term	Variable	Extreme events, droughts, heat waves, extreme rainfall, forest fires, pests and diseases.	Health, civil protection and emergencies, education, CI, society, community.	Health
A.B.4. Drafting of self-protection plans (SPP) in urban-forest interface (UFI)	Short term	2.000 / plan	Forest fires, heat waves, droughts, increase in temperatures, decrease in rainfall.	Buildings, land uses and management, agriculture and forests, environment and biodiversity.	Health, biodiversity and water
A.B.5. First aid training for citizens	Short, intermediate and long term	Variable	Heat waves, extreme events.	Health, education, CI, society, community.	Health
Biodiversity (A.C.i.)					
A.C.1. Care and protection of local sinks	Short term	Variable	Variation of temperature, decrease in rainfall, appearance of pests and diseases, droughts and floods.	Water, agriculture and forests, environment, biodiversity and health.	Biodiversity and Waste

A.C.2. Plan for the promotion of urban biodiversity	Short-medium term	8.000 – 12.000	Increase in temperatures, decrease in rainfall, appearance of pests and diseases, extreme drought and heat.	Agriculture and forests, environment, biodiversity.	Health, Biodiversity, Water
A.C.3. Promotion of green itineraries that connect existing green areas	medium term	10.000 – 15.000	Drought, extreme heat, fires and floods.	Environment and biodiversity, health, education, CI, society, community	Biodiversity and Health
A.C.4. Study and refurbishment of landscaped units for their adaptation	Short-medium term	5.000 – 10.000	Increase in temperatures, decrease in rainfall, heat waves, droughts.	Environment and biodiversity, health, education, CI, society, community	Biodiversity, Water and Health
Waste management (A.D.i.)					
A.D.1. Promotion of community and domestic composting in the municipality	Short term	10.000-15.000	Waste generation, soil and water pollution, GHG emission	Environment and biodiversity, waste, health, education, CI, society, community	Waste, Biodiversity, Water, Health, Energy
A.D.2. Promotion of the sale of second-hand objects	Short and Medium term	1.000 -3.000	Waste generation, increase in the cost of energy.	Environment and biodiversity, waste, health, education, CI, society, community	Waste, Energy
A.D.3. Creation of WEEE repair shops	Intermediate and long term	2.000 – 3.000	Waste generation, increase in the cost of energy.	Environment and biodiversity, waste, health, education, CI, society, community	Waste, Energy
A.D.4. Location and removal of illegal dumps and discharges	Short term	20.000	Environmental degradation, soil and water pollution, increased fire risk	Environment and biodiversity, waste, health, education, CI, society, community	Waste, Biodiversity, Health
A.D.5. Promotion of good practices of consumption and waste prevention	Short term	Variable	Environmental degradation, soil and water pollution	Environment and biodiversity, waste, health, society, community	Waste, Water Energy
A.D.6. Reduction of burns of agricultural remains	Short term	5.000 – 10.000	Risk of forest fires, Increase in GHG emissions	Environment and biodiversity, waste, health, society, community	Waste, Energy, Biodiversity
Energy (A.E.i.)					

A.E.1. Study of energy poverty in the municipality	Short term	5.000 - 10.000	Increase the cost of energy, heat waves, temperature increase, low temperatures	Buildings, CI, society, community	Energy and Health
A.E.1. Energetic valuing of the municipality's biomass	Medium term	50.000 – 100.000	Increase in the cost of energy, risk of fires, pests	Agriculture, forests, environment, biodiversity, waste, health	Energy, Biodiversity, Waste, Health
Transversal actions (A.F.i.)					
A.F.1. Creation of the Environmental Educator job in the list of jobs of the city council	Medium term	Variable depending on the positions created	All	All	All
A.F.2. Implementation of an Environmental Management System in the City Council	Short term	30.000	All	All	All
A.F.3. Creation of a specific budget item for environment and climate change	Short term	Variable	All	All	All
A.F.4. Creation of urban gardens	Short term	30.000	All	All	All
A.F.5. Natural regeneration of urban periphery spaces	Medium term	Variable	All	All	All
A.F.6. Citizen training on climate change	Short, intermediate and long term	Variable	All	All	All
A.F.7. Provision of technical means for the Municipal Environmental Sustainability Service	Short term	Variable	All	All	All
A.F.8. Inclusion of renewable energies regulation in the municipality strategic planning.	Short term	N/A	All	All	All