

# *Climate Adaptation Action Plan City of Madrid*

THIS DOCUMENT AIMS TO COMPLEMENT THE ROADMAP TOWARDS CLIMATE NEUTRALITY BY 2050, PUBLISHED IN 2021, IN TERMS OF THE SPECIFIC OBJECTIVES AND ACTIONS THAT THE CITY OF MADRID SHOULD DEVELOP IN TERMS OF ADAPTATION TO CLIMATE CHANGE.



The **alteration of the climate** causes impacts that **directly affect urban centres at environmental, social and economic levels**. In order to face these challenges, one of the priority objectives is the reduction of Greenhouse Gases (GHG), but the consequences of global warming also make it necessary to take adaptation actions in all areas.

At the **local level**, climate adaptation needs to identify **vulnerable areas, assess risks and develop strategies** to improve cities' response to the climate crisis. To this end, an analysis of **climate scenarios and assessment of key associated risks** is provided first. Although Madrid's climate is regional, as in other large metropolises, the urban morphology, materials and activity of the city lead to particular micro-scale conditions and phenomena such as the 'Urban Heat Island' effect. According to the municipal study '*Climate change vulnerability analysis of the city of Madrid*', the city is affected by **heat waves, droughts, extreme weather events (floods, storms, gales, snowfall, hailstorms...)** and **environmental degradation** (loss of biodiversity). These impacts generate a 'cascade effect' that affects crucial aspects such as citizens' health, increased energy demand, air quality, biodiversity loss, working conditions and the economy, among others.

This same analysis assesses, at **district level**, the most vulnerable areas of Madrid, reflecting the spatial coincidence of climate vulnerability with social and economic vulnerability.

The impacts derived from climate change are already a reality in the city of Madrid, occurring in different spheres, magnitude and intensity and in an acute manner, such as emergencies, or with less perceptible chronic effects, but constant and continuous, which deteriorate some aspects of urban life.

As in the development of mitigation actions, **adaptation requires a comprehensive and coordinated response**, due to the multiplicity of factors involved and the effects that derive from climate change.

**Municipal action** to adapt the city to climate change is deployed in the following aspects:

\* OBSERVATION AND MONITORING OF CLIMATE VARIABLES AND ASSOCIATED KEY IMPACTS

\* RISK ASSESSMENT IN SECTORS OF ACTIVITY, INFRASTRUCTURES AND POPULATION

\* ELABORATION OF RESPONSE ACTIONS TO IMPACTS; EMERGENCIES AND CHRONIC EFFECTS

\* IMPLEMENTATION OF ADAPTATION MEASURES

\* MONITORING OF THE CITY'S VULNERABILITY TO CLIMATE CHANGE AND OF THE MEASURES IMPLEMENTED

\* KNOWLEDGE TRANSFER



After analysing the possible scenarios, **eight objectives are set for the climate adaptation of the city of Madrid**, with their corresponding targets:

- 1  **TO COOL THE CITY**, BY PROMOTING BIOCLIMATIC DESIGNS, DEVELOPING GREEN AND BLUE INFRASTRUCTURE AND PROMOTING BUILDING ELEMENTS AND MATERIALS THAT CONTRIBUTE TO THERMAL COMFORT.
- 2  **PROTECT AND ENHANCE URBAN BIODIVERSITY** TO CREATE A HEALTHIER CITY AND INTEGRATE THIS PERSPECTIVE IN ALL MUNICIPAL AREAS, SERVICES AND PROJECTS.
- 3  **OPTIMISE THE MANAGEMENT OF WATER RESOURCES**, TO GUARANTEE A WATER INFRASTRUCTURE THAT PROTECTS THE CITY AGAINST EXTREME WEATHER EVENTS, TO IMPROVE EFFICIENCY IN ITS LONG-TERM MANAGEMENT AND TO TAKE ADVANTAGE OF ALTERNATIVE RESOURCES.
- 4  **ADAPT MUNICIPAL SERVICES AND EQUIPMENT** BY PROMOTING CLIMATE ADAPTATION ACTIONS IN PUBLIC AND PRIVATE FACILITIES.
- 5  **GOVERNANCE FOR CLIMATE ADAPTATION**, TO INTEGRATE CLIMATE CHANGE ADAPTATION INTO REGULATIONS, PLANNING AND PROJECTS, AS WELL AS TO PROMOTE BETTER COORDINATION BETWEEN MUNICIPAL AREAS AND DISTRICTS AND WITH OTHER ADMINISTRATIONS.
- 6  **PROMOTE CLIMATE ADAPTATION FROM A SOCIAL, FAIR AND INCLUSIVE PERSPECTIVE**, TO STRENGTHEN COMMUNITY NETWORKS AND INCREASE SOCIAL INVOLVEMENT, IN ADDITION TO PROMOTING SPECIFIC MEASURES FOR VULNERABLE GROUPS.
- 7  **CLIMATE RISK ASSESSMENT, MONITORING AND CONTROL** TO ANTICIPATE RISK SITUATIONS, MAPPING BY POPULATION GROUPS AND SECTORS OF ACTIVITY, AMONG OTHERS.
- 8  **STRENGTHEN THE EMERGENCY RESPONSE TO EXTREME CLIMATE EVENTS** BY IMPLEMENTING PLANS, PROTOCOLS AND MECHANISMS, PROMOTING INSTITUTIONAL TRAINING FOR THE MANAGEMENT OF CLIMATE EMERGENCIES AND THE DEVELOPMENT OF CITIZEN INFORMATION AND COMMUNICATION SYSTEMS.

Finally, this document includes a list of **pilot projects** executed following adaptation criteria to climate change that have been developed by the DG of Sustainability and Environmental Control in collaboration with other Directorate Generals, Government Areas and Districts.

These **climate adaptation demonstration projects** show the combined deployment of objectives, goals, lines of work and initiatives carried out by Madrid City Council. Despite not being an exhaustive list of actions, their study can be very illustrative and generate lessons for the design and implementation of new actions. Specifically, mention is made of the intervention in school environments and schoolyards (with special mention of CEIP Navas de Tolosa, in Villaverde) and university campuses (Campus sur of the Polytechnic University of Madrid in Puente de Vallecas) or the Climate corridor of San Cristóbal de los Ángeles, in Villaverde.