life adaptate

LAYMAN'S REPORT

COMMON METHODOLOGY FOR THE DEVELOPMENT OF SUSTAINABLE ENERGY AND CLIMATE ACTION PLANS IN EUROPEAN MUNICIPALITIES

INDEX

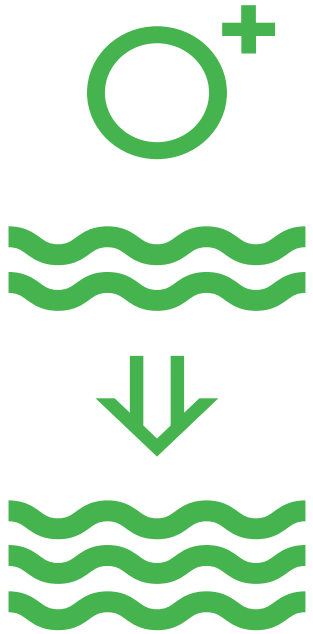
0. PROBLEM FACED

According to the 5th Assessment Report of the IPCC (Intergovernmental Panel on Climate Change), if greenhouse gases emissions continue rising at the current rate, the global average temperature will increase from 2.6 to 4.8°C and sea levels will become 0.45 to 0.82 meters higher than present.

Risks coming from climate change have a **special incidence over urban areas**, such as rising temperature, sea-level rising, water scarcity, droughts, flooding and food supply risk. These impacts become more intense when public services, infrastructures and housing are affected.

Population growth, together with climate change effects, form a lethal combination which is already increasing the risks for human health.

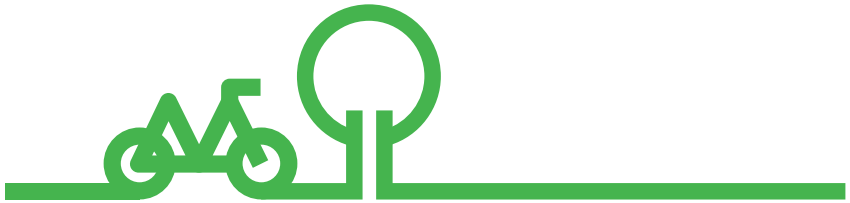
The development and implementation of local policies for adapting to climate change and the overall inclusion of climate change related issues into local policies is still complicated for Local Authorities (LAs) in spite of the efforts made by initiatives like CoM, due to reasons like lack of knowledge/skills or misperception of the seriousness and urgency of the problems related to climate change, which has led to a very modest success in the adoption of specific action plans at local level.



I. LIFE ADAPTATE: IMPLEMENTED SOLUTION

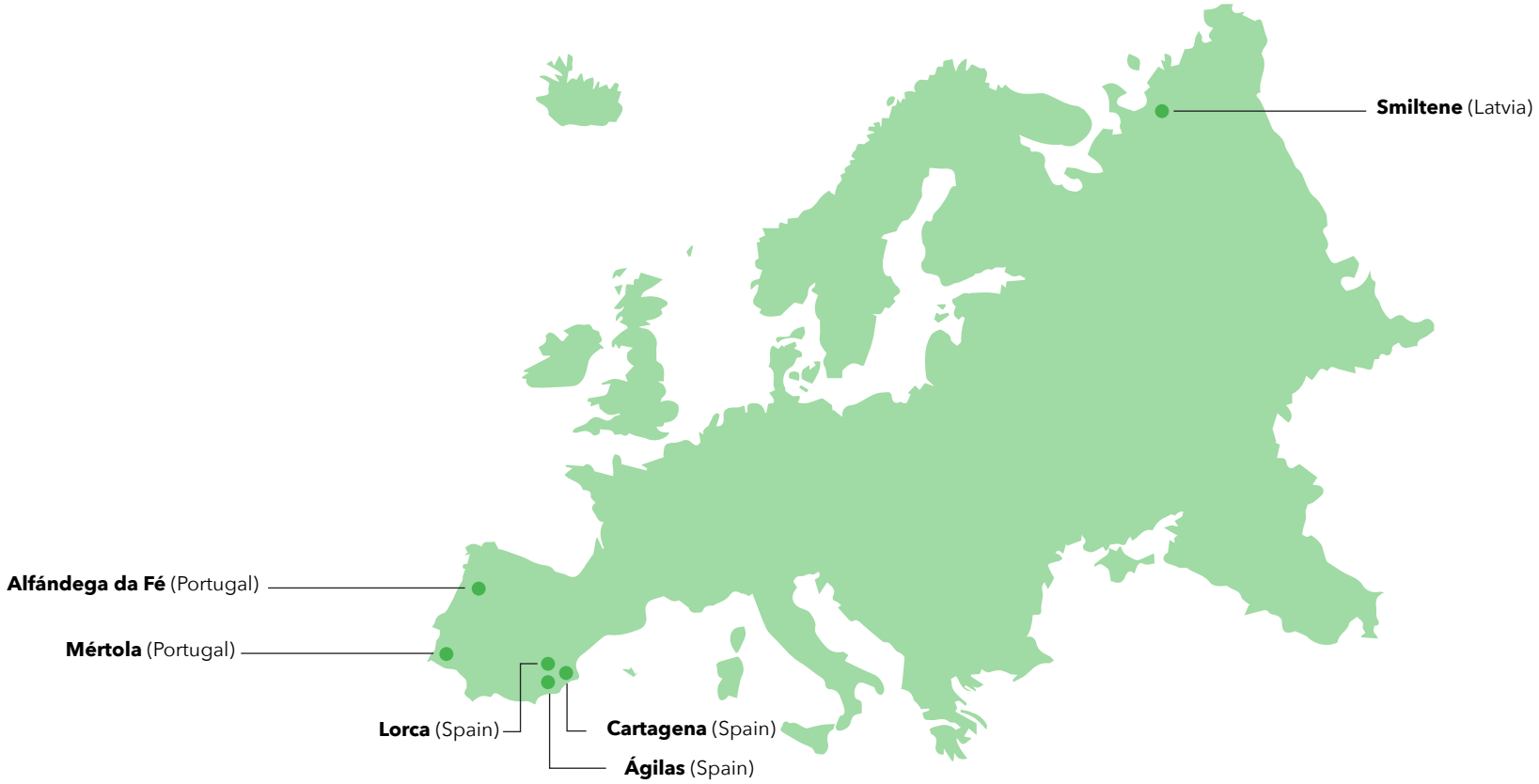
In order to support climate change adaptation in European cities, **the Life Adaptate project aims to increase the commitment of European municipalities** with the Covenant of Mayors for Climate and Energy by the development of local adaptation plans which will be integrated in the previous mitigation objectives of several municipalities, giving a comprehensive approach to the fight against climate change.

Accordingly, the project fits with the EU policy priorities for the 2016 call related to urban adaptation by contributing at the same time to climate adaptation and mitigation and developing green infrastructures in cities. Additionally, pilot actions will provide direct benefits over the urban environment by the creation of green and water infrastructures that can provide new created areas to host biodiversity besides of preventing floods and absorb heat.



II. ACTIONS

The LIFE ADAPTATE project has been implemented from September 2017 to September 2021 in six municipalities belonging to three different countries of the European Union: Spain, Portugal and Latvia.



II. ACTIONS

The implementation of the project ended in September 2021 after 49 months of duration, with significant results in the local adaptation to climate change, achieving he following objectives:

- The development of **Sustainable Energy and Climate Action Plans** (SECAP) in the six EU participating municipalities, taking advantage of synergies and know-how of different entities supporting **technical development** and **public participation approach**

- The implementation of **demonstrative pilot actions** related to adaptation to climate change at local level and the different approaches that can be used to face **similar risks in different European areas**, widening the knowledge database of adaptation actions.

- The demonstration of the **effectiveness of cooperation schemes** among municipalities of different countries and the **positive effects of public involvement and participation.**

- The evaluation of how **local initiatives** and the adoption of **specific measures** allow the **adaptation and mitigation of the climate change effects.**

- The promotion of **specific resources and guidelines** to allow transfer and replication of the project activities at European level.

II. ACTIONS

To achieve these project objectives, it has been necessary to implement the following actions:

> **Preparatory actions** that paved the way to the SECAPs development with common protocols and guidelines for public participation and the design of pilot activities for climate change adaptation.

> **Implementation actions**, which can be divided into four groups:

The process of development approval and implementation of 6 SECAP's (3 in Spain, 2 in Portugal and 1 in Latvia) using participatory approaches in each municipality and cooperation among municipalities

The development of pilot actions for climate change adaptation in the project municipalities, based on already their actual needs for adaptation, to support the implementation of SECAPs

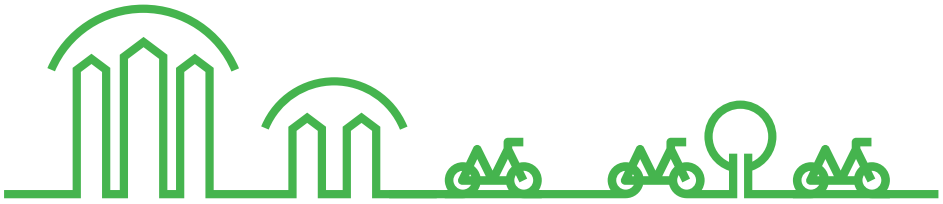
The work on the sustainability of the adaptation and mitigation approach at local scale through its inclusion in the planning and management activities of municipalities

The design and implementation of a transfer and replication strategy so that the achievements and lessons learnt could be replicated and transferred in other areas efficiently.

> **A monitoring action** to assess the pilot actions development, the SECAP process of development and implementation and the socioeconomic effects of the project.

> **A dissemination action** to develop and implement the communication strategy and tools for communication, being also responsible for the international dissemination to the general public and the networking.

> **A project management action** to coordinate all project actions and the partnership and is also responsible of the monitoring of the project implementation and the risk contingency plan.



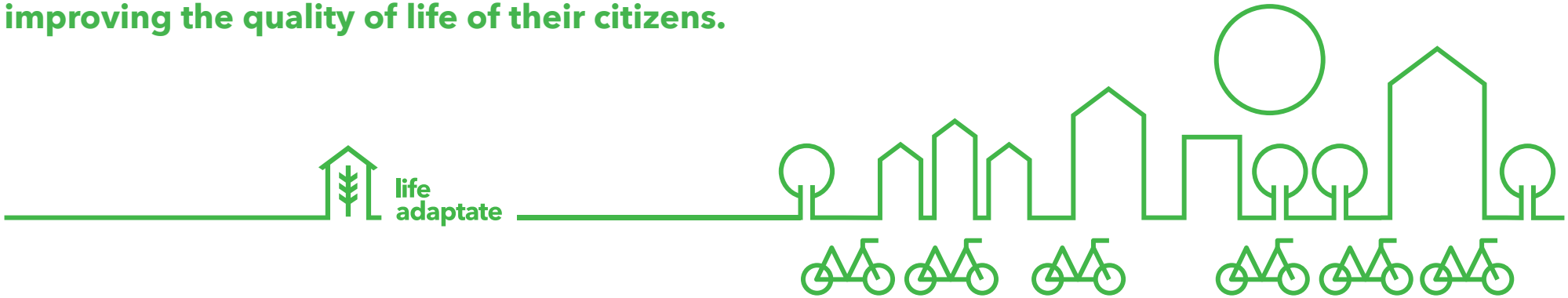
III. COMMON METHODOLOGY FOR THE SECAP DEVELOPMENT

Among the documents planned for the project is the guide for the development of local climate change adaptation plans. However, in recent years, the Covenant of Mayors' approach to these plans has advanced substantially. There is no longer talk of two action plans, one for mitigation and one for adaptation, but rather a new integrated approach that brings together mitigation, adaptation and energy poverty in a single action plan.

The **"Guide for the elaboration of Climate and Sustainable Energy Action Plans (SECAP)"** developed by EuroVértice with the help of the other project partners, already includes this integrated approach and allows to address it in a simpler way, accessible to most municipalities. Furthermore, **this methodology favours synergies between mitigation and adaptation**. In short, it constitutes a reference document for those municipalities that intend to carry out their SECAP through a qualitative analysis of the municipal situation.

IV. PILOT ACTIONS

Municipalities participating in the LIFE ADAPTATE project have developed pilot actions for adapting to climate change with the aim of improving the quality of life of their citizens.



In **Águilas (Spain)** an indigenous urban forest area of 30,000 m2 has been planted and irrigated with water from a wastewater treatment plant. By doing so, waste water is being used to increase the water available for irrigation in the municipality. The pumping installation runs entirely on solar energy, where 32 photovoltaic panels of 270W have been installed, generating more than 18MWh of 100% renewable energy per year. This installation reduces CO2 emissions by 8.71 tonnes per year. In addition, the action incorporates a sustainable urban drainage system (SUDS) that slows down runoff caused by torrential rains and protects the houses located in the lower part of the park. This action has thus reduced the risks of drought and extreme heat addressed.

In **Cartagena (Spain)** the increase and adaptation of the green area to pedestrian use has contributed to minimising the climate risk that was addressed by the action: extreme heat. In areas where it has not been possible to plant trees, pergolas have been installed to provide shade for pedestrians. Sensors have recorded a reduction of 1 to 2°C in the ambient temperature. This apparently small reduction has a large impact on the thermal sensation of pedestrians.

IV. PILOT ACTIONS

In **Lorca (Spain)** the risk addressed by the pilot action has also been extreme heat. The installation of awnings in several busy commercial and pedestrian areas has created shaded corridors that improve the thermal comfort of pedestrians, reducing the temperature on building facades and pavements. In addition, businesses have noticed a significant decrease in electricity consumption for air conditioning in summer. In the monitoring carried out in 2020 and 2021, the following values have been obtained:

> Average reduction of ambient temperature comparing sun and shade: 5°C.
> Maximum reduction of ambient temperature comparing sun and shade: 9°C
> Average reduction of soil temperature comparing sun and shade: 15°C
> Maximum reduction of the localised soil temperature comparing sun and shade: 20°C

In **Mértola (Portugal)**, 3 types of shaded areas have been installed in urban areas, reducing the risk of extreme heat in the city's busiest areas. A photovoltaic tree was installed in one of the areas, providing renewable electricity. A sustainable tourism plan was also developed, which includes measures to make protected natural areas more accessible to visitors, while protecting the areas from the negative effects of tourism. The measures included in the plan also contribute to reducing the risk of extreme heat.

In **Smiltene (Latvia)** the risk of flooding and eutrophication of the city's central lake has been reduced by cleaning its waters and restoring its floodgates to control the water level. This was done by removing excess vegetation, increasing the depth of the lake and improving conditions for fish and other aquatic animals. Water quality measurements show a significant decrease in suspended solid particles, which are reduced from 5.8 to 2 mg/L. These particles reduce the transparency and photosynthesis, thus affecting the depth of the distribution zone of aquatic plants. Another significant improvement is the reduction of nitrites, an unstable element formed under anaerobic conditions by the decomposition of organic matter, from 0.10 mg/L to 0.013 mg/L.

In **Alfândega da Fé (Portugal)**, 120 m2 of solar panels have been installed on a rooftop generating 262.5 m2 of shaded area. The total power of the photovoltaic systems is 20.52 kW, and the electricity produced is used for the self-consumption of two nearby public buildings. In addition, a 2,500 m2 lake was built to retain water from rainfall, ground run-off and water lines from the Bornes mountain range. This water will be used either for irrigating crops or for fighting forest fires. With these actions, the risks of extreme heat and drought have been reduced.

V. INCLUSION OF CLIMATE CHANGE IN LOCAL POLICIES

The **LIFE Adaptate project** takes advantage of the experience of its partner, the **Region of Murcia's Department of Climate Change**, to define some basic guidelines to help European municipalities adopt local policies that are in line with their commitment to fight climate change. **This is a requirement for all municipalities signatories of the Covenant of Mayors.**

The **"Guide to including Climate Change Mitigation and Adaptation in Local Policies"** is a compilation of the main actions that can mark local climate policy. **It analyses 6 specific objectives:**

> **To include** the emission reduction targets for 2030 established by the European Union in any new plan and project of works or activities.

> **To minimize** the occupation and sealing of new land and compensate for the destruction of its capacity as a CO2

> **To compensate** the destruction of carbon sinks and scope emissions by works.

V. INCLUSION OF CLIMATE CHANGE IN LOCAL POLICIES

> **To reduce** the use of private vehicles and provide infrastructure for the electrification of mobility.

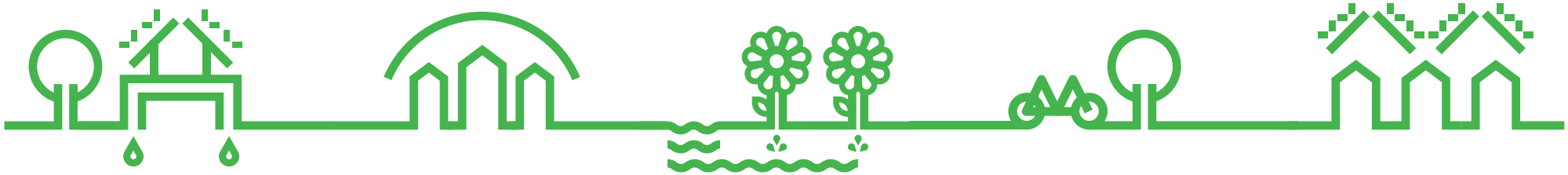
> **To incorporate** building by building through building permits, mitigation and adaptation measures.

> **To apply** future scenarios of rising sea levels to urban planning decisions on the coast and initiate the adaptation of urban spaces and infrastructures that are likely to be affected.

VI. PROJECT RESULTS

In relation with climate change adaptation, the project has had **a clear positive impact on the reduction of threats caused by climate change** suffered by all 6 partner municipalities. Pilot actions have improved all municipalities resilience to climate change, since forecasts describe changing climatic conditions (increased extreme climate events, with more frequent and longer dry periods and torrential rains) that will have great impact on citizens. Some of these pilot actions integrate adaptation solutions with mitigations technologies, including the onsite production of electricity with renewal energy, so LIFE ADAPTATE impact can be measured not only in adaptation terms, but also in mitigation terms.

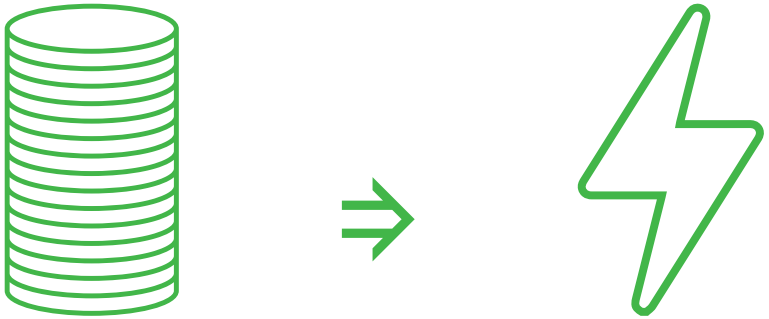
The actions implemented in Águilas, Mértola and Alfândega da Fé have produced 23,82 MWh/year, and is expected that they continue producing a similar amount per year after the project ends.



VI. PROJECT RESULTS

Three hectares have been reforested in Águilas, and with the future reforestations in Mértola and A lfândega da Fé, the surface will be 55,4 ha beyond 5 years of the project end. The PV installations in Águilas, Mértola and Alfândega da Fé and the reforestation of urban areas in Cartagena and Águilas reduce every year 9,41 tonnes of CO2 equivalent.

Besides pilot actions, all municipalities have already started to implement several additional measures of their SECAPs. Some measures are already concluded and at the moment 91 measures of a total of 316 are under implementation or concluded, which represents 28,8% of the total of the measures presented in the SECAPs.
In terms of costs, the total costs of measures under implementation are **72,935,115.51€**. In terms of energy saving achieved with the measures implemented this is **122,751.91MWh/year.**



72,935,115.51€
(In terms of energy saving achieved)

122,751.91MWh/year

PROJECT PARTNERS

REGIONAL DEVELOPMENT AGENCY OF MURCIA REGION

PROJECT COORDINATOR.

Responsible for preparatory actions with municipalities, analysis of climate risks, transfer and replication activities and project management.

http://www.institutofomentomurcia.es/web/portal/

EUROVÉRTICE CONSULTORES

TECHNICAL SUPPORT DURING THE PROJECT DEVELOPMENT.

Responsible for communication and dissemination actions and monitoring of results obtained.

https://www.eurovertice.eu/en/home/

EKODOMA

TECHNICAL SUPPORT DURING THE PROJECT DEVELOPMENT.

Responsible for the preparatory actions for pilot actions and their implementation.

www.ekodoma.lv

IRRADIARE

TECHNICAL SUPPORT DURING THE PROJECT DEVELOPMENT.

Responsible for the development, approval and implementation of the Sustainable Energy and Climate Action Plans.

http://www.irradiare.com/

GOVERNMENT OF THE REGION OF MURCIA. REGIONAL MINISTRY OF WATER, AGRICULTURE AND ENVIRONMENT.

SUPPORT FOR THE EVALUATION OF CLIMATE CHANGE SCENARIOS AND THE ADOPTION OF LOCAL ADAPTATION POLICIES

Responsible for preparatory actions with municipalities, analysis of climate risks, transfer and replication activities and project management.

http://www.institutofomentomurcia.es/web/portal/

MUNICIPALITY OF ÁGUILAS

COASTAL MUNICIPALITY LOCATED IN THE SOUTH OF MURCIA REGION, SOUTHEAST OF SPAIN.

With the development of its SECAP and the implementation of its pilot action, the municipality aims to be adapted to climate change, reducing its vulnerability to heat waves or sea level rising.

www.ayuntamientodeaguilas.org

MUNICIPALITY OF CARTAGENA

MUNICIPALITY LOCATED IN MURCIA REGION, SOUTHEAST OF SPAIN.

Its SECAP and its pilot action will encourage the adoption of measures to adapt the municipality to climate change, including green areas as an adaptation measure against heat waves.

www.cartagena.es

MUNICIPALITY OF LORCA

MUNICIPALITY LOCATED IN MURCIA REGION, SOUTHEAST OF SPAIN.

Its objective is to develop an action plan against climate change and carry out its pilot action, installing awnings on streets to mitigate heat island effect and heat waves.

www.lorca.es

MUNICIPALITY OF SMILTENE

MUNICIPALITY LOCATED IN THE REGION OF VIDZEME, IN NORTHERN LATVIA.

Its objective is to find a solution to phenomena such as heavy rains produced due to climate change. With the execution of their pilot action, they will clean the Vidusezers lake to collect rainwater and reduce the risk of flooding.

www.smiltene.lv

MUNICIPALITY OF ALFÂNDEGA DA FÉ

MUNICIPALITY LOCATED IN THE NORTH REGION OF PORTUGAL.

Besides developing their SECAP, they will create shade areas with photovoltaic awnings to reduce the risks derived from heat waves and a natural lake to collect rainwater.

www.cm-alfandegadafe.pt

MUNICIPALITY OF MÉRTOLA

MUNICIPALITY LOCATED IN THE BAJO ALENTEJO REGION OF PORTUGAL.

It is a municipality very vulnerable to water scarcity, to the increase of temperatures and with great risk of fires. Its SECAP and pilot action seek to mitigate these effects derived from climate change.

www.cm-mertola.pt

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Región de Murcia

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CÂMARA MUNICIPAL

SMILTENE MUNICIPALITY

Município de Alfândega da Fé