

# City and Countryside: So Close, So Far Away



**September 2022**

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This report has been published by the **Green European Foundation** with the support of national partner **Transición Verde**.

The **Green Europe Foundation (GEF)** is a European-level political foundation whose mission is to contribute to a lively European sphere of debate and to foster greater involvement by citizens in European politics. GEF strives to mainstream discussions on European policies and politics both within and beyond the Green political family. The foundation acts as a laboratory for new ideas, offers cross-border political education and a platform for cooperation and exchange at the European level.

**Transición Verde (Green Transition)** was founded in 2011 with the objective of promoting green thought and green policies. The foundation carrying out national and international level projects and campaigns continues to operate in the field of ecology and sustainability, economy, democracy and media, climate change and energy.

This publication has been realized with the financial support of the European Parliament. The European Parliament is not responsible for the content of this publication.

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This report is partially based on the outputs of the conference titled City and Countryside: So Close, So Far Away, organized as part of the Cities as Place of Hope Project on the 26th May 2022.



The **Cities as Places of Hope Project** has been carried out by the **Green Europe Foundation** with the support of green organizations from all over Europe; Spain (Transición Verde), Catalonia (Nous Horitzons), Croatia (The Institute for Political Ecology-IPE), Belgium (Oikos), Northern Macedonia (Sunrise), Wetenschappelijk Bureau GroenLinks (Netherlands) and Turkey (Green Thought Association). This project was launched in 2019 focusing on progressive city networks, a key factor in developing a positive narrative about Europe's future. Within the scope of the project, it is aimed to bring together the progressive and transformative local and international city networks, to provide cooperation, to facilitate the exchange of information, and to contribute to the creation of a positive narrative about the future of Europe with the activities carried out in 2022.



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# Introduction

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In an increasingly urban world, cities face a fundamental challenge: to being able to adapt to the changes brought about by the climate, environmental, energy, social crises. To do so, they must become aware of the territory of which they are a part and interact in a balanced way with their rural environment. To discuss this balance in the management of basic resources such as water, food and energy, the Green European Foundation (GEF), with the support of Transición Verde, organised the online conference "City and Countryside: So Close, So Far Away" (May 26th 2022), as part of the "Cities as places of hope" project. In order to further explore this topic, the New Water Culture Foundation (Fundación Nueva Cultura del Agua), the Network of Municipalities for Agroecology (Red de Municipios por la Agroecología) and the Renewables Foundation (Fundación Renovables) have prepared articles for the GEF and Green Transition, within the framework of the aforementioned project.



## The Climate Emergency in Our Towns and Cities

*(This text is a transcript of her presentation at the online session held on 26 May).*

### **What is my vision for cities? How did we get here, where do the problems lie and where are the key areas for action? Where can the greatest opportunities be found?**

When we talk about cities, often resilient cities, we always end up labelling cities as unsustainable or to be eradicated, but in reality, living in efficient communities and environments is the most sustainable way for the world's population to do business on this planet. Historically we have come together to exchange services, to exchange goods, to make our lives more efficient, to work as a group... Cities themselves, the concept of the city, the concept of community, the concept of the people, should be positive concepts.

What is going on? There are several problems. First, world population growth. There are currently 7.7 billion people on the planet and it is estimated that by 2050 there will be 9.7 billion people. And this growth is uneven. It will not occur in all parts of the world in the same way; it will be concentrated in developing countries and emerging economies, which will double their population between 2020 and 2050. Added to this is the general ageing of the population - currently the over-65s outnumber the under-5s - a situation that will worsen and generate different needs that will have to be addressed. What is the problem? Cities are expected to concentrate all this population growth. Currently, more than half of the planet lives in cities, reaching 80% in Europe and Spain, where the figures are similar.

Second problem: How have we grown? In a way that has not brought us to a good end. Since industrialisation, our consumption of fossil fuels and the way we have developed has led to CO<sub>2</sub> concentrations in the atmosphere that are not sustainable. This CO<sub>2</sub> increases the temperature of the seas, of the atmosphere, with all the associated climate chaos that leads to the climate emergency we are currently experiencing. The problem is that cities account for 70% of these emissions worldwide. They are both direct emissions and indirect emissions combined, but the point is that it is the needs of cities that cause these emissions. But this, in turn, can be an advantage, because if we act in cities, it would have a

quick effect on climate action and on reducing emissions globally.

Third point: cities are areas that lack social equality. They have underlying structural problems that generate social, environmental and economic inequalities, and are therefore focal points of vulnerability. On the one hand because many critical infrastructures are concentrated there: many of our markets, economic actors... And on the other hand because they concentrate a population that includes vulnerable and marginalised groups that, in addition, are more vulnerable and sensitive to these climate impacts.

And, the fourth point is that all this is happening at a time of total disconnection from our environment, which we sometimes see only as an environment from which we receive material resources. However, it is an environment that also provides climate resilience. I am talking about ecosystem services that allow us to regulate those climatic conditions, to cope with possible extreme events, and even to slow those events that may be longer term, such as sea level rise.

Historically, ecosystems have been systems that have naturally adapted to the events that may arise, just as our communities have historically adapted to the ecological and climatic conditions of the environments in which they have chosen to settle. The problem today is that urbanisation is growing so exponentially that we have bypassed all these ecosystem services and urbanised the land in such a way that, when it comes to dealing with these climate impacts, we find that we have no natural, learned tools. There is no natural adaptive capacity in our cities and in their environments, because we have ignored it, we have avoided developing our capacity to cope with climate impacts; for example by urbanising in flood zones on riverbanks.

We are part of the problem, we are the cause of the climate emergency, but also the very way in which we have urbanised is the cause of us not being resilient to it. We have had to resort to technological solutions like this [slide with a portable dyke in a street during a flood]



because we have not imitated the way nature deals with these phenomena; services that we could have acquired naturally and that provide resilience.

In the pictures we can see some examples of such buildings in unsuitable locations, which do not help to cope with these climate impacts; the increased use of cement and concrete in urban areas which, in addition to excluding other elements that could increase our resilience, such as nature-based solutions (or simply respecting the natural ecosystem that was there in the first place) lead us to much more serious situations, for example, by increasing heat retention within cities...

The result is evident: this is a photo you probably saw last year [a makeshift shelter in a kind of sports centre], of spaces that were set up in Canada during the 45 degree Celsius heatwaves they experienced last summer.

My main argument is that disasters are not natural. We have got here because of the way we have developed urbanisation, the way we have developed our growth, and our duty now is to look inwards and look at what the solutions are at this moment. It is a major issue, therefore, to rethink the city. Redesign, revolutionise, regenerate, reconnect with the environment. We have become accustomed to accessibility and we have forgotten where the water comes from, where the food comes from and what the cost really is when we make everything so accessible.

The main sectors where action should be taken are buildings on the one hand, food on the other hand, and also mobility. For me, these are three critical sectors where we could make a lot of progress both in terms of mitigation, the causes, adaptation, and of increasing resilience. I 'resilience' to be as a whole, not only as adaptation to climate change but also with reductions in emissions that have to come with any climate action.

In terms of addressing urbanisation in public policy, I think it is a crucial aspect of municipal policy, and I think we should talk about respecting the ecosystems themselves, not about urbanising and then adding a row of trees or adding a green space.

We saw this during the pandemic when, for everyone, one of the basic needs was to have access to green spaces. Because not only do they provide the ecosystem services we are talking about: climate regulation, thermal comfort, humidity, water capture, filtering, etc., but there are other social and psychological benefits of having nature in the city. Having green spaces, shaded spaces, even improves mobility, facilitates active mobility; more people cycle,

more people walk when you have spaces like this in summer.

But we have to bear in mind that one of the problems that is occurring with these new green infrastructure projects can be gentrification, because land prices and rents increase. And it is not so much a question of carrying out emblematic projects, but of carrying out actions throughout the city, so that everyone can have access to these environmental and social benefits. Because that is another difficulty, that currently they are focusing on flagship projects, innovative, demonstrative examples; and what we need is to scale up the action. There is a good example in Paris, where there is a very strong plan which is being financed in the long term. Because designing climate change adaptation plans without adequate financing makes no sense. That is what is needed: funding, real plans and leadership.

And the last message I would like to convey is that all this climate action cannot happen in isolation from all the processes that are happening worldwide. This [a slide showing a world map with numerous extreme weather events and their geographical location] is an example of what was happening during the first wave of COVID-19. Lots and lots of extreme events happening at the same time and lots and lots of communities that were suffering from two simultaneous crises: a health crisis and an environmental, climate crisis.

Climate action cannot be made alone. It has to go hand in hand with health, social, economic and environmental action in general.

And that is what I want to convey to you: the need to reconnect with the context, to contextualise actions, to reconnect with the environment and to look again at how cities are built and what would be the best plan for the future, considering what still awaits us.





## Urban Water Uses as a Link between Cities and the Rest of the Territory

### An urban society

According to the World Bank (2020)<sup>1</sup> three quarters of the population of the European Union live in cities. In the case of Spain, this percentage exceeds 80% and, in both cases, the trend towards urbanisation has been growing for decades. Statistics, as usual, should be considered carefully. Especially in a case, such as this one, where the boundaries between categories are blurred, if not arbitrary. The characterisation of urban can include criteria as diverse as the population size of the municipality, population density, sealed surface area or lifestyles and access to centralised services (such as hospitals or universities). Despite the inaccuracies, we continue to use the categories rural and urban in a meaningful way, which, leaving aside the grey areas, continue to offer a contrasted and meaningful vision.

The increase in urban population has also occurred unevenly, generating profound territorial imbalances with negative effects both in urban agglomerations - congestion costs - and in rural areas, where basic services reach disproportionate per capita costs. These costs are generally borne by rural inhabitants themselves in the form of travel time to the place of provision or forced relinquishment of services.

It is clear that, despite these costs, cities offer opportunities that make them attractive and continue to fuel their growth, although not all expectations are fulfilled. The usual indicators of success, such as monetary income, the number of patents, the supply of services, etc., in which urban areas stand out, tend to hide other more negative aspects such as the increase in inequality and social conflict or the unhealthiness of urban life.

In addition to the spatial indeterminacy of the urban limits, there is the temporal variability, fundamentally of a seasonal nature, which means that the rural space is occupied at more or less regular intervals - weekends, long weekends, holidays - by urban dwellers. These relationships, which are occasional from the point of view of occupation, are not so sporadic from other points of

view, such as the ownership of second homes or rural properties which, although rural in terms of their location and use, are urban if we take into account the habitual residence of the owner and the social environment in which he or she lives most of his or her life.

### Urban metabolism

Urban life and the very existence of cities depend on their relations with the rest of the territory. The social metabolism of the city, that is, the transfer of materials, energy and information that allows the maintenance of urban life, as well as the sinks that receive the waste generated by its activity, is sustained in a much wider territory than that established administratively by municipal boundaries or functionally by indicators such as, for example, the daily movements of its inhabitants.

Two direct consequences immediately result from the metabolic perspective that are worth noting. Firstly, the nonsense of characterising cities as sustainable in the strict sense, i.e. as population entities of a certain density and with recognisable boundaries. The city without its hinterland - origin of resources and destination of waste - is unsustainable by definition. The second aspect to highlight is the interdependent relationship between urban and rural space, which leads to the failure of any antagonistic approach from either territory.

With the exception of a very small proportion of the materials and energy the city needs for its construction and functioning, the rest must be imported from other territories. Industrialisation has been expanding the area where cities seek their livelihoods, blurring the symbiotic relationship with the surrounding territory of other historical moments, when long-distance trade played a lesser role. At the same time, the waste products of urban metabolism - typically solid waste, sewage and air pollution - are variably expelled from the city and dumped or dispersed into the environment.

Information flows - including monetary flows, circulating in the opposite direction to physical flows - govern metabolic relations and organise the territory. It is in cities

<sup>1</sup> <https://datos.bancomundial.org/indicador/SP.URB.TOTL.IN.ZS>



that the institutionalised knowledge on which decisions about the whole of the territory on which urban life depends is administered. Institutions such as the market, which are fundamental to the organisation of metabolic circulation through the exchange of goods and money, generally favour cities because of their greater bargaining power. In the opposite sense, in the case of the Spanish state, political representation is biased in favour of constituencies with a lower degree of urbanisation. However, until very recently, the two-party system has managed to neutralise this advantage and it remains to be seen whether the new political parties will be able to generate a more balanced alternative model.

### Urban water metabolism

Water is one of the main materials of social metabolism due to its vital importance on the one hand and, on the other hand, the disproportionate volume of water in the totality of the materials transferred. This second feature implies the exclusion of water in the material balances - generally drawn up in units of mass - to prevent its overwhelming presence from obscuring the analysis of the flows of the rest of the materials. The first feature needs little explanation, given the obvious fact that without water there is no life, not only human, but of any known species. Regarding the first, it is worth noting that, since 2010, access to drinking water and sanitation have been recognised by the United Nations General Assembly as two fundamental human rights, on which the satisfaction of others such as the right to health or to life itself depends.

These rights are obviously not restricted to the urban sphere, but taking into account the degree of global urbanisation, it is in this space where the shortcomings in the satisfaction of rights affect the greatest number of people. Despite the deficiencies and limitations in access to safe drinking water and sanitation that are visible in some cities in the global south, it should not be assumed that these rights are universally guaranteed in the cities of the north. The financial crisis of 2008 and the health crisis of 2020 have highlighted the precariousness of access to urban water services for large groups of the population. Mainly - but not only - for reasons of affordability.

The modern city depends on the surrounding territory for the provision of drinking water and for the discharge of polluted water out of its space. In addition, it has to deal with problems related to urban drainage and flood protection, i.e. the management of rainwater and its possible urban use. The urban water cycle, despite its

highly technical artificial condition, is inserted into the natural hydrological cycle, on which it depends, altering it.

### Supply

Cities import the water they need to cover the domestic and vital needs of their inhabitants - drinking, cooking, hygiene, cleaning, etc. - and for other urban uses, such as those related to productive activities and businesses located in the city. Water is also used in other typically public areas such as street washing and garden irrigation.

Urban water supply entails the abstraction of water directly from a spring, by derivation from a surface water body, pumping from an aquifer or, exceptionally, by extracting water from the sea for desalination. The water thus obtained is taken to a treatment plant for drinking water treatment (DWTP) and is then distributed to users through pressurised networks.

Water abstraction establishes a link between the city and the surrounding territory. In many cases, urban growth has gradually distanced the areas where water is obtained for the city as the sources have been exhausted due to abusive extraction, or have become unusable due to pollution. Because of this, and because of the finite nature of freshwater on the planet and its limited availability in arid and semi-arid climates, the protection of sources and catchment areas is of vital importance for cities.

The Water Framework Directive (WFD), the legislative instrument defining water policy in the EU, requires the identification and protection of drinking water catchment areas. The Drinking Water Directive<sup>2</sup>, which is based on a risk management approach, also requires the protection of water catchments. However, in Spain, although the WFD has been in force since 2000, the necessary instruments for the protection of catchment areas have not been generally developed. Exceptionally, some autonomous communities have legislated on this matter and require detailed studies to protect new catchments. The transposition of the drinking water directive should resolve this issue and initiate a general process of defining protection zones and establishing measures to safeguard existing catchment areas, to guarantee that the relaxation of controls at the end of the pipeline, which the directive itself promotes in exchange for applying a risk management approach from the catchment sources and throughout the whole process, is carried out without risks. Reduced testing of the quality of water reaching households, one of the main objectives of the new drinking water directive, without the prior guarantee of

<sup>2</sup> Directive (EU) 2020/2184 of the European Parliament and of the Council of 16 December 2020 on the quality of water intended for human consumption



effective protection of water from the catchment to the point of service can have fatal consequences.

Protection implies, among other things, the delimitation of a certain area in which some activities are restricted according to the risk of contamination of the sources. More precisely, what should be established is a set of more or less concentric zones around the point of extraction to different degrees and with instruments of protection. To the extent that these instruments may affect pre-existing activities in the territory, a space opens up for negotiation between the city and the territory in order to increase the guarantee of protection beyond what is established by legal standards, which in any case must be met by the activities in the territory. Thus, compensation can be agreed by the city to agricultural users in the catchment area in order to reduce the use of fertilisers or the livestock load and thereby reduce nutrient concentrations in the water beyond the legal limit. Alternatively, the user municipality can buy the farms in the protection area in order to change the land use to a less risky one.

The different uses of water in the city differ in terms of their priority and the quality of water required. The water quality requirements for domestic water, and also for water from non-ornamental public fountains, are the highest and are regulated by law. While for street washing and garden irrigation, lower quality water can be used, obtained at a lower cost, such as water pumped directly from the groundwater table or water treated appropriately for this purpose. Most urban businesses in Spain are connected to the general network and use water of the highest quality, although some activities have access to alternative resources of lower quality and cost, generally by pumping.

The fact that drinking water supply is a fundamental human right raises a number of important issues. On the one hand, it should be noted that the right is poorly protected in the current legislative framework. Despite the citizens' campaign developed in the European Union in favour of the recognition and effective protection of the human rights to water and sanitation in the EU, which culminated in the presentation of the first successful European Citizens' Initiative Right2Water, water is not a commercial good but a public good, the Commission's response (COM(2014) 177 final) has not been satisfactory. In it, the past actions of the European institutions in the matter of water are vindicated, in a defence of the quality

and infrastructure policy, to then reject the regulation of the water business, referring to the member states by virtue of the principle of subsidiarity.

It is precisely in the business model where the risks for the fulfilment of human rights lie, as the United Nations Special Rapporteur on the human rights to water and sanitation, Léo Heller, warned in his 2020<sup>3</sup> report. More specifically, privatisation through mixed companies - the majority model in Spain - entails risks for the exercise of these rights due to the combination of three factors related to the private provision of water and sanitation: the business objective of maximising profits, the natural monopoly of services and the imbalances of power in favour of the private partner to the detriment of the public entity responsible.

The process of privatisation of water management and commodification that began in the 1970s has recently led to the consideration of water as a financial asset that can be traded on futures markets and other areas of financial speculation. The participation of large banks and investment funds in the urban water business intensifies the processes of dispossession, increasingly distancing water management from the general interest of citizens and aligning it with the speculative ends of financial capital. The current United Nations rapporteur for the human rights to water and sanitation, Pedro Arrojo, has proposed in his 2021 report<sup>4</sup> the development of democratic water governance from a sustainable perspective based on human rights and the application of participatory strategies for adaptation to climate change as an alternative and a brake on the financialisation of water.

### Wastewater management

The clean water that cities take from their environment for the maintenance of their social metabolism returns to the environment with a loss of quality and at a different return point from the point of intake. In Europe, the collection of urban sewage for removal from the city dates back to Minoan Crete, but it was not until the 19th century that modern sewage systems became widespread, to which purification processes were gradually added prior to discharge into the environment. This was intended, firstly, to put a stop to the hygienic problems derived from the contamination of urban drinking water wells by faecal water, which caused recurrent epidemics of cholera and other diseases. With

3 *United Nations. General Assembly (2020) Human rights and the privatization of water and sanitation services, Report of the Special Rapporteur on the human rights to safe drinking water and sanitation, Mr. Léo Heller, A/75/208.*

4 *United Nations. General Assembly (2020) Risks and impacts of the commodification and financialization of water on the human rights to safe drinking water and sanitation. Report of the Special Rapporteur on the human rights to safe drinking water and sanitation, Mr. Pedro Arrojo Agudo, A/76/159*



industrialisation, the composition of urban wastewater is changing and the proportion of non-biodegradable substances is increasing. On the other hand, with urban growth, the volume of discharges exceeds the purification capacity of the ecosystems, adding to the hygienic reasons for the environmental problems and making the treatment requirements more demanding.

In the EU, a considerable effort has been made to reduce the environmental impact of discharges of water polluted by urban use since the approval of the 1991 Waste Water Treatment Directive<sup>5</sup>, which is currently being revised. Spain, after repeated warnings for non-compliance with this regulation, has finally been sanctioned by the Court of Justice of the European Union to pay a coercive monthly penalty of millions of euros<sup>6</sup>, while the infringement continues<sup>7</sup>.

Despite the fact that the proportion of urban water purified in Spain is higher than the European average - 84% compared to the average of 76%<sup>8</sup> - the quality of inland waters - aquifers, rivers, lakes, etc. - has hardly improved significantly since the beginning of the century when the WFD came into force. The causes of the generalised deterioration of water quality are to be found more in diffuse sources of agricultural origin than in urban or industrial discharges, with some exceptions.

As noted above, the composition of wastewater is evolving along with changes in lifestyles and technologies. In the first decades of this century, there has been growing concern about so-called emerging pollutants, substances - such as pesticide residues, frequently used pharmaceuticals and their metabolites or personal care products - that are not degraded by wastewater treatment plants and are incorporated into the effluent receiving environment. Although the concentrations detected are generally low ( $\mu\text{g/l}$ ), their potentially hazardous effects - e.g. cancer, endocrine disruption, etc. - on aquatic fauna and humans are in many cases not dose-dependent. The risks associated with their presence in the environment reinforce the general environmental policy principle of the need for prevention and intervention at source, the application of which, in the field of urban wastewater management, is in its early stages. Current policy, inherited from 19th century initiatives, is based on an end-of-pipe approach, i.e. intervention after deterioration has occurred with the aim of reversing it. Preventive measures, such as the creation

of collection points for used cooking oils or recommendations not to pour solids (wipes, swabs) down the toilet, are recent and rather anecdotal compared to the lack of action to reduce the use of pharmaceuticals or to promote the use of less toxic substances in production and consumption.

### “Free” urban water circulation and ecosystem services

As described above, the urban system of water circulation through water supply, collection, treatment and discharge networks is connected to the general hydrological cycle, through the abstraction of water from the environment and its return to it once it has been used. On the other hand, the urban territory is directly linked to the hydrological cycle in many ways and to a certain extent outside the system of networks mentioned earlier.

Along with concerns about the effects of extreme events linked to climate change, there has been growing attention to urban rainfall management and drought prevention. Moreover, the microclimatic impacts of cities, such as the influence of urban heat accumulation on precipitation, torrential rainfall, have been observed for decades. The sealing of surfaces - buildings, streets, car parks, etc. - in the urban landscape reduces infiltration and increases runoff, creating drainage problems, which can be addressed by so-called sustainable urban drainage systems (SUDS), such as permeabilisation of surfaces, creation of temporary retention areas, e.g. in parks, rainwater harvesting and storage for later use, etc. The separation of rainwater collectors from sewage collectors is a first step to improve rainwater management in the city and to avoid the discharge of untreated sewage into the environment due to overflowing of mixed collectors.

The green areas of the city, especially when they are connected to each other, form a very interesting space also from a hydrological and climatic point of view, as ecosystemic elements. The retention of moisture in vegetated areas, in addition to enabling the existence of numerous forms of life, also contributes to tempering the urban climate.

The presence of free water is most evident in the many cities that have been built next to a river. The relationship between the two, river and city, has evolved as the city has grown and has often been conflicting. For although the presence of the river is usually a determining factor in the

5 Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment

6 <https://curia.europa.eu/juris/document/document.jsf?text=&docid=204404&pageIndex=0&doclang=ES&mode=req&dir=&occ=first&part=1&cid=719655>

7 [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_22\\_1923](https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1923)

8 <https://water.europa.eu/countries/uwwt/spain>



location at the time of foundation - because of the existence of a ford, because it constitutes an element of defence, because of the water supply, etc. - it is also a recurrent threat due to flooding. This threat is sometimes aggravated by the constriction of the riverbed due to the occupation of the river territory for urban uses. Improving the relationship between cities and the rivers that flow through them with a view to restoring the ecological functions of river space and making urban uses compatible with them has aroused growing interest, which has materialised in urban reform projects with an ecological perspective.

### Other ecosystem services

In addition to its direct role in the social metabolism of the city and its ecosystemic functions in the urban space, water indirectly links the city with the rest of the territory in other aspects of the urban metabolism. The very urban demand for ecosystem services outside the city limits generates competition between them and contributes to the configuration of the rest of the territory. This relationship is particularly evident in the case of aquatic ecosystem services related to food and energy provisioning.

Industrial irrigated agricultural production, whose main destination is the urban market, competes with the supply of drinking water both for flow rates and, above all, for the maintenance of quality. The massive use of fertilisers and agro-toxins in the industrial farming system pollutes water supply sources and causes deterioration of aquatic ecosystems. These effects, together with those derived from high water consumption by irrigation, are not limited to the immediate environment of the city, but are spread throughout the world by means of international trade, as reflected in virtual water flows. On the other hand, the production of hydroelectric energy, through the construction of reservoirs and the diversion of flows, the final destination of which is mainly to sustain urban metabolism, has caused serious deterioration in river morphology, impeding the circulation of fauna and altering the natural flow of sediments.

### Conclusion

Urban water management necessarily goes beyond the city limits and links the city to the rest of the territory through numerous relationships. Although globalisation connects cities with the rest of the world, in the case of water, the immediate territory and the river basin remain the reference space for most of the exchanges that underpin the urban water metabolism.

The city's relationship with this territory should not be seen in antagonistic terms, as the existence of both spaces is closely linked. However, the relationship is not balanced. Neither in terms of power, since the greater urban control of information flows puts the city in a situation of relative pre-eminence with respect to the territory, nor in economic terms, since a large part of the services that the city obtains from its surroundings are not registered and, therefore, are not compensated.

On the other hand, the city's dependence on the river basin in which it is located for its water supply is evident. The lack of protection of catchment sources and the deterioration of many of them due to agricultural pollution generate costs - denitrification, change of intakes, etc. - which, to date, have been borne by urban users, thus generating an asymmetrical distribution of costs. While cities that adequately treat their wastewater (84%) do so at their own expense, agricultural users, by avoiding the application of the polluter pays principle, have no incentive to avoid damage to the ecosystem and the population as a whole.

Urban water, as an integral element of the links between the city and the rest of the territory, is affected by the spatial imbalances resulting from the processes of massive urbanisation and rural abandonment. As such, it must form part of any project to restore complementary relations between the two territories, on an equitable basis that allows for the sustainability of the whole.

In this sense, it is a priority to guarantee the human rights to water and sanitation, through quality public management with citizen participation, in order to reverse the effects of commodification and privatisation, which have turned water into an object of financial speculation. The preventive approach, aimed at protecting sources and restoring the good status of aquatic ecosystems, together with the reduction of water abstractions and pollution, is an essential element for a just water transition, which must contribute to an overall reduction in costs and an equitable distribution of them. If the protection of aquatic ecosystems links the city - before and after water use - to the rest of the watershed in which it sits, the urban population can contribute to preventing deterioration by reducing the water footprint of the goods and services it consumes, and also by managing rainfall differently over the city. Alterations in rainfall patterns and the increased frequency and intensity of extreme events make it more urgent to adopt measures to adapt to the new context of climate change, through drought plans, sustainable urban drainage systems or the recovery of urban river spaces.



## The Food System and Rural/Urban Links: How Can They Be Strengthened through Local Food Policies?

### The current food system. Implications

The agri-food system has been defined as the set of activities involved in the formation and distribution of agri-food products and, consequently, the fulfilment of providing human nutrition in a particular society<sup>9</sup>.

At present, it is made up of four main areas which are interrelated as follows: (A) the agricultural input sector produces all the necessary inputs (machinery, fertilisers, crop protection products, seeds, etc.) for the agri-livestock sector (B), which grows and rears fresh foodstuffs intended for human consumption, animal feed or industrial processing- mainly foodstuffs. The food processing industry (C) processes food to a greater or lesser degree for subsequent distribution to food distribution and consumption networks (D). As regards to the latter, the marketing and distribution sector encompasses a network of transport, infrastructure, storage and sales activities aimed at ensuring that food products reach final consumption, with increasing demand from the restaurant and hotel sector. However, households or domestic spaces are the place where most of the final food processing work is carried out. Between each of these stages, there are institutional actors - public and private - responsible for defining the regulatory framework for trade (public policies, licences, regulations, quality standards, etc.) and for regulating trade on the market (financial sector, markets and auctions, etc.)<sup>10</sup>.

The current agri-food system is the result of the process of agri-food industrialisation and globalisation that followed the Second World War. Until then, the food function had been the responsibility of the agricultural sector, with food being an almost natural product, with little transformation and mostly local, despite having been an important sector of international trade since the 19th century, going through different stages or food

regimes<sup>11</sup>. The development of the food processing and input industries, together with the growing international food trade, profoundly transformed the role of food, which has become much more complex and, therefore, the result of multiple interrelationships between different socio-economic agents. This reality of complex dynamic relationships underlying the production, distribution and consumption of industrialised food and beverages is at the heart of the concept of the agri-food system, where commercial distribution drives and controls today's globalised agri-food system<sup>12</sup>.

In this way, food production and distribution is structured around a value chain, where the participation of the majority of primary producers has been progressively reduced and relegated to a minimal part of the value produced. Meanwhile, the rest of the links in the chain (input industry, processing and distributors) have accumulated a growing share of this value.

This current food system has serious implications from a social, economic and ecological point of view:

- Food production and distribution are structured in an unequal power chain. While the other links in the chain have accumulated great wealth, the fall in agricultural income - which has been stable for decades - is at the root of the loss of almost two million jobs in the agricultural sector in Spain as a whole since 1976<sup>13</sup>, and of the exclusion of women from agricultural production. This dynamic has not stopped, and we continue to lose 10% of agricultural holdings every ten years, a process which is at the root of the rural depopulation processes in the interior of the peninsula<sup>14</sup>.
- Greater dependence of agriculture and livestock farming on the inputs used (fertilisers, phytosanitary products, seeds, etc.) and a de facto monopoly on sales

9 (Malassis, L, 1979).

10 (Sevilla, E., Soler, M., Gallar, D., Vara, I., & Calle, A., 2012).

11 (McMichael, 2018).

12 (Soler Montiel, 2009).

13 INE, 2019. *Labour Force Survey (Encuesta de población activa)*. Madrid: INE

14 INE, 2019. *Farm structure Survey (Estructura de las explotaciones agrarias)*. Madrid: INE.



by the agri-food industry and large-scale distribution, leading to a loss of agricultural income for agri-food SMEs<sup>15</sup>.

- Disconnection between production and consumption, generating a rupture with rural territories and their economic development<sup>16</sup>. Producers —especially small and medium-sized ones— have difficult access to their nearest markets, leading to impoverishment and rural abandonment and being some of the people with the lowest income in the state<sup>17</sup>.

- Increase in poor nutrition and chronic diseases. Current diet and lack of physical exercise are estimated to be a major cause of premature death and long-term illness. Lack of access to fresh, healthy and sustainable produce at a fair price, especially among the most vulnerable people, is becoming increasingly common<sup>18</sup>.

- A growing gap between city and country and between production and consumption, as well as a loss of trust in the food system and also a loss of legitimacy of policy in terms of its obligation to care for people, societies and the environment.

- Environmental unsustainability of food systems. The way food is produced, processed, stored, distributed and consumed uses large quantities of toxic substances and generates large quantities of waste (fertilisers, pesticides and slurry)<sup>19</sup>, wastes food<sup>20</sup>, is altering the climate<sup>21</sup>, has transformed the soil and landscape in an unprecedented scale and generates desertification<sup>22</sup>, wastes water, has broken the biogeological and natural cycles of ecosystems and is depleting natural resources at breakneck speed.

The development of this globalised food system has responded to the capitalist need to generate a system of cheap food supply for the working class population

(industrial at first and through service providers later) which, during the second half of the 20th century, has been settling in the cities, thus depopulating the rural areas<sup>23</sup>. Thus, at present, more than three quarters of the population of Spain lives in cities, where most of the food consumption now takes place.

### Agri-food system and cities. Agroecology. Institutional framework

Cities are currently facing a number of interlinked challenges related to food. On the one hand, overcoming economic stagnation, taking advantage of local resources as generators of social wealth and decent employment. On the other hand, recovering and conserving urban and peri-urban agricultural land, in order to ensure the supply of local and quality food, and recovering the environmental services associated with a living and well-conserved agricultural territory. It is essential to reduce the vulnerability of a food model based on supplying cities with food from increasingly distant places, which is associated with high energy consumption and atmospheric emissions, especially in these times of global change. Peri-urban agricultural areas perform very important environmental functions, both social and economic in nature. However, in recent decades, cities have grown with their backs to the land that supports them, and have devoured much of the more fertile land that surrounds them, neglecting the many vital services that agricultural spaces provide to society, beyond food.

In view of the magnitude of these challenges, agroecology emerges as a proposal for a future based on both the development of local food systems and also the circular economy and sustainable agricultural management – supported by the principles of ecology. It also proposes a

15 As recognised by the Spanish State itself in Law 12/2013, of 2 August, on measures to improve the functioning of the food supply chain. Inspired by the DIRECTIVE (EU) 2019/633 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 April 2019 concerning unfair commercial practices in relations between undertakings in the agricultural and food supply chain, the current executive approved on 3/11/2020 the amendment of the previous law to strengthen and implement it from 1/11/21.

16 In real terms -12,46%. 23.042,43 € in 2020 vs 26.323,90 € in 2003. MAPA,2021

17 Economic and Social Council. "El medio rural y su vertebración social y territorial". Colección informes, n.º1. Madrid: Economic and Social Council, 2018

18 In terms of health, according to the WHO, diet, whether through inadequate diet or toxic intake, is linked to 70% of deaths from chronic non-communicable diseases, including a quarter of all forms of cancer. The organisation has also published reports on the serious health impacts of pesticides and the epidemic of overweight and obesity that now afflicts more than 2 billion people, particularly women. Chronic diseases, often diet-related, account for up to 80% of annual health spending in Europe, of which barely 3% is spent on prevention.

19 Carricondo, Ana y C. Peiteado, 2010. ¿Quién contamina cobra? Relación entre la Política Agraria Común y el medio ambiente en España. Madrid: SEO-Birdlife y WWF-España.

20 More than a third of the food produced is discarded along the food chain.

21 The food system is responsible for 30% of global greenhouse gas emissions, including a significant share related to deforestation for the cultivation of cereals and protein crops for intensive livestock farming. <https://www.fao.org/platform-food-loss-waste/en/>

22 Up to 65% of Spain's land area is at high or very high risk of desertification, with an alarming loss of productive capacity and associated wild and cultivated biodiversity.

23 (Leal, 1986)



governance model based on participation and food sovereignty, articulating different territorial scales. It promotes social equity, improving access to fresh, sustainable and quality food, especially for low-income social groups. And, finally, it seeks to restore the role of the production sector in the provision of food, maintaining both the dignity of their incomes and the ecosystem services they provide.

Agroecology, originally applied at farm level at the beginning of the last century, has been scaled up to the level of political positioning, with the support of numerous governmental organisations:

- The United Nations Conference on Sustainable Development (Rio+20) in 2012 reaffirmed the promotion of sustainable consumption and production patterns (SCP) as one of the three overarching goals and indispensable requirements for sustainable development, reiterating the need for changes in the way societies consume and produce. At this Conference the Heads of State adopted the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP).
- The [Second International Conference on Nutrition](#) (ICN2, Rome, 2012), organised by FAO, established a global framework for action to tackle malnutrition (obesity and excess weight, poor diets or malnutrition). In 2013, the FAO reaffirmed its commitment to work towards a world free of hunger and malnutrition through the development of sustainable agriculture and healthy food, transforming conventional, productivist food systems into more holistic ones that provide more nutritious diets.
- The EU has its own sustainable development strategy that addresses most of the issues discussed in Rio de Janeiro, including as key challenges climate change and clean energy, sustainable consumption and production, conservation and management of natural resources, public health, social inclusion, etc.
- The [Sustainable Development Goals \(SDGs\) of the 2030 Agenda](#) were adopted in 2015. Although the 17 SDGs are interrelated and aimed at achieving sustainable development, three of them are particularly related to the agri-food system: Goal 2 (end hunger, improve food security, nutrition and drive sustainable agriculture); Goal 11 (inclusive, safe, resilient and sustainable cities and settlements); Goal 12 (ensure sustainable consumption and production patterns). At a national level, there is the Spanish Strategy for Sustainable Development. In its application to food systems, we have the recent approval in the Congress of Deputies of the Proposal of Law No. 161/003896, of 20 November 2018, presented by the Popular Parliamentary Group in Congress, regarding the

application of Agroecology to achieve the Sustainable Development Goals.

- 2016 marks the start of the [UN Decade of Action on Nutrition](#) to address the situation of the nearly 800 million people who are chronically undernourished and the more than 2 billion people suffering from micronutrient deficiencies. Meanwhile, some 159 million children under the age of 5 are stunted.
- After the state of alarm over COVID-19, it has once again become clear that contact with nature is of vital importance for human beings. It is therefore necessary and urgent to consolidate eco-social transformation projects, strengthen environmental education plans in the education system, revitalise environmental facilities and rely on the people working in these fields who, in addition to their experience and technical training, have a proven commitment. Their role is key to driving the transition to a new structure, one that allows human societies to fit into a finite planet and is based on a culture that uses collective action to mitigate the impact of new crises. The draft Action Plan on Environmental Education for Sustainability, which is currently being drafted, proposes as one of its operational axes the integration of sustainability in the education and training system. This way, new generations have incorporated competences on this issue that enable the achievement of the SDGs.
- Finally, the "Recovery, Transformation and Resilience Plan", presented in June 2021 by the Spanish government, includes as component 3 the promotion of the "environmental and digital transformation of the agri-food and fisheries system" with a strong focus on sustainability.

A large number of national and international documents and bodies have raised the role of cities in the sustainable use of natural resources, as they are the main and growing destination of the world's resources. At a higher level, these include the [Aalborg Charter](#) (1994) and the [Opinion of the European Economic and Social Committee in peri-urban areas](#) (2005/C 74/12), the [New Urban Agenda](#) (Habitat III Summit, Quito, 2016), the [United Nations Climate Conference](#) (COP21, Paris, 2015). More recently, FAO has been promoting the "[Food for the Cities](#)" initiative, which promotes rural-urban linkages through what has been called "[City-Region Food Systems](#)", to promote food security and sustainability and governance. The Intergovernmental Panel on Climate Change (IPCC) report "[Climate Change and Land](#)", published in 2019, stresses the need to move towards greater sustainability in agri-food systems through agro-ecology, dietary changes and curbing food waste.

Agroecology and local and sustainable food systems have become particularly important in 2020, with the COVID-19





pandemic and the resulting food crisis. Relevant documents include the "[Biodiversity strategy for 2030](#)" and the "[Farm to Fork](#)" strategies, presented by the European Commission in 2020, which commit to 25% of Europe's usable agricultural land being organically produced. At the international level, we can also cite "[Agroecological approaches and other innovations for sustainable agriculture and food systems that enhance food security and nutrition](#)" (2019), and "[Impact of the COVID-19 on Food Security and Nutrition](#)" (2020), published by the High Level Panel of Experts on Food Security and Nutrition of the FAO's Committee on World Food Security.

In 2021, the global agenda has highlighted the importance of agrifood systems for global ecological sustainability and health, through the organisation of the [Food Systems Summit](#) organised by the UN; and through the high profile of the food systems debate at COP26 in Glasgow, for example through the "[Food and Climate Declaration](#)" presented at that summit. At both events, agroecology has been widely accepted as the approach to guide the transition to sustainability in agri-food systems.

The importance of urban food policies, in relation to the sustainable use of natural resources, food security and the possible effects of climate change, makes urban food strategies, plans or programmes key. However, it is necessary to consider the leadership of cities as drivers of integral transformations in the territory. Therefore, we cannot forget the vital rural-urban connection as a key element in the adaptation of food systems to climate change and in the advance towards more sustainable and resilient systems. This cooperation between countryside and city is reflected in the Milan Pact on Urban Food Policies (2015), currently signed by 25 Spanish cities; or in the FAO programme on City-Region Food Systems; or in the Initiative for Scaling Up Agroecology, presented by the FAO in 2014. Despite this, the Spanish State and the Autonomous Communities do not have food policies that allow them to holistically face the challenges of the agri-food system and food in the 21st century.

### The Network of Municipalities for Agroecology

The Network of Municipalities for Agroecology is the national body that articulates local and supra-municipal entities, a national association that brings together 24 local entities<sup>24</sup> (town councils, associations of municipalities, provincial councils) in Spain and collaborates with 16 others in the development of food

policies with an agroecological perspective. From the outset, the network's target audience has been elected officials and municipal technical staff, local social organisations involved in food policies in the municipalities of the Network and consulting/technical assistance bodies in the cities. The network is:

- Committed to the right to food and sustainable and healthy food.
- Working on local food policies based on the principles of agroecology and its holistic and transformative vision of food systems.
- To be constituted as a plural space, made up of all the territorial actors that promote local food systems adapted to the different realities of the state: local and supra-municipal entities, accompanied by social organisations and local economic and research actors, among others.
- Encouraging cooperation and the exchange of knowledge for innovation in food policies and the improvement of governance in local food systems.

These entities and, as a whole, as a Network of Municipalities, have set themselves the following objectives:

- Acknowledge peri-urban agriculture and the balanced relations between the rural and urban environment.
- Acknowledge the professional, ecological and social activity of producers in the social, economic, political and administrative spheres.
- Preserve fertile soil and good agronomic practices and restore the productive capacity of urban and peri-urban environments.
- Promote ecological and proximity agriculture based on shortened supply chains.
- Raise awareness and value agricultural work, consumption based on agroecology and the agricultural landscape and cultural heritage.
- Coordinate departments and levels of administration.
- Review and adapt municipal resources and regulations.
- Promote multi-stakeholder and multi-level participatory processes.
- Co-produce knowledge and co-management of public policies.
- Articulate and extend city networks and share with other cities and analogous networks at state and international level.

To this end, municipalities can carry out the following actions, either individually or in a coordinated manner:

24 *Aínsa, Allariz, Baztan, Barcelona, Cardedeu, Castelló de la Plana, Córdoba, Deba, El Prat de Llobregat, Fuenlabrada, Granollers, Godella, Huetor Vega, Madrid, Meliana, Murcia, Navàs, Orduña, Palma de Mallorca, Pamplona, Rivas-Vaciamadrid, San Cristóbal de la Laguna, Valencia and Zaragoza.*



Actions by municipalities	How can this be done?
Action plans with concrete and specific measures	Promoting public policies aimed at boosting their development, including agro-ecological research, extension and training.
	To put in place entities and processes that facilitate access to land for initiatives oriented towards organic agriculture and livestock farming, especially for young people and women.
	Support local commercial spaces (markets, shops, restaurants, etc.) and sustainable public procurement through the provision of material and immaterial public resources and by dynamising private resources.
	Develop information and communication programmes
Internal municipal coordination	Promote the study of municipal management models for the development of good food governance systems.
	Create specific public bodies for food policy.
Consulting dynamics/ Establishment of local participatory bodies	Promote collegiate bodies, urban strategies and territorial policies with an agro-ecological approach in the administration.
	Promote the articulation between local administration, social organisations, research and training centres and local economic actors, especially in the organic farming sector.
At the network level, collaboration between municipalities	Sharing knowledge to achieve the goals.
Outside the network, cooperation between administrations and civil society, at local, regional and national level.	Building on the Milan Pact framework for action on urban food policies.
Monitoring and evaluation tools	From the RMAe Working Group.

## Stages, context and key moments of the Network of Municipalities for Agroecology

### December 2016 – October 2018. Creation and formalisation of the network

- The Seminar 'Caminando hacia una Red de Ciudades por la Agroecología' (Moving towards a Network of Cities for Agroecology), (Zaragoza, 13- 14/12/2016) represents the informal start of the network, at the initiative of the Zaragoza City Council and the Entretantos Foundation. The III Meeting of the Milan Pact in Valencia (2017) is an important milestone for the consolidation of food policies in Spain.
- Great efforts and resources were devoted to the more formal aspects and internal cohesion, as well as to the creation and dissemination of the Network and the generation of a roadmap and work plan. A diagnostic report on the current situation of local food policies at the national level was produced.
- Thanks to the start of the co-financing of the Daniel and Nina Carasso Foundation (DNCF) 2017 and the approval of the second cycle of financial support 2018-2020, the project is provided with great stability.

### October 2018 – May 2019. Settlement

- The official constitution (October 2018) led to the work of the Technical Secretariat being formalised.
- Work began on the annual meeting "Healthy local and sustainable food for the territory and for the people" and on the Accession to the Spanish Right to Food Observatory. The working group for Public Procurement and Collective Catering was also created and the Council of Social Organisations was set up. The institutional communication and advocacy activity increases exponentially.

### May 2019 – January 2020. Increase in political activity and diversity

- The 2019 municipal elections meant an important change in the composition of the political parties governing the member municipalities, implying a certain slowdown in the work of the Network.
- A new Board of Directors 2019-2021 was established, Zaragoza (PP), Valladolid (IU) and Valencia (Compromís), which participated in the 5th Meeting of the Milan Pact (Montpellier 2019). Changes are made in the FAO, WHO



and United Nations, with firm support for Agroecology and the fight against Climate Change.

- The Small Municipalities and Supramunicipal Entities Working Group and the Right to Healthy and Sustainable Food WG are created. Work on public procurement becomes intense with numerous webinars and seminars.

#### **January 2020 – November 2021. The network as a national and international benchmark**

- The first months of 2020 are marked by a strong focus on smaller municipalities. The emergence of COVID-19 accelerates the work for the Valladolid Declaration and the report Local food systems facing global risks, which culminates in the 7th Milan Pact Forum in Barcelona and the Glasgow Declaration.
- Intensive work is being done on the #FoodIsHealth campaign and food aid. Urban planning (creation of the Urban Planning WG), work with MERCAS (supply markets), sustainable public procurement... also play an important role.
- In terms of funding, the "pasarelle" grant of April 2020 and the final funding 2020-2023 in November 2020 from

the Daniel and Nina Carasso Foundation, opens a second period of stability.

- During 2021 the financial support has diversified enormously, receiving important contributions from the Entretantos Foundation, the Barcelona City Council, the European Climate Foundation, the València City Council, etc.
- In the 2021 assembly, a new Board of Directors is elected, representative of the plurality of sizes, territories and political colours of the network: Valencia (Compromís), Rivas-Vaciamadrid (IU), Zaragoza (PP) and memberships for Orduña (EH-Bildu), Cardedeu (ERC) and Madrid (Cs). It was also decided to adopt the new, more inclusive name of Red de Municipios por la Agroecología (Network of Municipalities for Agroecology).

#### **November 2021 to present**

The network is focusing on working with small and medium-sized municipalities to promote the development of food policies in this area. Projects are being carried out to bring production closer to local food policies (RURBACT), work continues on the Barcelona Challenge and with the dynamics of webinars and working groups.



## Energy Self-sufficiency as the Backbone of Rural and Urban Development

### From climate emergency to action

We are already experiencing the devastating effects of climate change across the globe. The relentless and rapid increase in the frequency and intensity of extreme weather events and record-breaking temperatures in many countries is putting systemic pressures on the most affected local communities and regions. Thus, climate migration stresses are increasing and food crises are looming. We have reached a point of no return. One of the main reasons for this is the increase over the last century in the atmospheric concentration of greenhouse gases (GHGs) due to historic and uncontrolled burning of fossil fuels, which has already resulted in a 1°C increase in global average temperature, varying according to location.

As the February report from NOAA's (National Oceanic and Atmospheric Administration) Global Monitoring Laboratory (GML) reveals, in January the monthly average concentration levels of CO<sub>2</sub> reached 418.19 ppm. This is higher than the average for the same month the previous year of 415.52 ppm. The first record, made in 1959, was 315.98 ppm; in the 2010s it was 393.9ppm.

Following the guidelines set by the Paris Agreement to achieve climate neutrality for signatory countries by 2050 at the latest, the last two IPCC reports for 2022 contain worrying conclusions, but with a glimmer of hope. To stay within the 1.5°C of the Paris Agreement, we need to peak GHG emissions in 2025, and from that, there must be a 43% reduction by 2030 by using the technologies we already have at our disposal and getting into the habit of shifting to localised product consumption.

In practice, this means a 95% reduction in coal consumption, a 60% reduction in oil and a 45% reduction in gas consumption by 2050 compared to

2019. To stabilise the temperature at 1.5 degrees Celsius, net zero CO<sub>2</sub> emissions need to be reached by the early 2050s. All current climate policies are insufficient, so increased ambition remains imperative to avoid a climate catastrophe.

### The leading role of the European Union

Under the premise of urgency, both past and present, the European Union (EU) has been the main driver of the international response to the climate emergency. In November 2016, the European Commission (EC) presented a set of political and technical measures to support renewable energies, known as the "[Clean Energy Package](#)", which came into force in 2018, better known as the "Winter Package", supported by numerous important directives in efficiency, the electricity market and renewable energy.

Continuing its exemplification of global leadership in sustainability, in December 2019 the European Commission launched its own [Green New Deal](#), the European Green Pact, to achieve climate neutrality and create a new resilient economy where fossil fuels have been eradicated. It is also committed to progress through action and the creation of social value- not through the austerity policies historically employed in an effort to emerge from the economic crisis of 2008. Following the impact of the Covid-19 pandemic on different economies on a global scale, in 2021 the European Commission raised its GHG emissions reduction target to 55% by 2030, from the previous 40%. In July of the same year, the new "Fit for 55" legislative package was adopted with numerous innovative new regulatory and legal tools, notably:

- The overall emission limit in the Emissions Trading System (ETS) will be lowered and the annual



reduction rate will be increased. In addition, aviation emission allowances, hitherto free of charge, will be phased out and maritime transport will be included in the ETS for the first time. In addition, a new, separate emissions allowance system for road transport and energy consumption in buildings will be established.

- The Renewable Energy Directive raises the target of producing 40% of our energy from renewable sources by 2030. All Member States will contribute to this target, and specific targets are proposed for the use of renewable energy in transport, heating and cooling, buildings and industry.
- The Energy Efficiency Directive will set a more ambitious binding annual target, to be defined, for reducing energy use at EU level. Along these lines, the public sector will be required to renovate 3% of its buildings each year to boost the renovation wave, create jobs and reduce energy use and costs for the taxpayer.
- New requirements that average emissions from new cars be reduced by 55% from 2030 and 100% from 2035 compared to 2021 levels. As a result, all new cars registered from 2035 onwards will be zero-emission. In addition, the revised Regulation on alternative fuels infrastructure will require states to install charging and refuelling points at regular intervals on major roads: every 60 kilometres for electric charging and every 150 kilometres for hydrogen refuelling.
- A revision of the Energy Taxation Directive proposes to align the taxation of energy products with EU energy and climate policies, promoting clean technologies and eliminating obsolete exemptions and reduced rates that currently encourage the use of fossil fuels.
- The New Carbon Frontier Adjustment Mechanism will put a carbon price on imports of some products to ensure that ambitious climate action in Europe does not lead to "carbon leakage".

Furthermore, as part of the new [RePowerEU](#) plan to reduce energy dependence on Russia, on 18 May the European Commission presented its new EU Solar Strategy, which aims to reach 600 GW of installed

photovoltaic capacity by 2030, doubling the current installed capacity throughout the European continent. As the cheapest electricity generation technology in recent history, with a price drop of 82% in the last decade, solar PV, combined with energy efficiency, can protect citizenry from the macro volatility of current and future fossil fuel markets.

Citizens, as defined by the [Electricity Market Directives](#), have the right to buy, manage, sell, generate and store their own energy. As part of the overall plan, the EU has developed the "European Solar Rooftops Initiative" to promote photovoltaic self-consumption, laying the foundations for what will be the near future of this technology in all Member States. The package, which sets the end of 2022 as a priority target for implementation, contains various measures such as limiting the maximum period for processing permits to three months by removing administrative obstacles. It also seeks to promote photovoltaic installations in all public buildings by 2025, to make it mandatory for all roofs on new buildings, to ensure that in building blocks all residents can engage in collective self-consumption and to prioritise its integration into renovation processes.

### Spain and climate change mitigation

Spain has not lagged behind its European neighbours. With the Governance Regulation contained in the "Winter Package", it established the planning procedure necessary to meet the objectives and targets, as well as to ensure the consistency, standardisation and transparency of the information submitted by the EU and its Member States to the United Nations Framework Convention on Climate Change (UNFCCC). With this in mind, the National Integrated Energy and Climate Plan 2021-2030 (PNIEC), and the Long Term Decarbonisation Strategy (2050) have been developed. Highlights:

- The [Climate Change and Energy Transition Law](#) (LCCyTE), which, with different preliminary drafts carried out since 2018, aims to be the regulatory backbone of some thirty of the points included in



the declaration. It was approved on 13 May 2021 and sets the objectives of reducing GHG emissions (similar to those of the PNIEC) by 23% by 2030, compared to 1990; the achievement of electricity generation with renewables to reach 74%; and for renewables to contribute 42% of primary energy by the same date.

- [The National Integrated Energy and Climate Plan 2021-2030](#) (PNIEC) required by the EC under the Governance Regulation; and the Long Term Decarbonisation Strategy 2050 (ELP), are each pathways to ensure the goal of climate neutrality by 2050.

- [The National Climate Change Adaptation Plan](#) (PNACC) approved by the Council of Ministers on 22 September, with the aim of investing in and shaping a country that is less vulnerable and more adapted to the risks generated by climate change.

- The creation of the Citizens' Climate Change Assembly in order to strengthen, improve and ensure citizens participation and involvement in decision-making on climate and energy issues. On 8 October 2021, its creation and formation by 100 people representing Spanish civil society was made public.

- The Agreements and the Just Transition Strategy, approved in April 2020, with the aim of supporting, accompanying and transforming the industrial, agricultural and services model, favouring its change towards sustainability, generating quality employment and boosting the local economy, efficiency and innovation.

All this, strictly speaking in terms of renewable power, is enabling us to ensure that in 2021 renewable technologies produced 46.7% of all electricity generated in Spain, registering their highest share of the generation mix since records have been kept.

### Renewables in the territory

However, the entire energy strategy has been carried out without taking into account the different cultural and socio-economic characteristics of the

territory; there is a lack of territorial planning in the implementation of renewable energies. It is clear that the development of the centralised energy model has been carried out without taking into account the aim of obtaining a territorial balance between the main areas of generation and the points of consumption, increasing the already existing demographic imbalance in rural areas. Thermal power plants were located far from the large urban centres of population and consumption, which is an inefficient, high-cost, polluting model.

One of the great benefits of renewable energies is that they introduce flexibility into the system thanks to their modularity, bring generation closer to consumption and favour a more balanced territorial development model in terms of population and economy. In addition to distributed renewable generation, it is a more efficient, cleaner and cheaper model. The development of the new energy model has not taken into account the wealth and territorial benefits provided by renewables, especially in its distributed form, as it has followed the same patterns and concepts as the centralised model.

This has led to a wave of social rejection of large renewable energy plants and parks in rural areas, considering them to be extractive, speculative processes that do not bring benefits to the municipalities or regions affected. The need for a holistic vision between energy, territorial and economic models is obvious. This is integrated into the different European Renewable Energy Directives. The creation of innovative and practical courses of action from the regulatory framework is needed to avoid a moratorium stimulated by social rejection and to accelerate the adoption of a distributed renewable model.

In contrast to the current energy model, which is highly concentrated and integrated throughout the value chain, access to electricity grids, availability of land and encouraging the opening of the electricity market to new agents are all of vital importance for its diversification. We need to opt for a mixed system of plants that coexist with smaller facilities, close to the points of end use and



that favour diversification and the incorporation of new agents.

We must prioritise distributed generation, in its different forms, ahead of centralised generation in order to increase the incorporation of citizens into the electricity system, benefit from distributed renewable resources and reserve evacuation quotas at access points. Otherwise, we would be betting a large part of the energy transition on centralised generation, mainly wind and solar, which would increase the rejection and social detachment of rural territories. The sooner we advance in the regulation and administrative prioritisation for self-consumption, energy communities and other distributed modalities, as indicated in the European Renewable Energy Directives, the sooner we will obtain improvements in the social perception of renewables and allow us to achieve the objectives of decarbonisation.

### The virtuous circle of energy towards self-sufficiency

The fact that in Spain we mostly live in blocks of flats means that the most common self-consumption model to develop is shared self-consumption. In their development, the so-called energy communities take on special importance because they represent a further step as they are installations in optimal locations within a community that can be joined by neighbours as co-owners, members or partners, whether they are citizens, part of the local social fabric or even public administrations.

The purpose of energy communities, in addition to the financial benefit they entail, is to provide environmental, social and economic benefits to their members and their surroundings. Thus, neighbours who do not have a roof or a rooftop suitable for self-consumption or those who want to increase their percentage of clean energy can do so thanks to this concept, which will undoubtedly

become very important in the coming years. The European package of directives has put the need to develop energy communities in the different member countries on the table.

RD 244/2019 has been a great step forward for self-consumption in Spain, but it could and should go further in order to improve energy self-sufficiency in both cities and rural areas. Currently, the owners of a self-consumption installation cannot share the surplus with their neighbours, they are only allowed to be compensated by their supplier with a maximum of what they spend from the grid, which is closer to the net tariff than the sale of surplus. In short, self-consumption is the perfect tool for democratisation, as it allows citizens to produce, consume, store and sell energy, but also to eliminate external energy dependence by increasing personal, local and regional self-sufficiency through society's participation in the electricity system.

It is necessary to advance in the democratisation of energy from the point of view of the "virtuous circle of energy", which is based on the energy self-sufficiency of citizens from a point of view in which the citizen is an active and central subject in the electricity system, whether in rural or urban areas. Thanks to self-consumption, we can generate our own electricity and we use it to cover our household electricity consumption. To this end, replacing fossil fuel consumption with electrical, through heat pumps for heating and thermal installations for domestic hot water, will allow us to consume our own renewable electricity and meet our needs. If we add this to the energy management capacity provided by the battery of the electric vehicle we can shape and increase our energy awareness. This will bring us closer towards towards energy saving and responsible energy consumption.



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