GREEN CITY GUIDELINES

the Green City Network

Presentation

From Rio's 1992 Agenda 21 to the goals of the United Nations' Agenda 2030 of 2015, many approaches have been put forward for improving the sustainability of cities. These approaches have, however, produced unsatisfactory results, either because the aims were too many and the indication of now inescapable environtmental priorities was missing or because the choices made were mainly based on IT developments or other important, yet insufficient, aspects. What was needed was an approach that would relaunch priorities such as the ecological quality, sustainability and resilience of cities more forcefully, in the light of more recent developments in the green economy – i.e. the economy of sustainable development – and the circular economy – its basic pillar – in the era of climate crisis.

These needs have produced analyses and reports that, particularly at a European level, have led to a '**green city approach**': a multi-sectorial, integrated approach to the well-being, social inclusion and long-term development of cities, based on aspects that are now essential, such as the environmental quality, efficiency and circularity of resources and climate change mitigation and adaptation. This integrated approach to green cities was adopted as early as 2010 by the European Commission for its European Green Capital Award, given to selected European cities on the basis of indicators that have helped define green city policies and measures.

A detailed, up-to-date definition of this approach had already been drafted in 2016 based on a methodology developed by the International Council for Local Environmental Initiatives and the EBRD (the European Bank for Reconstruction and Development). The 'green city approach' was finally adopted as the basis for a green city development programme with the Economics of Green Cities Programme developed by the London School of Economics, chaired by Lord Nicholas Stern.

This new approach has seen significant contributions in Italy as well. In 2017, the relationship between the green economy, architecture and town planning was placed at the heart of the Manifesto for the City of the future, put forward by a group of lecturers from around 20 universities both in Italy and abroad as part of initiatives launched by the States General of the Green Economy. This group of lecturers continued its work by drafting recommendations for these guidelines. The Green City Network, promoted by the Sustainable Development Foundation, put this work to good use and combined it with the work of other European organisations, creating a first draft of guidelines. This draft was then subjected to a thorough process of consultation that involved experts from a number of universities and research institutes, as well as government ministries, town councillors and ministers from two regional governments (Emilia Romagna and Friuli Venezia Giulia), as well as organisations belonging to the National council of the green economy. The final draft of these guidelines, produced by the Green City Network, provides a succinct, detailed and up-to-date overview of the green city vision – covering the main issues incorporated in a consistent, unified model – and the policies and measures that can be put in place to bring about a transition towards sustainability in Italian cities.

GREEN CITY GUIDELINES

1st GENERAL OBJECTIVE

ENSURING HIGH ENVIRONMENTAL QUALITY

GL 1 | Focusing on the architectural and planning quality of cities
GL 2 | Ensuring adequate urban and periurban green infrastructure
GL 3 | Ensuring good air quality
GL 4 | Improving the sustainability of urban mobility

2nd GENERAL OBJECTIVE

USING RESOURCES IN AN EFFICIENT, CIRCULAR WAY

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1st GENERAL OBJECTIVE

ENSURING HIGH ENVIRONMENTAL QUALITY

Guideline 1

Focusing on the architectural and planning quality of cities

As well as being extremely important cultural and historical capital, architectural quality and town planning quality are strategic environmental assets in Italian cities.
These positive values are, however, associated with considerable problems. The problems created by the urban expansion that occurred during the twentieth century – which was rapid, lacked suitable urban planning and often featured poor quality buildings – have been supplemented by those created by the failure to regenerate and renovate run-down areas that are usually suburban but sometimes also found in inner cities, particularly in southern Italy, and by the continuing phenomenon of illegal construction. These circumstances, which have had enormous impact on the quality and appeal of Italian cities, must be tackled with incisive, well-planned and systematic action.

Policy

When we focus on the high architectural quality and town planning quality of cities, we safeguard and enhance the richness of the identity-forming value, the historical value, the cultural features, the traditional skills, the works and buildings that characterise them. This involves implementing high-quality projects that focus on, among other things, renovation and restoration. To this end, a systematic interpretation of the vast network of relationships that make up the urban and territorial metabolism is essential so as to identify, protect and enhance its quality, using improvements that take their cue from values such as identity and local cultural and natural capital, even when working on areas considered to be peripheral. Such an approach should not be limited to important cities; instead, given the particular characteristics of Italy, it should be extended to small and medium-sized towns and periurban areas as well.

Measures

- The supporting of architectural projects that combine environmental performance with urban design, high-quality architecture with benefits for the community, focusing on compact, sustainable cities that can ensure liveable urban development and foster a sense of belonging. Such projects should blend in with their surroundings, particularly encouraging a harmonious integration between buildings and the open space near them, adopting a unified architectural approach.
- The paying of particular attention to the redevelopment of public space both in central areas and, in particular, in suburban areas, as it has a decisive role in creating urban quality: squares, roads, porticoes, parks and gardens, sitting areas and pedestrian areas, they all affect the environmental quality of cities and the way in which a city is perceived and experienced.
- The identification of guidelines, criteria, best practices, indicators and standards for projects and for the assessment of the architectural, urban and environmental quality of improvements, renovating and updating existing versions as well. Such a process should include both conservation actions and improvements carried out on historical and architectural heritage as well as on new buildings, renovation programmes, maintenance work and both aesthetic and functional improvements to the existing built environment.
- The promotion of the use of construction materials and components that are of high environmental quality throughout their life cycle, and are reuseable and recyclable.
- A greater range, efficacy and speed when demolishing the many incomplete, unusable, illegally constructed buildings and decaying buildings with no historical or architectural value that cannot be converted, renovating and regenerating the sites previously occupied by these buildings.

Guideline 2
Ensuring that adequate urban and periurban green infrastructure

The environmental quality of cities is linked to the protection and increase of their natural capital and the ecosystem services they provide. Urban and periurban greenery – from tree-lined avenues to gardens, from parks to roof gardens, from vegetable gardens to green belts – significantly contributes to air quality and cutting pollution, to reducing the damage and risks caused by climate change, to protecting the water supply and limiting surface runoff and protecting the biodiversity of the urban environment. It also provides facilities for cultural activities, recreation and sports as well as facilities supporting the health and well-being of city residents. Thus this natural capital – which has all too often been neglected, undervalued and subjected to pressure and damaged – is a multi-functional green infrastructure of key importance both for urban and periurban areas that should be protected and boosted.

Policy

The protection and enhancement of natural capital, particularly as regards multi-functional green infrastructure and biodiversity, plays a vital role in the regeneration of urban and periurban systems. The expansion and protection of natural capital should be guaranteed by territorial and town planning measures and when planning improvement work, as the essential level of green infrastructure necessary to ensure a city's environmental quality.

Measures

- The continuous monitoring of the state of urban and periurban greenery and biodiversity, identifying pressure and risk factors, analysing changes in the cost of managing and maintaining natural capital.
- The development of long-term programmes for funding and managing urban greenery and biodiversity that are consistent with current town planning measures, focusing on the aim of increasing the number of tree-lined avenues, roof and vertical gardens and parks, whilst paying attention to existing networks of rivers, canals and ditches as well.
- An increase in the number of projects supporting allotments, sustainable farming and a periurban farm-to-table short food supply chain, educational farms and social agriculture, promoting the use of natural fertilisers such as high-quality compost produced by the treatment of organic waste.
- Support for the implementation of wildlife corridors and green belts whilst regenerating urban and periurban open space in order to protect biodiversity, mitigate climate risk and hydrogeological instability, improving urban waste water management for recreational, cultural, sporting and agricultural activities.
- The identification of environmental units (woods, fields, towns, waterways) and ecological systems (rural and periurban areas, coastlines, riverbeds and floodplains) as places where natural capital can be enhanced and strengthened and healthy ecosystems can be reconstructed, using – amongst other things – the adoption of best land preservation practices.

Guideline 3
Ensuring good air quality

Despite the improvement seen in recent years, the air quality of our cities is still unsatisfactory and, in a number of cases, dangerous, harming the health of residents as well as causing a significant number of premature deaths, as recorded by the World Health Organisation. Italy is the European country with the highest number of premature deaths due to air pollution in proportion to the population. The most dangerous pollutants are particulate matter, nitrogen oxide and tropospheric ozone. The situation is made worse both by the effects of climate change now underway and weather/climate conditions in parts of the country where atmospheric stability is frequent, with a lack of wind and air flow. Noise pollution also creates significant problems and can be a major factor affecting the liveability of a number of cities, particularly in vulnerable areas like those near hospitals, schools and homes, especially at particular times of day and on particular days of the week.

Policy

The quality of the air we breathe in our cities is a decisive factor influencing our health and well-being, particularly that of children and the elderly and, more generally, more vulnerable and exposed individuals. Projects to improve air quality must be integrated and must tackle all sources of pollution, as well as primary emissions that go on to create secondary pollutants; they should be permanent and structural and, given that pollutants can travel long distances as well, must affect a vast area. Cities need to make this problem more of a priority but they should not be left on their own: regional governments should adopt incisive plans and programmes and a national air quality strategy should be put in place alongside the national air pollution control programme. The fight against noise pollution should not be neglected either and should be given equal importance alongside other environmental quality policies developed for cities. Last but not least, cities are engaged to minimise residents' exposure to electromagnetic fields.

Measures

- City residents are to be provided with up-to-date, detailed information regarding the air quality of their city, identifying the contribution made by all sources of pollution, both at a local scale and further afield. An effort should be made to avoid emergencies by setting up immediate, rapid measures that can be launched when the concentration of atmospheric pollutants increase.
- The enactment of measures that will: promote sustainable urban mobility; reduce energy consumption; incentivise the use of renewable fuels; guarantee the proper level of urban and periurban green infrastructure and integrate it with regulations controlling the use of biomass for heating; involve farmers and livestock rearers in order to reduce ammonia emissions in the atmosphere; expand the use of the best technologies available in the manufacturing industry.
- The obligatory implementation of a package of blanket measures for cutting emissions in all cities located in the vast area affected by high pollution, which would include the strengthening of urban and periurban green infrastructure.
- The creation of a noise pollution map of the city, particularly focusing on vulnerable areas, adopting an action plan to reduce such pollution and to monitor the measures adopted and their effects.
- It should be ascertained that equipment is properly installed, thus minimising residents' exposure to electromagnetic fields.

Guideline 4

Improving the sustainability of urban mobility

Italy has the highest rate of private car ownership in Europe: there are 613 cars per every 1000 inhabitants, compared to the 555 in Germany or the 477 in France. The excessive use of too many cars is an enormous problem for many Italian cities: the roads are often congested, polluted and noisy. Cars are also left parked and unused for most of the time, occupying precious urban space and using up technological resources and valuable materials in a highly inefficient way. It is possible to make urban mobility more sustainable, and this has already been done in many European cities: from Copenhagen to Paris and Amsterdam, from Lisbon to Berlin and Oslo, just to name a few of the most famous examples.

Policy

We need to make a decided effort to reduce the number of privately owned cars in cities, discouraging and limiting their use, whilst improving the range of alternative multimodal transport available: from cycle paths and footpaths to local public transport and the various forms of 'sharing mobility', and the integration of the various forms of mobility with the use of digital systems and applications for more efficient transport systems. We also need to focus on electric and low-emission transport.

Measures

- The compilation of an overview of city mobility and its evolution, establishing a long-term strategy and implementing a plan for sustainable mobility that is integrated with town planning and specifies the objectives that should be pursued in all its aspects.
- The extension of pedestrian zones and those that are limited to public transport, slow vehicles and those paying for access; a focus on reducing the number of journeys people make by encouraging (for example) forms of smart working; an increase in car sharing parking areas and the implementation of a balanced hourly cost for parking; the extension of no parking areas along public roads and the improvement of the monitoring powers and numbers of local traffic police.
- The improvement of protection and safety and the expansion of the network of cycle paths and pedestrian lanes, using existing as well as new linear infrastructure that can connect pedestrian areas, bicycle parking areas, bike sharing and intermodal transport exchange points; a move to encourage workplaces to provide changing rooms and lockers for employees who cycle to work; the assessment, adaptation and/or adoption of urban plans improving access for those with disabilities.
- The prohibition of vehicles that produce high levels of pollution, whilst continuing to promote the reduction of emissions created by new vehicles and banning diesel and petrol cars from city streets by a specific deadline, promoting their replacement with more sustainable forms of transport as well as electric cars and biomethane-fuelled vehicles and, during the transition phase, hybrids as well as vehicles that run on less polluting gas fuels.
- The encouragement of the modal shift using modal integration systems and rates, strengthening the various modes of collective urban and metropolitan transport and sharing mobility, promoting the use of IT and communication technologies and smart transport systems, as well as MaaS (Mobility as a Service) and autonomous driving models for shared, zero-emission vehicles.
- The reorganisation of the system for distributing goods in cities using efficient, coordinated methods and systems and vehicles with a low environmental impact.

2ND GENERAL OBJECTIVE

USING RESOURCES IN AN EFFICIENT, CIRCULAR WAY

Guideline 5

Focusing on urban regeneration and strengthening land protection

Cities can develop and attract new activities, improve living conditions and meet the demand for homes and services without having to consume any more land and, instead, focusing on the reuse of already urbanized areas. Land is an essential, vital, non-renewable resource and its consumption in Italy continues to grow: in 2017, new artificial land cover amounted to approximately 54 square kilometres, 15 hectares a day on average. The high land consumption and urban sprawl that affects most urban areas has fragmented and destroyed natural areas and farmland, caused erosion and soil sealing, increasing the risk of flooding and wasting resources when completing construction projects and increasing the timescale and cost of transport and the emissions it produces.

Policy

Urban regeneration should be tackled using an integrated strategy that addresses all the various different policy sectors, meeting the growing demand for change in an innovative way. What is needed is an organic plan designed to meet all the various different needs as well as offer the improved ecological performance of the urban system and reduce land consumption to zero, with all the social and economic benefits this would bring. Today, urban regeneration is the strategic choice if we want to increase the appeal of our cities with the reuse and efficient use of our existing built heritage and built-up areas, with the redevelopment of public and private buildings and the improvement of urban quality, tackling signs of decay, disuse and urban chaos, reconstructing marginal areas.

Measures

- The creation of a detailed map of land consumption in our cities and of a package of measures that will strengthen land protection, reducing greenfield construction, consistent with the European objective of set to zero land consumption by 2050.
- The promotion of urban regeneration plans and programmes that are consistent with green city policies and measures, with a particular focus on measures for saturating, reorganising and densifying large urban areas and ‘hybridising’ single-function areas with the addition of complementary, compatible uses, including space for collective uses, in line with the mixed-use principle, thus also ensuring the maintenance of, and increase in, land permeability, the salvaging of ecosystem functions and the development of green infrastructure.
- The inclusion of neglected, abandoned and under-utilised areas in urban regeneration programmes, not just the usual dismissed industrial estates but other important parts of cities as well (unplanned urban fabric with a mixture of random uses, disused railway lines, smaller industrial estates and abandoned workshops, etc.).
- The promotion of public housing in urban regeneration programmes that will thus meet both the need for housing and residential well-being and social integration, with support for the construction of communities of residents, including the planning of shared collective space open to everyone.
- The streamlining and simplification of bureaucracy and procedures for approving projects and the strengthening and expansion of financial incentives and tax measures that foster urban regeneration.

Guideline 6

Expanding the redevelopment, renovation and maintenance of the existing built environment

Roughly 70% of Italy's building stock is at least 40 years old and most of it requires maintenance and renovation work, the improvement of its energy efficiency and, often, the reduction of its vulnerability to the risk of earthquakes and flooding, due to the construction technologies used, the age of the installations and sometimes due to its dilapidated state. Some of the built environment is abandoned or badly used due to its poor state; part of it is also of historical value but no less in need of renovation and functional, energy and seismic improvements.

Policy

One of the ways we will achieve the relaunch of cities quality is through the regeneration, renovation, reuse and maintenance of existing building stock, both public and private, involving integrated improvement work on the efficient use of energy, water and the improvement of other ecological aspects, of quality and environmental comfort. Moreover, given that the risk of flooding is now higher and that many areas are at risk of earthquakes, such improvements should be assessed and combined, wherever necessary, with measures to reduce vulnerability and prevent such risk.

Measures

- The promotion of a long-term programme involving local, regional and national authorities for the regeneration of public buildings, a programme that addresses every level and uses ground-breaking, sustainable technical and design solutions, which will serve to test and promote best practices and the best techniques available.
- The strengthening, expansion and identification of programmes of intervention on private buildings, for the improvement of living standards, energy efficiency and the use of water. These programmes should coordinate with those addressing seismic and hydrogeological risk, focusing on architectural quality and the promotion of highly ecological techniques and materials whose use should be incentivised with tax breaks, simpler bureaucratic procedures and authorisations.
- The planning, design and implementation of systematic maintenance work on existing building stock for its entire life cycle so that it may last longer and in a better state.
- The meeting of the demand for housing, services and economic activities by verifying beforehand, and as a matter of priority, the potential to be gained from renovating, reusing and regenerating existing building stock.

Guideline 7

Developing waste recycling and preventing the creation of waste, in a move towards a circular economy

It is estimated that cities consume 75% of natural resources and produce 50% of all waste. The world population is 4.5 times greater now than it was in 1900, rising at an unprecedented rate, and the consumption of natural resources – minerals, fossil fuels and biomass – has increased at an even greater rate, as many as 12.5 times, and could double again within the next 35 years. This linear economic model – which draws on enormous quantities of natural resources and turns them into products that create waste that needs to be disposed of – is no longer sustainable. As natural resources are depleted, they become more costly and more difficult to extract. The extraction, transportation and processing of large quantities of natural resources, like the disposal of enormous amounts of waste, has a hugely detrimental effect on the environment.

Policy

We need to complete the transition to a circular economy that reduces the extraction of natural resources and promotes the long-term, shared use and reuse of products and the prevention and recycling of waste, as it is now accepted at a European level for reasons both of ecological sustainability and economic competitiveness. Cities must become the cornerstone of this transition towards a circular economy, the basis of a green economy, reducing the consumption of natural resources and the production of waste, making the most of the reuse and recycling of all kinds of waste, promoting a change in manufacturing processes and consumption models. The transposition and proper implementation of the recent package of EU directives concerning waste and the circular economy has enormously boosted this process.

Measures

- The definition and updating of an overview of local data regarding the production, collection and handling of all kinds of urban waste; the identification of a plan for handling urban waste that includes an assessment of future trends and waste management costs; the publishing of data regarding such a plan and its results on a regular basis.
- The strengthening of measures for preventing and reducing waste production at a local level: for example, networks for collecting and donating foodstuffs that can still be consumed, the sale of local products with a short supply chain, a network for repairing and selling used items, platforms for promoting industrial cooperation and the reuse of byproducts, initiatives for fighting built-in obsolescence.
- The promotion of the shared use of circular goods, services and business models based on the use of a product rather than on its ownership.
- The expansion and improvement of the quality of recycling systems for urban waste, making up for the delay that continues in a number of cities as regards, for example, facilities, leaving incineration and dumping as a last resort for non-recyclable waste from the selection and recycling processes.
- The expansion of, and continued support for, the demand for recycled materials as part of an approach that favours the circular use of resources, removing technical and cultural barriers, completing and simplifying the End-of-Waste regulations, applying green public procurement procedures.
- The separate collection of waste items and byproducts of the construction and demolition activities, which filters them into a local and effective process of reuse and recycling; the orientation of the design of construction components and systems in order to encourage future reuse and recycling and promote the reuse, on site, of as many materials and components as possible, particularly milled asphalt.
- A focus on the reduction of organic waste in rubbish dumps to zero, expanding and improving recycling processes, improving and completing the availability of treatment plants for producing high quality compost and biomethane production from the anaerobic digestion of organic waste.

Guideline 8

Managing water as a strategic resource

Water is a limited resource that is essential for city residents, many ecosystems and many economic activities. The climate change underway is not only causing long periods of drought and water shortages, creating serious problems in many cities; it also results in sudden downpours that worsen the risk of flooding and landslides. In many cities, the water distribution network is old and suffers from substantial leaks. Some cities do not receive enough clean drinking water on a regular basis, others still do not have adequate sewage and sewage treatment facilities, few separate grey water from black water, or treat and use rainwater. Given these shortcomings, investment in this sector is well below the estimated need.

Policy

Cities must make water supply management a priority, as a strategic issue for their future. Ensuring an adequate, high quality water supply requires the implementation of policies designed to save water, use it efficiently, address waste and look to returning clean water to water sources after use, as well as improve rainwater management. An action plan is also necessary in cities exposed to long periods of drought, with faster and more effective measures addressing resilience and mitigation so as to reduce the risk caused by sudden heavy downpours.

Measures

- Increased investment in water supply infrastructure, sewage and water treatment plants, drawing from other sources of funding in addition to water rates.
- The establishment and regular updating of an overview of information regarding drinking water use, so as to save and reduce consumption and improve the safety of the water supply, adopting systems that monitor the efficiency and quality of water facilities.
- The implementation of a programme for repairing and updating the water supply network, focusing on minimising leaks and prioritising the many areas where such leaks are particularly numerous.
- The setting up of a programme ensuring that enough high quality drinking water is available throughout the year in cities where this essential service is not yet guaranteed.
- The promotion of the efficient use of water and the saving of water in urban areas through communication and information campaigns addressing residents, with the installation of devices and equipment that reduce water flow, introducing smart meters that allow users to track and modify their consumption and separating black water and grey water drain networks.
- The encouragement and extension of the reuse of treated water – whilst ensuring high standards – as well as rainwater, introducing adequate systems for monitoring their quality and managing their supply.
- Raising awareness amongst residents of the importance of not dumping dangerous substances, given the limited ability of water treatment plants to remove them; the completion and updating of water treatment plants with the best techniques available, guaranteeing both the improved quality of treated effluent and the improved energy and environmental sustainability of water treatment processes and the reuse of the sludge these processes create.
- The tackling of flooding with up-to-date territorial planning and management that takes into account the new climate, increasing the permeability of urban paving, creating natural absorption areas, improving urban drainage systems, updating floodwater drainage systems, ensuring enough spendable and assured funding is available that is in proportion to the high costs of emergencies, costs that can be avoided.
- The promotion of best practices and cutting-edge designs that combine the improvement of water bodies, the renaturalisation of hydrographic networks and wetlands with the lessening and absorption of flooding and, in general, the mitigation of hydrogeological risk.

3RD GENERAL OBJECTIVE

ADOPTING MEASURES TO FIGHT CLIMATE CHANGE

Guideline 9
Cutting greenhouse gas emissions

We only have a few decades left to mitigate the global climate crisis and avoid dramatic repercussions by implementing, without dangerous delay, the Paris Agreement on climate change. Cities have a decisive role to play in tackling the climate crisis by cutting greenhouse gas emissions by 80-90% by 2050 and achieving the target of zero net emissions (carbon neutrality) by implementing substantial energy consumption reduction programmes and increasing the production and use of renewable fuels. They also need to implement the National Plan for climate and energy.

Policy

Cities must commission reliable, up-to-date analyses of their greenhouse gas emissions and set their greenhouse gas emission reduction goals for 2030 and beyond, to 2050, which should be consistent with national and European objectives implementing the Paris Agreement. In order to achieve this goal, they must proactively raise awareness amongst residents and businesses so that they may act responsibly and promote the new opportunities for investment, innovation and employment offered by a low or zero-emission economy. They also need to speed up processes that cut energy consumption and increase the production and use of renewable fuels. Last but not least, they need to complete the integration of climate policies with those addressing green cities; measures promoting energy savings and renewable fuels not only reduce greenhouse gas emissions, they also reduce air pollution and affect urban regeneration, the redevelopment of buildings and sustainable mobility.

Measures

- The estimation of the city's greenhouse gas emissions since 1990, establishing targets for the reduction of greenhouse gas emissions by 2030 and 2050. These targets must be backed up by policies and measures that can be activated at a local level, setting a timetable for assessing the results achieved and evaluating the economic and employment repercussions as well as other environmental benefits.
- The identification and implementation of a set of local measures and policies for cutting greenhouse gas emissions, reducing energy consumption in a quantifiable way, increasing the production and use of renewable fuels in a quantifiable way, promoting the relationship between natural environments and CO_2 capture, increasing sustainable urban mobility and assessing and publicising the results.
- The encouragement and acceleration of energy transition and Deep Energy Renovation processes in favour of smart networked systems, applied at all levels, designed to cut greenhouse gas emissions.
- The comparison of climate targets, policies and measures with more advanced cases in other Italian and European cities on a regular basis, and the launch of a public debate at a local scale, involving stakeholders, regarding climate change and its consequences for cities, both those that are already perceivable and those that are in store, and the drafting of city's commitments to combat them.

Guideline 10

Reducing energy consumption

Given that cities consume vast amounts of energy, they must take the lead in the energy savings and efficiency revolution, so as to avoid the dramatic consequences of the climate crisis. In order to apply the Paris Agreement and cut greenhouse gas emissions to the levels needed to contain temperature increase below 2°C, we need to drastically cut all aspects of energy consumption: from the energy used to produce goods and services to passenger and goods transportation, though paying particular attention to the energy consumed by buildings.

Policy

We need to promote the positive connections of many green city policies and measures with energy efficiency and savings: from urban regeneration to building renovation, from the efficient and circular use of resources to sustainable mobility. The energy upgrading of entire buildings should be promoted, taking into account building envelopes as systems that help reduce energy consumption by combining active and passive solutions thanks to the use of innovative technologies and materials.
We need to promote the use of systems that can assess the energy and environmental performance of buildings and go beyond the mere assessment of a single building's performance, certifications and energy upgrading, extending our analysis to that of the constructed aggregate, based on key performance indicators that highlight the priorities and the most effective solutions, restoring the role buildings and their outdoor areas once played in modulating the climate.

Measures

- The definition and updating of the following: a city's energy consumption as regards electricity, heat and fuel; an overview of the use of different energy sources and forecasts estimating the total demand for energy; a programme that sets future energy saving and efficiency targets.
- The drafting of long-term assessment, certification and energy upgrading programmes for both public and private buildings, paying particular attention to built aggregates such as condominiums and city blocks, activating more incisive public-private partnerships.
- The promotion of integrated designs that can optimise the passive energy performance of a building and make the most of reusable energy sources throughout the territory, incentivising the adoption of design methods based on M&S (Modelling and Simulation) as well as the adoption of systems that monitor the energy performance of improvements.
- To establish policies and measures that prevent businesses from wasting energy so as to: check and maximise the energy efficiency of systems and replace equipment and electrical goods with highly energy-efficient alternatives; improve the efficiency of lighting systems; incentivise the adoption of digital home automation systems monitoring energy consumption and digitally interfacing with users; adapt energy supply infrastructure to growing levels of electrification of consumption in homes.
- The encouragement of the widespread adoption of the best passive technical solutions available for reducing energy requirements, combined with the improvement of indoor comfort: from natural ventilation and passive cooling systems to heat loss control, from natural lighting to passive heating and the natural regulation of humidity, etc.
- The reduction and management of the demand for energy using intuitive monitoring and user interface systems; the promotion of forms of energy distribution and exchange amongst 'prosumers' using smart grids and local cooperative mechanisms, such as using the extra heat produced by industry and services to meet home heating needs; last but not least, the encouragement of the aggregation of energy demand among end users.

Guideline 11

Expanding the production and use of energy from renewable fuels

In order to stop climate change from having dramatic consequences, we need to accelerate the transition from fossil fuels to renewable energy sources. This historic change is already underway and will continue. Those who are at the forefront of that movement by investing more today will not only gain environmental benefits, they will also enjoy technological and financial benefits. When we compare the cost of renewable and fossil fuels, not only do we see a sharp reduction in the cost of generating renewable energy and the significant growth of investment at an international scale of such fuels, we can also no longer underestimate the enormous cost of the climate crisis that is being worsened by fossil fuels. The European renewable energy target of at least 32% of final energy consumption by 2030 requires Italy – which reached 17.35% in 2016 – to significantly increase its commitment to produce and use renewable, electricity, heat and fuels, reversing the slowdown of recent years. This significant increase in the production and use of renewable energy is a founding principle of the National Plan for climate and energy.

Policy

Cities need to play a leading role in the renewable energy revolution both by substantially increasing their use – in transportation, cooling and heating systems and with a more extensive use of renewable fuels – and by adopting the best technology available to create new production plants and keep existing ones located in urban areas working, updating and improving them. Apart from climate considerations, we also need to enhance the other benefits of renewable energy sources for cities: from new investment to technological innovation, from the creation of new jobs to the reduction of local pollution, promoting and supporting distributed generation methods and on-site management that help reduce energy loss, the cost of energy storage and distribution and increase the safety of supplying energy and the possibility of, and ability to, handle local demand.

Measures

- The identification of long-term plans for developing the production and use of renewable energy sources in cities, identifying the areas and sites available for new plants during the planning stage, as well as surveying all the possibilities of using and increasing their production, which will include the improvement of existing plants.
- The identification and promotion of the best uses for renewable fuels: for electrical, heating and fuel purposes, paying particular attention to networks that can integrate the actions of all the users connected to them (producers and consumers); the storing of the extra renewable energy produced locally (Dynamic Smart Grid); the supporting of the widespread creation of energy efficient, self-sufficient settlements run on renewable fuels;
- The promotion of a 'local energy renewable community' of grouped local users.
- The commissioning of an analysis of the renewable sources that can be used locally and the promotion of the best production technologies available: active solar systems; small-scale and micro wind turbines; the supply of energy from geothermal sources, both near-surface and deep; systems that run on biomass, equipped with suitable emissions-cutting technology, and organic waste-generated biomethane; fuel cell systems that can be used in urban environments; micro-cogeneration systems; trigeneration systems and the use of district heating systems.
- The planning of fast-track procedures and regulations for setting up renewable energy production plants in existing buildings.

Guideline 12

Adopting climate change adaptation measures

Climate change is happening. Whilst we implement measures for reducing greenhouse gas emissions to avoid drastic and dramatic consequences, we mustn't forget to implement adaptation measures as well that will reduce the vulnerability and exposure of cities as much as possible. Climate change causes dangerous heat waves, long periods of drought and high temperatures, as well as short bursts of heavy rainfall, increasing the frequency of floods and landslides, as well as increasing the risk associated with rising sea levels. These extreme weather events can have serious effects on Italian cities, which are particularly exposed to the effects of climate change due to their geographic position, i.e. due to the characteristics of the terrain and coast.

Policy

In cities, we need to draw on specific knowledge – regarding local climate, territorial, as well as demographic and socio-economic characteristics – so as to carry out technical assessments of the risk caused by climate change, particularly as regards extreme weather events. We therefore need to identify and plan integrated strategies that will prevent and reduce the built environment's vulnerability to these phenomena and mitigate their effects. In order to evaluate the levels of adaptation we can reach, based on the particular geographic and socio-economic context, we need to fine-tune design solution methodologies, protocols and systems to evaluate adaptive capability. We need to promote permanent actions that will develop an appropriate approach to risk and a suitable form of governance in urban areas in order to reduce their vulnerability and improve resilience, expanding existing planning with particular attention to the repair of waterways, improving their safety.

Measures

- The commissioning of studies examining a city's vulnerability to climate change, examining the impact of extreme weather events (heat waves, heat islands, drought, heavy rain, flooding) and, in particular, the impact of rising sea levels on coastal cities.
- The drafting of climate change resilience and adaptation plans and projects designed to improve prevention, reduce vulnerability and exposure to risk, both in the long and short term – prioritising key infrastructure and buildings – as regards sudden and/or continuous extreme weather events.
- The commissioning of analyses and assessments regarding the ability to adapt to heat waves and the increase in heat islands, using state-of-the-art sensors and diagnostic tools and efficient design, technical and managerial solutions in urban regeneration work and renovation work on buildings, their exterior areas, both outdoor spaces and connecting areas, and green infrastructure.
- The promotion of information and training tools and processes and those that involve residents, adopting early warning systems for extreme weather events.
- A halt to soil sealing and land consumption, reversing the impermeabilisation of urban areas, reducing their vulnerability to the risk of heavy rainfall; action to promote the use of high quality compost to increase the permeability of the soil; the use of green networks and infrastructure, not only as microclimate regulators but also to absorb and collect larger amounts of rainwater; the setting up of rainwater collection and treatment systems that can be used during extreme weather events; improved drainage of particularly large amounts of rainwater towards wetlands in periurban areas, which can collect large quantities of water; the creation of ecological areas of excellence encouraging biodiversity and recreational and sporting uses.

4TH GENERAL OBJECTIVE

PROMOTING ECO-INNOVATION AND THE GREEN ECONOMY AND IMPROVING GOVERNANCE

Guideline 13
Promoting eco-innovation

Environmental sustainability, the saving and efficient use of resources and climate change mitigation and adaptation are now the main drivers of innovation in our era and are essential for the future of our cities. Green cities promote and require research, expertise and eco-innovation. In all key sectors – from architectural and town planning quality to green infrastructure, from urban regeneration to building renovation, from mobility to the circular economy, from climate measures to energy measures – green cities can draw on a vast pool of knowledge, on innovative projects, best practices and good techniques and ICT technologies at a national, European and international scale, expertise that is continually evolving.

Policy

Green cities are smart cities that make the most of the vast range of IT technologies now available: broadband, ensured by the widespread use of connections along fibre optic cables, which allow the rapid transmission of large quantities of data, a reduction in necessary trips and less space occupied by various different activities; the digitisation of green technologies, which offers a range of possibilities for bioclimatic design; the cutting-edge management of energy in buildings; distributed generation; energy storage systems; the efficient and circular use of resources. These are tools that need to be used, paying particular attention to innovative design based on an analysis of product life cycles and the processes of transformation of the built environment (from the scale of a single building to the town planning level) with an integrated vision that allows us to try out new techniques inspired and supported by nature, by new materials and new management systems.

Misure

- The promotion and support of the widespread adoption of eco-innovation, green technologies, best practices and innovative designs in all the various key green city sectors, setting up partnerships with universities and other research institutes, running information, training and study initiatives.
- The use of IT developments to improve our ability to analyse, design and plan green city policies and measures, so as to improve the projects we implement and how we handle them, to strengthen supervision and monitoring work, to support decision-makers and encourage participation.
- The promotion of a life cycle approach when designing, planning and creating solutions and improvements inspired and supported by nature (NBSs, or Nature-Based Solutions).

Guideline 14

Developing the green economy

Given the scale of the environmental impact made and its tendency to increase, the sustainability of our cities' development, in our time, must be based on an approach that considers environmental quality, the limited nature of resources, resilience and the climate challenge to be priorities. Many things are moving towards sustainability in our cities, but the scale and the type of changes are still inadequate and we are still lagging behind. The green economy – which lies at the heart of a kind of sustainable development that can ensure a more inclusive and higher-quality well-being – can play a decisive role in making the transition towards green cities more incisive and extensive because it aims to transform environmental problems into new opportunities.

Policy

Focusing on a green economy in cities means understanding the importance of architectural and town planning quality, of the creation of green infrastructure, of clean air and urban mobility both in order to ensure residents' quality of life and well-being and in order to create new opportunities for local development. If we adopt the circular economy model in our cities, the fundamental pillar upon which the green economy is based, we will save and use resources efficiently (and stop further land consumption), encourage urban regeneration, the redevelopment of our building stock and the improvement of water and waste management. Tackling the climate crisis with mitigation and adaptation measures in cities requires the promotion of policies and measures that focus on energy efficiency and the development of renewable energy sources that have many benefits, including economic benefits. Focusing on green cities, now more than ever, is therefore a decisive choice, not only for the well-being of residents but also so as to create cities that can attract and support economic activities, investment and research and generate new, decent employment, particularly for young people.

Measures

- The commissioning and publicising of analyses of the economic and employment benefits of green city policies and measures.
- The sponsoring of training courses and programmes promoting young people's employment in decent green jobs, in partnership with universities and other specialised institutions.
- The organisation of meetings, employment advice and training opportunities with local businesses to involve them in green city policies and measures in every industry.
- The creation of public-private partnerships and other kinds of agreements that encourage social responsibility amongst companies in the race to improve the cities and territories where they are based, publicising their actions and their financial contributions.
- The promotion and support of innovative start-ups when implementing green city projects and initiatives.
- Increased funding for green city measures and an improvement in the use of the resources available at a European, national, regional and local level, involving banks and other financial and insurance institutions as well, drawing from the vast range of financial instruments and funding methods available.

Guideline 15
Improving governance

Just as there is no favourable wind for sailors who don't know their destination, so the transition towards green cities requires that institutional decision-makers at all levels (local, regional and national) understand the basics of this approach, its particular objectives, its potential and the results of best practices that have already been tried. During processes of change, it is not enough to establish the final destination, what we need to know is how to get there and what methods are necessary to complete that journey. Sometimes the problem isn't a lack of money: what's missing are ideas, the knowledge of what can be done and how we can do it. Not only do best practices that have already been tried help decision-makers identify and orient policies; they also stimulate the continuous improvement of the market, allowing operators to understand their positioning and guide innovation and investment.

Policy

Before we refer to the table of guidelines, we should first verify what the situation is in a particular city, in order to have a clearer idea of the initial conditions. When setting up policies and measures, it is useful to be familiar with the best practices and techniques that have already been tried and adopted in other cities. The green city approach is multidisciplinary and we need to tackle the various aspects that overlap, converge and combine in a coordinated and integrated way. Green city measures therefore need to interact with council, metropolitan and regional planning measures. These measures also require connections and contributions from national and European initiatives that are similar to them and consistent with them. The transformation towards green cities should be supported by suitable measures stimulating information and participation so that residents may know and subscribe to them. It is for all these reasons that the process towards a green city also contributes to improving overall governance, i.e. the principles, rules and procedures for managing and governing cities.

Measures

- The drafting of a green city plan, indicating the general and specific objectives that we wish to achieve within set deadlines and the measures we intend to adopt.
- The establishment of the budget available for implementing green city plan measures, who is responsible for administrating them, what team and what structure will be used by the administration.
- The planning of detailed information, supervisory and accountability procedures reporting on a regular basis the activities, objectives and results achieved, as well as both wide-ranging forms of consultation, made possible by digital technologies, and targeted consultation with stakeholders concerning projects and improvement work.
- The promotion not only of participatory project-based procedures and public-private partnerships, but of collective local projects and sustainable improvement projects as well, carried out by residents grouped in various different ways.
- The use of the potential that GPP offers (Green Public Procurement) for public contracts at all levels.
- The creation of opportunities to meet, inform and train representatives of institutions at all levels, interested personnel and experts, regarding the best green city practices and techniques and previously tested measures.