Urban Center - CENTRAL EXHIBITION

3 – BOLOGNA, A CHANGING CITY

Bologna Municipality is developing its **Municipal Structural Plan** (Piano Strutturale Comunale - PSC), the structural urban planning tool defined by regional bylaws.
It is valid for the mid-long term (around fifteen years) and lays down the general aims that are then interpreted by the Municipal Operative Plan (Piano Operativo Comunale - POC), which however has a term of five years.
On the basis of a politically defined social, economic and environmental strategy, the PSC formulates structural urban aims for the form and development of the city that protects its physical, environmental and cultural integrity.

The **City Forum** has been set up by Bologna Municipality, as an additional participatory tool for the process of drawing up the PSC by working together on the contents.
It is made up of representatives of the institutions and civil society, with links throughout the area.
As part of the forum, participatory town planning workshops have been set up for the design of the shared measures at district (and/or neighbourhood) level.

http://psc.comune.bologna.it

140.9 sq. km urban area
375,000 population
81,000 students registered at the University of Bologna
41,000 university students domiciled in Bologna from outside the city
37,720 businesses
2.3% unemployment rate

4 – CHANGES IN THE POPULATION

The most recent data highlight the establishment of a **new demographic cycle** that involves Bologna and can also be seen throughout the Province and the Emilia-Romagna region. The variable, characterising this new phase, is the extraordinary growth in migration from other areas in Italy and abroad. This has rapidly changed the image (that had been the norm for around twenty-five years) of an area distinguished by a falling birth rate, an aging population and a drop in the number of inhabitants.
The rapid change in the demographic aspect of the city has had profound repercussions on its social and economic fabric. Compared with ten years ago, Bologna has **more children, more old people and more immigrants** (from other countries as well as from the south of Italy and its island). **The overall population of the Bologna Provincial area has begun to increase** even if the values differ widely from municipality to municipality.
Coming up with explanations for the demographic composition of the population also means reasoning over the economic and social evolution of the area: this awareness will help in evaluating some tendencies correctly and benefiting from them in the process of defining local policies.

Progressive increase in the birth rate
In Bologna, **deaths are still more numerous than births**, but in the last few years the gap has narrowed due to a **steady increase in the birth rate**.
3,044 children were born in 2004 (181 more than the year before - an increase of 6.3%); of these new-born babies, 407 were to parents both of whom are foreigners (13.4% of the total), while almost 200 were births to mixed couples (133 where the father is Italian and the wife a foreigner and 65 to a foreign father and Italian mother).
Such a high number of births had not been recorded in the city since 1977 and the contribution of foreign immigrations is evident. Almost one child in five in fact has at least one parent of a nationality that is not Italian.
The attitude of couples formed by young Italian nationals from Bologna is also steadily changing. Compared with the past, these are showing a greater propensity to have children, even if it is later on in life (an average age of thirty-six for the father and almost thirty-three for the mother when the child is born).

Increase in average life expectancy
Numbers of elderly residents continue to increase (especially those over seventy-nine years old) thanks to greater life expectancy, which has reached seventy-eight for men and eighty-three for women.

According to some estimates, in 2018 the number of old people resident in the province of Bologna will probably have an overall increase of between 27,500 and 36,000 people compared with 2003.
The territories most affected by this **phenomenon of aging** will be the municipalities in the greater Bologna area as well as those making up the rest of the Province. Bologna, now characterised by considerable aging of the residents could, on the other hand, experience slight reductions or levelling off of the population over 64 years of age.
This process, whereby there is an increase in the number of people over seventy-nine in the province, will probably also continue in the city of Bologna itself (with variations of between 6,300 and 9,000 units).

Intense migration with a strong foreign component
In 2004 more than 14,500 people came to live in Bologna, while more than 12,000 moved out of the city. Migration determines a **very high social turnover of the population:** residents in the city since birth total 36% of the population and in many areas the residents who have been there for less than ten years are more than 20%.
While Bologna loses inhabitants to the municipalities in its province, migration from the south of Italy and its islands has begun again with force and the number of immigrants from foreign countries remains high. The foreign population resident in Bologna reached nearly 25,400 people in 2004 and now represents nearly 7% of the overall population. It is a very young population with a large presence of **Asian, African and European nationals** with **a slightly higher number of females**.

Changes in the family
There has been a **considerable overall increase** in nuclear families (+ 1.6% in 2004 for a total of 190,000 units) and a **far-reaching transformation in their type**: more, ever smaller, families (up to one or two members only). The slight increase in families with single parents (mostly the mother) living with children. In relative terms the number of families has grown much faster than the population.
There seem to be many more single residents in Bologna, with a net majority of females: in 2001 42,000 "single" people were women against 25,000 men. A large number of people are over sixty-four years old.
Also accommodation requirements (evolution of the total accommodation pool and the ways in which it is used) are profoundly influenced by these changes in the family.

Resident population and the overall population
In the Municipality of Bologna, the resident population has stabilised over the last few years to between **370,000 and 375,000**, thus the long downward trend of the inhabitants that started in 1973 has come to an end. If one considers in addition that the population of the city on a non occasional basis (in particular the almost 40,000 students who come in to the city) and the more than 100,000 people who flock to Bologna each day to study, work or who come on business or else are here as tourists, Bologna exceeds the **500,000 mark** (rising to 650,000 if the population in the municipalities of the greater Bologna area are also taken into account).
Future estimates tell us that if Bologna is still be able to attract migrants in significant numbers, the resident population in 2018 will vary between the 2003 figure (almost **2,000 inhabitants** more as a conservative estimate) and a significant increase (over **13,500 residents** more in the most dramatic of cases).

5 –THE TOTAL HOUSING POOL – RECENT DEVELOPMENTS

The analysis of trends in the local housing pool highlights a number of links between the trends in housing, how it is used, and the demographic changes in the population and families.
One fact is that **the overall number of houses is increasing, the number of owner occupied flats is increasing and the number of rented flats is falling**.
The average surface area available is also increasing, as is the number of rooms per head, partly as a result of smaller families.
Most of the housing in Bologna is in a **good or excellent state of repair**.

Housing
The 2001 census showed that there are almost **445,700 houses** in the province of Bologna, with an increase of 38,000 houses compared with 1991 (+9,1%). This increase in the amount of accommodation has been smaller in Bologna itself, with a calculation of almost **194,900 units** (over 4,500 more than in 1991, a 2.4% increase).
The 2001 census, for the first time, also gives the number of buildings for residential use in which these housing units are situated. In the province of Bologna, the buildings for residential use in 2001 totalled almost **113,000** with an average of four units per building. In Bologna itself, there were on the other hand some **20,500** buildings with a considerably higher number of units per building compared with the provincial average (9.5).

Owner occupied buildings as opposed to rented accommodation
Housing in Bologna consists mainly of flats occupied by families legally resident in the city.
The houses and flats occupied by persons resident in Bologna in 2001 totalled almost 173,400 with an increase of 4,800 units (+2,8%) more than 1991.
In Bologna in 2001, **the number of houses occupied by their owners reached 65% of the total** and today an even higher value can be estimated because many other householders have decided to buy their homes over the last few years. So, if it is considered that in 1971 the number of homes owned by their occupiers was still a distinct minority (33% of the total), in just thirty years the number of families owning their homes has doubled and has become the clear majority.

Size of the homes: **available area and number of rooms**
In Bologna in 2001 the average surface area of occupied housing was approximately **85 square metres** (approx. **93 square metres** in the Province of Bologna) and the average number of rooms in each home was **3.68** (**3.91** in the entire province).
Compared with 1991, the average surface area of the housing units has risen slightly (on average almost two metres more) and the average surface area available to each occupant has grown still further as a result of the simultaneous reduction in the average family size.
In Bologna in 2001 each resident had over 40 square metres of living area available, with an increase of almost five square metres over ten years previously. The trend over the long term is even more astonishing as it rose from 26 square meters per person in 1971, to 31 in 1981 and 35 in 1991.

Housing not occupied by resident families
In Bologna housing not occupied by residents in 2001 totalled **around 21,500**, a slight fall compared to ten years before.
Of course, in Bologna most of these homes (roughly two thirds, around **14,500 units overall**) meet the living requirements of the numerous non-residents present, particularly university students from other areas. The remaining (about **7,000 flats**) are unused for various reasons (unrented, or kept free for use by the owner, flats waiting to be sold, flats in a very bad state of repair etc.).
In Bologna therefore, about 7% of its total housing pool is lived in by the non-permanent population, and another 3-4% is completely unused.

State of repair of the buildings
In Bologna, more than 4,600 buildings for residential use (22.4% of the total) were built before 1919, while those completed between 1919 and 1945 account for some 4,800 (23.6% of the total). **The greatest number of buildings was built between 1946 and 1971** (more than 9,000) and, from 1972 onwards, building in the city has slowed considerably (fewer than 2,000 buildings put up in the last thirty years).
In 85% of cases the buildings surveyed were judged to be in a good or excellent state of repair.

6 – CHANGES IN THE SOCIO-ECONOMIC SYSTEM

Over the last few years there has been a considerable slowing down of the national economy, which has not however had too much of a negative effect on Bologna's employment market. **Employment continues to grow** and the large immigrant population is playing an ever-greater role in local employment.
The pro capite GDP in Bologna is still among the highest in Italy, thanks not least to a **solid, active productive fabric**, and an ever-growing tertiary sector.

Employment
Despite the slowing of the economy in recent years, **employment in Bologna continues to rise** albeit it at lower rates than the regional average, highlighting a tendential shortage of job opportunities.
The unemployment rate is stable (2.37% in 2003); this situation is basically similar to that of the entire Region (3.04%) and the area of North East Italy (3.26%).
The immigrant population is an increasingly important player in filling the jobs available.

Income
In 2002, the pro capite GDP of Bologna was Euro 26,860, a figure that places the provincial area in third place nationally, with 31% growth since 1995. The provincial areas located in the centre of the Emilia region represent the fulcrum of the regional economic system. Wealth and economic well being are in fact rooted in a **solid, active productive fabric**. In industry, including services, the Province of Bologna in particular has 20% of the area's businesses, local production units and relative workers.

Structure of the local economy
An analysis of added value by field of activity confirms the **growing move towards the tertiary sector by Bologna's production system,** a process that is a typical feature in areas of particular economic development. As a matter of fact more than 68% of added value is produced in the tertiary sector, an amount higher than the regional average and just under the national figure.
According to the figures from the eighth ISTAT census, of the 58,025 businesses in the Bologna area, 75% are service companies. If trade shows a decline common with almost all the provincial environments with the exception of Rimini, businesses in other service industries has grown at a rate of over 45% in Bologna. The increase in industries is decidedly lower, at a rate of just over 3.1%. On the contrary, other provinces of the region have recorded considerable growth in the field.

The field of knowledge
The Bologna area boasts a **University** of national and European renown. The student body of over 100,000, and the 15,000 freshmen starting each year, can choose from a wide range of faculties and courses in Bologna (and its decentralised centres). In addition to these there are some 14 research centres that make Bologna a leading scientific concentration in Italy.
The **Bologna Trade Fair**, in addition to the undoubted direct and indirect impact it has on the local and regional economic system is an important venue for the exchange of knowledge and professional expertise. In 2004 there were 28 trade fairs with 22,000 exhibitors and over 1,300,000 visitors.
One of the provincial area's most striking features lies in the field of **healthcare.** Patient treatment services and medical research have reached such a level of excellence as to increase the appeal of the facilities in the province, considerably. In the last few years more than 183,000 patients have been through Bologna's hospitals, some 10% of whom come from other provinces in the Emilia-Romagna region, almost 20% from other Italian regions and 1% from abroad.

Accessibility of the area and transport infrastructures
The **G. Marconi Airport** is the main gateway to the metropolitan area for foreign tourists and business travellers. The considerable increase in passenger traffic and, to a lesser degree, goods traffic recorded in the last few years makes Bologna one of the main airports of regional importance in a European context.
Bologna railway station will undergo radical restructuring and enlargement, bearing in mind that once work on the high speed line and the metropolitan railway network has been completed, approximately 180,000 passengers a day will pass through it.
As for goods transport, the Bologna **Interport** is the main interchange. It handles some 3.8 million tons of goods a year, of which 1.5 million is transported by rail. The current surface area of around 2 million square meters is to be expanded by a further 2.7 square metres.
Other provincially important logistic platforms are the goods centre (**Centro Merci**) in Imola, the **Centergross** wholesale centre and the **Centro Agroalimentare** agriculture and food products centre.

7 – BOLOGNA'S VALUES

Values are elements that make a city attractive, pleasant to live in and interesting.
Bologna has many values. The **old city centre** has first place of course, but the historical fabric of Bologna's outskirts is also important. Some districts that grew up in the 1960s and 1970s are almost small towns in their own right, places where people feel at home, and that provide the city with a sort of **emotional map of the city**.
The city's **urban renewal** policies are centred on these values so as to promote them and to give them space to develop in some of the more difficult contexts.

The old town and historical settlement patterns
Bologna's old town is the most representative part of the city.
Over the last few decades, since the 1969 Urban Masterplan, and its conservation policies, which no longer regarded single buildings, but the overall conservation of the historic area, the centre of Bologna has undergone wide-ranging urban renewal and restoration schemes aimed primarily at the conservation of its historical buildings. As the old town does not have great potential for actual physical transformation, the areas along the alleys skirting the centre play an important functional role.
A very topical theme is that of the quality of public spaces in the city centre, partly concerning the matter of traffic control and the promotion of cycling and walking as alternatives to vehicular transport. In fact, apart from a few main roads built at the beginning of the twentieth century, most of the roads in the centre were not conceived for motorised vehicles.
Since the 1985 Urban Masterplan (Piano Regolatore Generale – PRG), conservation policies also cover the city's historical outskirts and to a certain extent the rest of the municipal area.
Leading on from regional bylaws, the most recent urban planning instrument provides for the extension of cultural heritage conservation to the entire city.

Focal points and places of identity

The presence of places that are meaningful for the inhabitants in each "neighbourhood" (section of a district) is an important factor for urban quality. The recognition of one's own district as an area imbued with character and history, and full of focal points, contributes greatly to the sense of belonging and thereby creates the prerequisites for a better use of public spaces.
By consulting the local inhabitants directly, the neighbourhood meeting points were identified, focal points and landmarks, i.e. places which define the neighbourhood and with which the local community tends to identify.
Bologna is full of these identifying places (not necessarily accessible) in particular in the city centre but in many other areas as well, such as Bolognina, the historic centre of Borgo Panigale and the Savena district. On the other hand, places where people can meet are few and far between in areas that have been developed more recently: Casteldebole, the Via Larga area and some more remote districts, including Birra, Noce, Pescarola, Dozza and Croce del Biacco.
Other areas, such as the Saragozza and Santo Stefano districts, while boasting fewer meeting places, are nonetheless rich in identity and history.

Urban quality perceived by the local residents
The view of the local residents is fundamental for assessing the data provided by surveys and to understand what priorities they attribute to city life.
The perception of quality of life by residents in the outskirts is fundamental in order to assess the values that are attributed to this residential context. The results of a social survey carried out in the outskirts of the city (in particular in the Bolognina and San Donato areas) on a sample of more than six hundred families show that among the elements determining quality of life the following are deemed particularly important:
- living in a safe, secure area;
- good public transport links;
- nearness of the services;
- living in a quiet area;
- low cost of housing and/or living in one's own house.

Another important factor is that the inhabitants say they are on the whole satisfied with where they are living, even if a number of difficulties were detected linked to the urban environment, safety and cleanness.

The good state of repair of the buildings in the city
The result of an analysis of the building work carried out in Bologna between 1992 and 2004 shows that most restoration was carried out on the oldest buildings.
The intervention covered the whole city more or less equally: degradation does not concern the urban area overall, but only individual, localised areas. In other words there are not any residential sections of the city that are perceived as totally run down and in need of urban renewal.
This phenomenon could be linked to the fact that the city centre and closest outskirts appeal particularly to newcomers to the city (Italian and foreign immigrants, university students etc.), although the quality and age of the buildings do present difficulties.
This has meant a market also for those flats and houses that do not meet the standards currently applied to new buildings but meet other requirements (proximity to services, to public transport etc.).

Promotion of neighbourhood trade
The spread of local shops adds to the richness and vitality of urban areas. The recent development of shopping centres, supermarkets, hypermarkets and other large stores has led to tough competition. Due to this, the Municipality of Bologna has approved various projects in recent years in order to improve trade and these have met with positive results.
In the last five years, the number of shops in Bologna has remained stable with a total of 6,694 units. While non-food stores have increased in number, food shops have closed (in particular neighbourhood groceries) and so have medium to small non-food outlets.
41.3% of Bologna's shops are located in the city centre, almost all of them being local shops mainly of the non-food type. The average density of food shops is 407 m^2 per 1,000 inhabitants, rising to 603 m^2 per 1,000 inhabitants in the old town centre and at a level of 374 m^2 per 1,000 inhabitants in the outskirts.
The average density of non-food stores, 1,240 m^2 per 1000 inhabitants, rises to as much as 3,132 in the old city centre and falls to 928 in the outskirts.

8 – WHAT DOES THE CITY HAVE TO OFFER US: PUBLIC FACILITIES

The contribution of urban planning to the relaunch of local welfare as a way to speed up city development is fundamental, in particular when it is necessary to equip the city with new facilities and, even more, when these must be planned among existing buildings.

In this way, the need to develop a system of public facilities emerged, and a specific section of the Municipal Structural Plan was drawn up.
The map shows the full picture of the facilities and public spaces available and it contains some of the main linking and integration elements.

9 - http://sit.comune.bologna.it

GIS - Geographic Information System (SIT – Sistema Informativo Territoriale)
Bologna Municipality's GIS department has been in charge of designing methods for the digital management of the area since 1996 and it co-ordinates development in relation to the territorial analysis needs of users both within and outside the local administration (planners, technical instructors, designers etc.).
Tasks include the creation, management and constant updating of mapping and of geographical reference points as well as the diffusion of data related to the territory, to planning and to the social, economic and environmental situation.
The purpose of GIS is to integrate the department's, often quite diverse, IT systems, relating them to common reference aspects, to enable the exchange, comparison and assessment of data, using a territorial approach.
Access to the GIS databases is possible from about a thousand workstations located in various council offices.
Since 1998, the department has provided innovative territory-based web services to citizens and professionals and has carried out training schemes for council staff, local actors and students.
Available on the web:

- Consultation and print out of digital maps, ortho-photo, the Urban Masterplan (PRG) and rules and regulations.
- Comparative consultation of the map and historical photo files.
- Virtual flight in a 3D model of the city.
- Place names.
- Topography and geodetic network.

10 – QUALITY OF THE URBAN ENVIRONMENT

For many years, Bologna Municipality has been involved in environmentally sustainable territorial planning. The opportunities offered by the regional law, and the Report on the State of the Environment (RSA), basis of the Local Agenda 21 process, formed a basis for the implementation of the knowledge base of the Municipal Structural Plan (PSC).
The environmental knowledge base is therefore shared between the Structural Plan and the Local Agenda 21 process and is organised into the following themes:

- **Physical and environmental conditions** (studies and analyses undertaken for **surface and underground water, soil and subsoil**);
- **Quality of the urban environment** (in which the status and critical themes of **air, noise, energy and greenhouse effect, waste and electromagnetism** are highlighted).

Air
Bologna Municipality is at the centre of a vast metropolitan area called, for the purposes of the assessment of air quality, the **Bologna Agglomerate**. As with many other Italian municipalities, the agglomerate faces the problem of emissions due to intense traffic and, to a lesser extent, heating systems and production activities. The data resulting from a period of monitoring, seen in the light of European standards recently introduced in Italy, highlights a **widespread critical problem** extending beyond the municipal boundaries.
The critical pollutants widespread in the Bologna area are:

- **PM10 (powders with aerodynamic diameters less than 10 µ)**
- **NO_2/NO_x (nitrogen dioxides and oxides)**
- **O_3 (ozone)**
- **C_6H_6 (benzene)**

The widespread critical levels must be confronted on a large-scale, through measures aimed at the reduction of overall emissions. The local critical situation regarding benzene, particularly in the city centre can be confronted with local traffic regulations.

Noise

Bologna Municipality has always been sensitive to problems of noise and has had a **traffic noise** monitoring network since 1995.

Furthermore, since 1992 there has been a central control unit for monitoring **airport noise** and since the year 2000, in cooperation with ARPA (the regional agency for environment and prevention), there has been a system measuring **railway noise** in order to identify the most critical areas.

In 1999, a **Plan for Acoustic Pollution Abatement** was approved from which the "Acoustic Criticalities Map" was developed. Critical areas were identified and intervention planned to improve situations where there is the problem of noise. These mainly include: the by-pass and motorway, the inner-city ring road, the old town centre, main roads and linking routes (Viale Vighi-Cavina), railway lines, the airport.

Waste

Thanks mainly to the increase in **differentiated waste collection**, the amount of non-differentiated waste disposed of fell from 167,000 tons in the year 2000 to 148,000 tons in 2003.

The need for urban renewal in particularly prestigious points of the old town centre led to the creation of **underground ecological islands** in 1995 for the collection of rubbish in the city. The familiar roadside rubbish containers were substituted by underground bins with a capacity of roughly thirty-five traditional containers, with a vastly improved visual impact.

Energy and the greenhouse effect

Energy consumption in the city of Bologna is on the increase with critical consequences for the **emissions that pollute and contribute to climate change**. The strategy aimed at reducing consumption included in the Municipal Energy Plan has been implemented partly through the opening of an **information point** for citizens (the "Energy and Environment" showroom), which **promotes rational energy use.** The urban **distance-heating** network, which gives the opportunity to exploit the combined production of electricity and heat (**cogeneration**), has also been extended.

Regarding activities measures aimed at energy saving, 1999 saw the end of the experimental phase involving **eco-building** solutions. The results are now available to the urban planners.

The "Metropolitan Boiler System Service" (SMIT – Servizio Metropolitano Impianti Termici) was established in 2003 to make **monitoring and safety procedures** for boiler systems easier. The service will contribute to the updating of the Municipal Energy Plan through the creation of a database, which will help integration between **territorial planning and planning for energy consumption**.

Electromagnetism

High frequency

There were 312 authorised **mobile telephone structures** in the city of Bologna at the end of 2004, 284 of them active.

The number of applications for new fixed installations for cellular telephony was low for 2005.

Bologna Municipality received around 200 applications for authorisations for existing **radio and television structures,** while applications for the authorisation of new structures were few and only for new relay stations.

Low frequency

Electricity distribution and transmission structures are among the sources that generate low frequency electro-magnetic fields. There were 110.8 km of high voltage (HV) power lines and 920 km of medium voltage (MV) power lines in the municipal area at September 2004. The percentage of MV lines underground is very high (89% of the total).

11 – GREEN AREAS

In Bologna's varied and complex landscape several factors that mark the city's identity more profoundly are immediately evident: the old town centre, the range of hills (accounting for 28% of the municipal area), the Reno and Savena rivers and the open countryside on the plain.

This considerable diversity in the territory, whose overall surface is 14,087 hectares, is matched by a notable wealth of natural, semi-natural and man-made environments, equally worthy of interest in terms of territorial management and planning policies directed at guaranteeing, as required, protection, improvement and restoration.

Public green spaces in Bologna now include **more than 750 areas**, covering a **total of over 1,000 hectares**. Actual parks and public gardens total around 250 (600 hectares) added to which are the green areas created alongside roads (160 hectares), sports centres (110 hectares), green areas linked to schools, green areas around public buildings and many smaller areas as well (totalling 180 hectares). It is an asset of considerable size if placed in comparison with many other Italian cities. Nonetheless, it provides too few top quality areas and responds only partially to the many requirements of the inhabitants in terms of the quality of green spaces and how they are laid out.

12 – GREEN AREAS IN BOLOGNA AND BORDERING MUNICIPALITIES

Plans to consolidate and increase Bologna's green areas must necessarily take into account the wider territorial context. This means considering the ten municipalities bordering on the city and, to a lesser extent, other municipalities that border on them, with the aim of integrating the layout of Bologna's green spaces with those that exist, or are under development, in the neighbouring territories.
Among the various themes that have emerged, the contribution that Bologna can make to a wider project of protecting, enhancing and using the **Reno river** stands out. This initially involves the municipalities of Calderara di Reno, Casalecchio di Reno and Sasso Marconi, but could also extend to the municipalities located on the banks of the river from the mountain to the plain, at a later date.
Also the area around the banks of the **Savena** could provide a good opportunity for a project at supra municipal level, as the footpath along the banks in Bologna could be continued through the territories of San Lazzaro and Castenaso.
As for the **hills** above Bologna, a good policy appears to be to increase links with the adjacent river environments of the Reno and the Savena, the areas protected by the Gessi Bolognesi and Calanchi dell'Abbadessa Regional Park and those belonging to the planned Nature Reserve at Contrafforte Pliocenico.
The theme of safeguarding and enhancing the **countryside around the urban area** promotes the opportunity to create new and effective connections between the areas of greatest natural beauty in the Bologna area and the surrounding open spaces.
A further idea being developed, which could be an excellent opportunity for co-operation between Bologna and the neighbouring municipalities, is to promote the wonderful **system of old canals** that flow through Bologna, in particular the two most important artificial waterways: the Reno canal and the Navile canal.

13 – MOBILITY AND INFRASTRUCTURE SYSTEM

14 – THE SUSTAINABLE MOBILITY PROGRAMME

The areas of intervention in the short/mid term: mobility with low environmental impact

The **Programme for Air Quality and Sustainable Mobility in Bologna** is an instrument for tackling the emergency situation regarding traffic and atmospheric pollution in the Bologna urban area. It includes a series of integrated actions aimed at promoting mobility systems with a **low environmental impact** and reducing the emission of fine particles.
The strategies introduced aim to reduce the need to use private transport by improving the public transport system and other forms of mobility that feature low environmental impact and zero emissions.

Pedestrian areas and areas used by weaker members of the community

There has been a steady introduction, through urban regeneration programmes, of pedestrian zones in areas with the problem of excessive levels of traffic noise. The aim is to improve conditions and the **quality of life** in the old town centre, showing artistic heritage and monuments at their best, as well as improving conditions in some of the suburbs that are suffocated by the traffic.
The need to enhance pedestrian routes is linked to the strategy of reducing the use of private vehicles in favour of other, lower impact, means of transport, which involve walking at least for part of the journey, at the beginning or the end.
These improvements must include aspects specifically aimed at greater safety and accessibility for weaker users. For this reason the themes of **pedestrian crossings** and **secure home-school routes** (or other places where people get together) have been identified as particularly significant.
The aim is to promote low-speed use of the city, by creating specific areas and introducing pedestrian-friendly bylaws for traffic and thereby reducing the number of accidents involving pedestrians.

Cycling and walking in the city

The promotion of the use of the **bicycle as an alternative** to motor vehicles is one of the most significant commitments for long-lasting, sustainable development, contributing to the reduction of polluting exhaust gases in the atmosphere and relieving the congestion of urban traffic.
To encourage the inhabitants of Bologna to use their cars less, it is essential to create a continuative cycle network that is safe and easily identifiable as well as being integrated with other forms of mobility.

Mobility management and the new ECO tickets

Home-to-work journeys, while accounting for less than 50% of total journeys, do have a definite impact on the build up of traffic at rush hours.
To reduce the environmental impact caused by traffic, mobility strategies are being introduced for the employees of medium to large companies and schools with the aim of favouring the use of public transport and bicycles.
The policy for employees' home-work journeys is drawn up by each company's mobility manager with the aim of reducing the use of private vehicles and organising timetables better. Policies approved by Bologna Municipality in 2003 concern around 30,000 employees.

The new **Ecoticket and Ecodays** bus tickets are intended for those who do not use public transport every day, for motorists on days when traffic restrictions linked to car registration numbers prevent half the population from driving in the city and for cyclists and motorcyclists in the case of bad weather. Both the new tickets are flexible and offer great advantages with a considerable reduction in price for the occasional user: with the Ecoticket the price of a journey is € 0.60 and when Ecodays is used for four trips a day the price is € 0.45.

Bus lines with low environmental impact
The steady updating of the bus fleet with ever more environmentally-friendly vehicles comes under the municipal strategy proposal, and involves, in particular, the urban areas of greatest historical, architectural and environmental prestige such as Bologna's old town centre.
Since the late Eighties there has been a steady reduction in the number of buses running on diesel. At the same time, the local public transport company ATC's fleet of vehicles has been gradually renewed, introducing electric vehicles and vehicles running on methane. As a result, a number of lines crossing the old town centre have become completely environmentally friendly.
The trolley bus network at present involves lines 32, 33 and 13 covering a total distance of 42.6 km in both directions.
Bus lines using only electrically powered vehicles: shuttle A.
Bus lines using only hybrid vehicles: shuttle B.
Bus lines using only vehicles powered by methane: 30, 17, 18, 25, 10.
Bus lines using only vehicles powered by diesel with CRT: 28, 29.

Car sharing
Car sharing is a service where **use of a vehicle is shared**.
At present there are eleven reserved parking points for the service, and the fleet counts twenty environmentally friendly cars of different kinds (9 Smarts, 2 Puntos, 2 Stilos, 3 Doblò bipowers, 4 Multipla bipowers), plus Bologna Municipality's 10 Fiat Pandas running on methane.
In the face of the introduction of a new system of access restrictions, the service will be perfected with a view to integrating car sharing with the local transport system.
There is a dual aim: reducing pollution emitted and freeing up public space, as well as developing a service conceived for short, frequent trips as a form of public transport for individual use.

15 – THE SUSTAINABLE MOBILITY PROGRAMME

Areas of intervention for the short/mid term: new technologies to support mobility

As laid out in the Programme for Air Quality and Sustainable Mobility in Bologna, the use of new technologies for mobility is fundamental. The aim is to ensure compliance with the measures adopted, while at the same time helping to create a new way of thinking and new behaviour patterns among the inhabitants regarding the way they get around the city.
The Programme includes various kinds of intervention, to be brought in alongside the complete activation of SIRIO, the system of **remote monitoring of accesses** to the restricted traffic area (ZTL). The aim is to promote the reorganisation of mobility in the direction of the city centre and to define a different use of the city.

SIRIO
Sirio is the system whereby **access** to the restricted traffic area (ZTL) in the centre of Bologna is **monitored remotely**: it reads vehicle licence plates, runs them through the database of authorised vehicles and produces fines for those who enter the area without authorisation.
With this system, access to particularly sensitive areas from the point of view of monuments and the road system can be limited in the attempt to make public transport more efficient.
The aim is to reduce the number of non-authorised vehicles in the centre (by an estimated 20-30%) by means of better management of permits and a closer check on vehicles with permits not linked to their number plate.

Sirio began operating on February 28 2005 at the entrances to via Santo Stefano, via San Vitale and via Alessandrini. In the summer of 2005, Sirio also began operating at all the other entrances: via Marconi, via Riva di Reno, via San Felice, via Sant'Isaia, via Tagliapietre and viale XII Giugno.

RITA
The RITA programme (Integrated Remote Access Monitoring Network) covers the installation of CCTV cameras for the **electronic surveillance** of some routes of particular importance for public transport.
The activation of the RITA program aims to:

- Increase the efficiency of public transport (increased speed and regularity of the service) by reducing non-authorised transport in lanes reserved for public transport, particularly on main routes (entering and leaving the restricted traffic area ZTL);
- Stop unauthorised driving through the old town centre on the so-called "T", comprising Via Indipendenza, Via Rizzoli, Via Ugo Bassi). This will involve an estimated 25-30% of cars and a greater proportion of motorbikes, on the basis of results registered in the lanes that are already monitored remotely.

The correct functioning of the reserved lanes leads to benefits from the point of view of both speed and safety by dividing the traffic up into its different components.

Bus priority at traffic lights
The **on-going modification of the system of traffic lights** and the implementation of strategies giving priority to public transport, are facilitated by the local public transport (ATC)'s Remote Bus Monitoring centre. This structure uses a GPS localisation system to follow the buses' progress, transmitting the co-ordinates to the traffic light centre. The traffic light centre, in turn, adjusts traffic light sequences so that the public transport vehicle is given priority and can reduce any delays accumulated.
The eight lines for which this traffic light preference system is active at present are on the primary network (lines 11, 13, 14, 19, 20, 21, 25, 27).
Main objectives: increasing the efficiency of local public transport through improved regularity of the service (i.e. respect for the timetable) and avoiding vehicles on the same line forming a queue behind one another.

Directions to car parks and the CISIUM Centre
Bologna's telematic mobility facilities include:

- a **road information** system through variable message panels (VMS)
- a system **directing cars to car parks** that receives data regarding the situation at the car parks and transmits it to the direction signs with a variable message system at the side of the road.

CISIUM (the Centre for Supervision and Integration of Urban Mobility Information) is responsible for collecting and processing information on the **state of mobility** in the metropolitan area (in real time) and summarising recurrent scenarios in order to:

- provide an up-to-date overview of the metropolitan mobility situation making it possible to take adequate action;
- help the user make decisions regarding a journey by presenting the various options;
- direct those already on the road in private vehicles, towards the least congested route;
- regulate traffic lights to help ease congestion in the most critical areas.

To communicate the information, variable message panels, radio broadcasts, Internet and text messages to mobile phones will be used.

STARS Programme
The **STARS Programme** (Sanzionamento Transiti Abusivi Rosso Semaforico or Traffic Light Abuse Fines Programme) has been implemented with the aim of making the road user aware of **safety** issues and to check that the monitoring and fine systems are working properly.
During the initial experimental stage, the crossroads monitored are located as follows:

- Malvasia, Saffi, Vittorio Veneto;
- Emilia Levante, Po, Dozza, Lenin.

The programme's offence detection system will be extended to other junctions and crossroads and it will be made automatic, becoming more efficient.

16 – METROPOLITAN RAILWAY SERVICE

The Metropolitan Railway Service (Servizio Ferroviario Metropolitano - SFM) is a public transport system on rails designed to serve the main routes between the city and the province by means of five railway lines terminating at Bologna's central railway station.
The service is being increased in order to make it more efficient thanks to the introduction of new stations, the modernisation of the infrastructure and a greater frequency of trains.
Since the perception of transport efficiency largely depends on total travel time (from leaving home to arriving at work or place of study), all the stations and stops, both the new and old modernised ones, will have:

- Plenty of convenient points of access to make coming from the surrounding areas easier;
- Space for the tram and bus stops, car, moped and bicycle parking and easy access for pedestrians;
- Direct, convenient and safe pedestrian routes.

Please refer to the diagram on the panels prepared by the Bologna Provincial Administration, to see the complete SFM network.

17 - http://sit.comune.bologna.it

Bologna in 3D
The three-dimensional modelling of the buildings gives a highly realistic view of the city and urban landscape and makes it possible to explore the city dynamically, a true flight simulation.

Using digital maps that give the dimensions of the buildings and with the aid of specialised tools, the buildings have been modelled three-dimensionally and the orthophoto technique has been used to "dress" the shapes.
The model can be explored through the Internet using functions typical of flight simulators; thanks to the wealth of substrate information – more than 50,000 objects – it provides a highly realistic view of the city and urban landscape.
It also allows for two-dimensional border enlargement of traditional tourist maps and exploration of the city in a highly dynamic way, moving freely to find information in a realistic flight over the city.
The consultation system, designed for the web, can be integrated with specifications about the various items, external links and more detailed information about the main monuments and places of interest. One idea is to plan a series of virtual guided tours around the city and the Internet.

18 – HIGH SPEED RAIL LINES

19 – THE BOLOGNA RAIL HUB

Bologna is the most important rail hub for passenger and goods trains between the north and south of the country.
Work on the new high-speed line will allow the Bologna hub to be reorganised and improved, enabling the development of the Regional Rail Service (Servizio Ferroviario Regionale - SFR) and the Metropolitan Rail Service (Servizio Ferroviario Metropolitano - SFM).
The volume of trains passing through the hub could be more than doubled. To optimise the management of all the hub's rail traffic, a Command and Monitoring System (SCC) will also be set up, using the latest technologies. Bologna will thus be in a position to restructure and develop its entire rail link system.

The line
The new high-speed line crosses Bologna from south to west on a route 60% of which runs underground. The total length through the city is 17.7 km.
From the Savena-San Ruffillo district the line arrives at the new high-speed train station. From here it continues towards Milan and comes out onto the surface again at Prati di Caprara. After crossing the Reno the line runs alongside the current Bologna-Milan railway line as far as the Lavino river. It then joins the new high-speed line at Anzola Emilia.
When it is completed, the new high-speed line will make it possible to reach Milan from Bologna in an hour (as opposed to the present hour and 45 minutes) and to connect Bologna and Florence in 30 minutes (as opposed to the current 59 minutes).

The main works
The project includes the digging of eight artificial tunnels, the use of two natural tunnels, two large chambers, two viaducts and two bridges.

Among the main works:

- The **double tunnel** between San Ruffillo and the central station, some 6 km in length. To dig these, very large machines, known as "mechanical mole-hole tunnelers" (over one hundred meters in length) have been used. These machines, also called shielded mechanical diggers, allow for 10-15 metres progress a day compared with the mere 2-3 metres progress made using normal digging techniques.
- **Two new bridges**, already built crossing the Reno river, positioned alongside the railway bridge of the existing Milan-Bologna line. The first bridge, to the north of the existing one, will carry one of the two tracks of the new high-speed line (the other will use the existing bridge). The second will use twin tracks to make the link to Bologna Station on the Porrettana (Bologna-Pistoia) line.
- **Interlinks.** The high-speed line is connected to the existing line by two interlinks. The San Ruffillo interlink consists of two tunnels in the municipal areas of Pianoro and San Lazzaro di Savena. The Lavino interlink is in the municipal area of Anzola and consists of two branches connecting the new high-speed line with the peripheral Bologna line and the existing line. A further two interlinks are planned within the hub near the locomotive depot (between the Maggiore hospital and Via Agucchi): one with the Padua-Venice line and one with the Verona line.

The technical characteristics of the hub

Length	17.7 km
km above ground	5.9
km viaduct	1.6
km in man-made tunnel	1.8
km in natural tunnel	7.7
Average speed	160 km/h
Minimum radius of bend	475 m.
Maximum radius of bend	11,400 m.
Power	3k V d.c.

The Metropolitan Rail Service

When the high-speed line is built in Bologna, the existing lines will be completely given over to regional, local and goods transportation. The Metropolitan Railway Service (SFM), an extensive network stretching over the entire metropolitan area, designed in particular for commuters within Bologna and between the city and the province, will be developed. There are eight rail lines which converge on Bologna Central Station from all directions. In addition to national and regional trains, it will be possible for metropolitan trains to circulate and provide 50,000 seats a day as opposed to the current 5,000. The Italian Railway Network company (Rete Ferroviaria Italiana – RFI) plans to build 13 new stops, nine of which will be in the urban area. The service will become more frequent, providing trains every fifteen to thirty minutes in a radius of 30 km around Bologna, starting from the Central Station.

The new underground station

The new underground station for the new high-speed lines, some 23 m below the surface, is for medium to long distance trains. Situated in the area occupied by the last five tracks of Bologna's central station on the via Carracci side, a large new underground area some 650 m long and over 40 m wide, spread over three storeys, will be built. The tracks will be on the lowest level, with passenger services on the middle level (15 m below the surface) while the nearest level to the surface (7 m underground) will be reserved for road traffic and will give access to the station's carparks and those in the Salesiani area.

20 – BY-PASS & MOTORWAY

Noise reduction intervention concerning the whole urban section of Bologna's motorway and by-pass is planned in the near future. A new tollbooth exit will be built to serve the trade fair district, the by-pass slip roads will be improved and a so-called "third dynamic lane" will be built.

The noise reduction intervention will bring the entire urban section of the by-pass and motorway in line with current standards. A soundproofed tunnel will be built in the San Donnino residential area of the San Donato district, and soundproof barriers will be put up at all points passing residential areas.

Planned intervention on the roads includes:

- The rationalisation of the by-pass slip roads that connect with the city road system at critical points:
    - Airport
    - Lame
    - Corticella
    - Trade fair district-Viale Europa

- Roveri
- Massarenti (San Vitale-Mazzini)
- San Lazzaro.

- The construction of a new "Trade Fair District" exit with toll booth to ensure better accessibility to the trade fair district and a consequent lower flow of traffic on the by-pass when a trade fair is on.

- Widening of the motorway to make an emergency lane, the so-called "third dynamic lane", to be used temporarily under particularly heavy traffic conditions (rush hours, trade fairs, mass exodus for the holidays); under normal conditions the motorway will operate with two lanes plus an emergency lane.

Use of the third dynamic lane will be managed by efficient information systems, in particular:
- Variable message panels, clearly visible to road-users at entry points, displaying information regarding the state of lane use (both motorway and by-pass).
- Variable message panels before all by-pass access roads, with information on the general road conditions.
- A highly automated monitoring system using CCTV cameras and sensors to check traffic flow conditions and enable real time traffic management (including emergency situations).
- Adaptable passages in the traffic divide between the motorway and the by-pass, that can be opened rapidly to ensure aid gets through as efficiently as possible in the case of accidents where traffic has come to a standstill.

21_22 – METRO TRAMWAY

A **rapid network for mass transport** using railways and metro tramways is necessary in order to achieve two main objectives.
- To allow the Bologna area to grow in competitive terms in the economic field.
- To allow Bologna to grow as a place of excellence: regarding territorial development, quality of life, and services to the population.

It is a logical integration between the different forms of public transport to make the mass transport system more efficient and effective, so as to increase the use of public transport and reduce pollution from exhaust emissions.

Line 1 of the metro tramway links the trade fair district to Bologna's central railway station, the old town centre, Maggiore hospital, and Borgo Panigale district. The line covers a distance of 11.3 km, of which 5.4 km is underground, 5.5 km is on the surface, and 0.4 km is on linking ramps.
A further link is planned from Prati di Caprara-Lazzaretto stretching for some 1.5 km.

Characteristics of the line:
- Capacity: 6,600–7,200 passengers/hour in each direction
- Speed: 23–28 km/h
- Frequency during the rush hour:
  - 1 train every 2 minutes in the central stretch
  - 1 train every 4-6 minutes in the Maggiore hospital–Borgo Panigale stretch

Characteristics of the vehicles:
- Capacity: 220 to 240 passengers
- Length: approx. 33 m
- Average width: 2.3 to 2.65 m

Complementary road system improvements:
- Link between Via Prati di Caprara and Via Triumvirato.
- Improvement of the south-west road link between the Romagnoli roundabout and the Granatieri di Sardegna roundabout.

23_33 – HOW WE LIVE THE CITY: THE DISTRICTS AND NEIGHBOURHOODS

The "How we live the city" map contains an interpretation of the district area. Its aim is to highlight the positive and critical factors that must be understood in order to work positively towards urban quality. Shown on the map are focal points and values, critical issues and problems, requirements and needs, resulting from opinions collected from different points of view. The map in fact is the summary of an

extended discussion carried out with the districts, during which local inhabitants and institutions had various opportunities to understand, verify and add to the content.

- Each district's positive elements should be brought out: places of identity, focal points, streets with lively pedestrian traffic, were identified in a study carried out by Bologna Municipality, then enriched and developed with the suggestions of the local inhabitants.
- The places and elements of value: preliminary studies for the Municipal Structural Plan listed buildings bound by the Cultural Heritage Code, buildings indicated in reports on green spaces, parks and public gardens of particular beauty, tree-lined avenues.
- Problematic elements can limit urban quality although, in some situations, can be turned into opportunities for change and positive transformation. The Municipality and districts have identified the areas and disused buildings that can be recovered, the barriers dividing parts of the city (railways, rivers and heavily trafficked roads), busy areas where heavy traffic interferes with pedestrian use and so on.
- Requirements, projects and specific requests have been outlined by the districts themselves.

24 – BORGO PANIGALE DISTRICT

Borgo Panigale is an outlying district brimming with history and identity. Separated from the centre of the city by the large infrastructures that are its boundaries (motorway, highway, railway, the airport, the Reno river) it is, in itself, complete and self-contained and provides a variety of services that are not always to be found on the outskirts of towns.
The Via Emilia main road has dictated the district's development, and the various neighbourhoods are distributed along it: Borgo Panigale, Birra and Casteldebole, Lavino.
There is also a large high quality agricultural area south of the Via Emilia, large parts of which are owned by the Municipality, and the disused Vocational Training Centre building. Villa Pallavicini, a meeting place, land mark and integration centre for the area, is also here. With its impressive driveway it stands out in the agricultural landscape.
With the exception of the Bacchelli Centre, the focal points and main landmarks are located in the oldest part of Borgo Panigale, although the modern district of Casteldebole has neighbourhood shops, a new railway station and the Reno river nearby, which are all attractive aspects with development potential.

26 – NAVILE DISTRICT

The Navile district, one of the city's largest, is greatly affected by the thorough urban transformation planned.
Various local communities with their own history and identity, as well as a high degree of participation and involvement, are grouped here.
Bolognina, Lame, including Pescarola, and Corticella are the three old districts which make up the Navile district today, together with two more recent centres: Noce and Dozza. These two are not very well connected to the rest of the area and show signs of being isolated, with little access to public services. Pescarola, Noce and the southern part of Corticella lack a central focal point and landmarks.

27 – PORTO DISTRICT

The Porto district is not a particularly large area, but it is very built up. It consists of the Marconi and Saffi areas, and its boundaries are marked by substantial barriers that, especially to the north, condition and limit interaction with other parts of the city. One important topic, or problem, is the railway station and the conditions of degradation and safety connected with it.
The district's central focal point is the former cattle market, which now serves a variety of functions. The central area of the district has a less well-defined identity, although it does include the important resource of the former tobacco factory, which is undergoing a process of urban renewal.

28 – RENO DISTRICT

The Reno district is made up of two well-defined areas: Santa Viola and Barca.
The right bank of the Reno river forms a border to the west and gives the area its identity. Another notable, and also problematic, element of the area is the south-west highway that separates the area, crossing it from north to south (thereby isolating one built up section near the Reno canal) and from east to west dividing the two areas.

Barca is an important central focal point, with good integration between the facilities present (some of the best in the urban environment) and the Via Emilia that, while suffering from the problem of traffic, plays a central role for the Santa Viola area.

29 – SAN DONATO DISTRICT

The San Donato district consists of a substantial area of agricultural land (the prestigious north-eastern agricultural wedge) and a built up, largely residential area (with a high incidence of public housing). It is also home to two important functional structures, the trade fair and CAAB, the central fruit and vegetable wholesale market (Centro Agroalimentare di Bologna).
The district consists of three areas, San Donato, San Donnino and Pilastro. Most of the mobility in the district is centred on Via San Donato which, consequentially, suffers from the large amount of local traffic and traffic passing through.
The failed integration of immigrants, the strong sense of isolation (even abandonment), and the presence of public buildings that are often in a bad state of disrepair, are all aspects that call out for considerable attention. A strategy must be brought in to emphasise the positive elements while dealing with social tensions and difficulties.
The central focal points and landmarks are mostly where lively social activities take place (the centre of the district, the Casalone events centre, various meeting places in the Pilastro area).

30 – SANTO STEFANO DISTRICT

The Santo Stefano district consists of the Murri, Colli and Galvani areas: it covers a very wide, diversified area that extends from the city centre to the outskirts (it grew under the 1889 town plan) and the hill area (that it shares with the Saragozza and Savena districts).
The Murri and Galvani areas are characterised by a lot of upmarket residential building and two extensive green areas that are among the largest in the urban area (Giardini Margherita and Lunetta Gamberini public gardens). Another noteworthy characteristic is the importance to the district of the hilly landscape that is a feature of all its built up area in the south.

31 – SAN VITALE DISTRICT

The San Vitale district consists of various areas, the morphology and urban structure of which differ considerably, and which are separated by infrastructures that make mobility between districts difficult. The areas are: Irnerio, Cirenaica, Mazzini together with the area of Via Scandellara, the recently urbanised areas of Via Larga and Croce del Biacco.
There are marked differences between the centre on the one hand, and the zone to the east of the S. Orsola hospital on the other. The former, while suffering from a lack of green areas and a high density of residential buildings has, like the Cirenaica area, a precise identity. The latter area, though, is gradually losing its identity through the steady modifications being made to the building fabric, caused in part by the barriers that obstruct mobility, and causing what is no doubt one of the district's main problems.

32 – SARAGOZZA DISTRICT

The district consists of the Malpighi area in the centre of the city, and the Costa Saragozza area.
Among the features of the district is its upmarket housing in the first ring of suburbs with its leafy avenues.
The district's hilly landscape and a number of its more evident features are of considerable importance, such as the Basilica of San Luca and its porticoed approach route, which have deep significance for the area.
In Saragozza the hills, thanks to the series of parks (particularly Villa Spada), are closely tied to the residential urban fabric.

33 – SAVENA DISTRICT

The Savena district consists of two areas that are quite different from each other socially and morphologically, Mazzini and San Ruffillo.

The Mazzini area, which has grown around the Via Emilia road, with the "Fossolo" expansion projects, has plenty of green areas and adequate services and facilities. The San Ruffillo area is split in two by the Bologna/Florence railway line, and suffers greatly from southbound traffic along Via Toscana. The area stretches as far as the Savena river and beyond the bridge, which often appears to residents as the boundary with the Municipality of Pianoro, although the border is actually further south.

SUSTAINABILITY

What is HERA doing for a better future?

"We do not inherit the Earth from our Ancestors, we borrow it from our Children" (old African saying)

The first definition in order of time of **sustainable development** was in the Brundtland report of 1987: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

For Hera, each production process for the purpose of supplying a service must **create value** for the client without neglecting the environmental, social and economic impact.
Constantly investing in processes which make use of **renewable resources** and which encourage **recycling** and **disposal with the least possible impact on the environment,** is therefore one of the foundations of the strategic plan of the Hera Group.

Being socially responsible means operating so that the three aspects of sustainable development are taken into consideration:
- **economic responsibility**: working so that the company choices not only increase the value of the industry in the short term, but are able to guarantee business continuity in the long term through application of an advanced model of corporate governance. Basically, the economic dimension concerns the capacity to generate income, profit and work; economic equilibrium in the industrial management of the services supplied by the Hera Group is an essential objective of sustainable development;
- **social responsibility**: promoting ethical behaviour in business and reconciling the legitimate expectations of the various parties involved in respect of common shared values. Social responsibility, intended as the possibility of guaranteeing conditions of wellbeing and opportunities for growth evenly distributed throughout the area, as well as respecting human and labour rights, is directly rooted within the daily activity of a group like Hera which provides essential public services;
- **environmental responsibility**: managing to produce while reducing the direct and indirect environmental impact of its production, in order to defend the natural environment for the benefit of future generations. Basically, the environmental dimension of sustainable development is to be understood as the ability to maintain the level of quality and reproducibility of the natural resources; this means it is necessary to operate with respect to the different environmental features of the area, such as taking water where this will have less impact on the environment (subsidence) and thus allow the water table to re-establish itself.

Each year the Hera group draws up and publishes the Sustainability Balance Sheet, which provides a means for accounting for, monitoring and publicising the responsible management process for sustainable development.

ECONOMIC RESPONSIBILITY. Economic objectives which are responsible in the long term.

A company pursues economic responsibility if it operates in an economically responsible way in the long term. Hera pursues this objective of sustainability and thus intends to operate so that the business choices increase the value of the company and are able to guarantee the future – in other words the stability – of the company itself. The services provided must therefore respect economic principles, as in any other industrial process. But the company's capacity to produce wealth is no less important than its capacity to redistribute it to all the subjects concerned. The Group's firm establishment in the local area means that the whole area served received derived benefits of about 840 million euros in 2004 due to the group's work. For the area of Bologna alone the economic spin-off is estimated to be 30% of the total amount.

SOCIAL RESPONSIBILITY. The social context as objective.

The Hera Group is part of a social context made up of different parties - employees, shareholders, sponsors, institutions and customers - each bringing along their own interests with respect to the company itself.
It is essential for us to aim towards objectives of social responsibility, adopting a behaviour towards these different interlocutors which is responsible in the long term.
As regards **employees,** the group focuses on staff policies, the composition of a workforce structured in an equal way and with respect for equal opportunities, with ongoing training and development opportunities (a total of more than 22,000 hours in 2004 in Hera Bologna alone), and incentivation, and complying with stringent safety and health standards.
Towards **shareholders** and **sponsors,** Hera maintains positive, ongoing relations, offering guarantees and transparent handling of their investment.
Towards **suppliers,** Hera adopts principles of correctness, equity and impartiality in order to obtain goods and services which meet the technical, professional and environmental requirements.
The formation of the Group also required a different approach to the market of reference, which has now been liberalised in some of the sectors of activity.
Attention is thus focussed on the service provided to the **customer** and customer satisfaction, a factor of primary importance for achieving the company's objectives. Communication with customers is designed to be simple, clear and transparent with a view to providing constant and accurate information.
Hera co-operates fully with the institutions of local government and with the regulatory bodies of the services. Participation in research and development projects together with public authorities and the University is of major importance.

ENVIRONMENTAL RESPONSIBILITY. Working to protect the environment.

Natural resources are not infinite. They must be used carefully so that they will also be available for the future. For Hera this means cutting down to the minimum the environmental impacts deriving from the production processes necessary for making water and gas available for everyday use and for handling the waste each of us produces.
Our attention is thus focussed on the emissions into the atmosphere produced by the plants, vehicle noise, and the least possible dispersion of gas and water in the networks. It is also focussed on environmental education, which is fundamental for a future increase in separate waste to reduce the amount of refuse taken to the waste disposal units or incinerated so that water and energy saving become more widely practised.
We are increasingly making use of low pollutant-emission technologies such as co-generation, methane-fuelled vehicles, complex systems and filters for the treatment of fumes from heating plants and solid waste conversion plants.

Refuse collection with methane-fuelled vehicles.

In 2003 Hera sent 11 methane-fuelled waste compaction and collection vehicles into operation in Bologna. With these vehicles, the levels of emission into the atmosphere and noise have been reduced considerably with respect to the diesel-fuelled vehicles they replaced. In 2004 they were used to collect about 18% of the urban waste disposed of in skips by the people of Bologna.

Leakage in the water pipe network.

At the beginning of 2004 the operation to reduce the network pressure of most of the area in the Municipality of Bologna was concluded. The overall data available highlight a decrease – of about 50% – in the total number of leaking pipes in the summer of 2004 with respect to the same period in 2003.

District heating.

More than 30,000 inhabitants of Bologna and Casalecchio benefit from the advantages offered by district heating as regards safety and continuity of the service, while contributing to improving the quality of the air we breathe. It is estimated that for a block of 25 flats, the use of district heating instead of independent gas boilers considerably reduces the installed power (from over 700 to less than 300 kW), as well as methane consumption (a few thousand cubic metres), and leads to a lower emission level into the atmosphere.

Separate collection and waste recovery.

For the whole of 2004, the area served by Hera Bologna s.r.l covered 23 Municipalities in the Province of Bologna.
The Hera group handles waste with particular emphasis given to the environmental impact of its operations. In 2004, treated and recovered waste amounted to more than 60% of the waste handled, a figure 50% higher than the average proportion achieved by waste collection operators on a national scale. The waste disposal unit at Galliera and the incineration plant at Frullo comply with ISO 14001 and ISO 9001 standards, in confirmation of their successful management and low environmental impact. In

addition, the waste disposal unit at Baricella conforms to the standards of EMAS, the European Union's authoritative environmental certification, which will also be applied to the two new plants at Galliera and Frullo.

Protection of the environment and the population.
Technologically re-conditioned and restructured, the waste heat exploitation plant at Frullo is located in a densely populated area affected by numerous sources of atmospheric pollution.
For this reason a monitoring campaign which is a research project in itself has been started up. 5 central units will monitor air quality (presence of fine dusts and polycyclic aromatic hydrocarbons), innovative bio-toxicological tests will be done on collected samples of solid particulate, epidemiological surveys will be done on causes of death, with research also extending to data on reproduction.
12 sampling stations will investigate any traces of heavy metals and microelements in the water-soil-plant system.

PROVINCE OF BOLOGNA

THE SIZE OF THE METROPOLITAN AREA

945,000 – population of the Province of Bologna
1,000,000 - forecast of the population in 2011
60 - municipalities
228 - built-up areas
190 - industrial areas
3,700 km^2 - surface area of the province
210 km^2 - urban area
62 km^2 - area used by industry

METROPOLITAN DEVELOPMENT STRATEGIES

The Province Co-ordinated Territorial Programme – PTCP (Piano Territoriale di Coordinamento Provinciale)
On March 30, 2004 the Provincial Council approved the new PTCP, the Territorial Programme co-ordinated at provincial level. This programme plans the future of the Bologna provincial area, reorganising the structure of new housing and settlements in line with large-scale mobility projects, and aiming to improve social and economic conditions whilst making the most of the environmental resources.
The PTCP opposes dispersive construction throughout the provincial area and promotes urban renewal in Bologna itself. It covers a new integrated public transport network and the reorganisation of private vehicle use. It also promotes the Bologna area on the international scene, concentrating on the aspects attaining standards of excellence, as well as the protection and promotion of nature and the landscape.

Consolidating the city network
The Metropolitan Railway Service (Servizio Ferroviario Metropolitano - SFM) will be the integrated provincial public transport system by 2008. It will have 5 lines, 8 routes and 86 stops, 16 of which will be in the Bologna municipal area.
Urban development policies concerning residential areas will be put into practice mainly near the SFM stops and where all main public and private facilities and services are available. In this way, a metropolitan network will be consolidated, countering the negative effects of the disordered sprawl of settlements over the territory.

Reorganising industry
Roads are among the infrastructures that influence industry in the Bologna provincial area. But also the disorganised growth of settlements over the area also influences the development of industry. To govern these phenomena, the PTCP will examine the 190 industrial areas in the province and select 14, taking into account their position in relation to the motorway's northern loop, as most suitable for sustaining future development.
The strategic decisions of the PTCP will ensure greater efficiency in the plain area where three quarters of the provincial population live and 80% of Bolognese businesses are based.

Promoting nature and the landscape
In the unified strategy of safeguarding natural resources and landscapes, the PTCP ensures compatibility between the policies introduced and intervention promoted by the various bodies that have responsibilities concerning the environment. In particular, the PTCP deals with matters regarding the water cycle, atmospheric, electromagnetic and acoustic pollution, energy consumption, waste collection and disposal as well as the conservation and restoration of historical and natural heritage. The PTCP also defines a wide mesh of "ecological networks" and connections between natural and semi-natural spaces featuring great biodiversity.

THE METROPOLITAN RAILWAY SERVICE (SFM)

The strengthening of the public rail transport network – in particular the Metropolitan Railway Service (SFM) – is one of the pillars on which the territorial development proposed by the new PTCP rests. The SFM consists of 8 rail routes, 5 of which being circular lines passing through Bologna's central station. Underpinning the project is the reorganisation of the metropolitan rail transport system through regular services based on a new system of stations along the existing railway lines. In 2008, when it is fully functioning, the SFM will have 86 stops, 16 of which will be in the Bologna municipal area. Trains will run every quarter of an hour, more frequently during the rush hour and on the more popular lines.
Links between the railway network and towns and villages are considered of vital importance in planning the various stops. At provincial level, the PTCP notes the greater potential for development in the places served by the SFM. At local level the importance given to integration between the SFM and other systems of public and private mobility shifts the attention towards enhancing their role in the territorial and urban context.

8 - routes of the Metropolitan Railway Service (SFM)
350 km - length of the network, 280 km of which is in the provincial area
86 - total stops, 16 of which are in the Bologna municipal area
22 - new stops, 8 of which are in the Bologna municipal area
3.5 km - the average distance between stops
160,000 - potential users a day

THE NORTHERN LOOP

The planned motorway section covers about 40 km, in a semi-circular shape on the northern plain. This area stretches from Lavino di Mezzo, a subdistrict of Anzola Emilia, in the west, and Ponte Rizzoli, a subdistrict of Ozzano Emilia in the east. The current route of the motorway, will be demoted and will reinforce the by-pass, serving the central urban areas and the functional structures located along its route (airport, trade fair, wholesale fruit and vegetable market - CAAB). The new section of motorway will serve the main logistical concentrations directly (Interport, the Centergross wholesale centre) and the inter-municipal industrial areas, which are expected to grow through use by a larger number of goods haulers. In order to reduce the impact – noise, air pollution and changes to the landscape - whilst protecting both the inhabitants and the territory affected by the motorway, the plan includes an environment project. This will involve the development of a wooded belt 120 m wide, planted specifically to be in keeping with land use in the area. There will also be other environmental measures covering a distance of up to a kilometre on each side of the new section of motorway.

40 km - length of the new Northern Loop
21 - large areas served by the motorway – bypass system
10% - less of the network congested than at present
120 m - width of the green belt involved in the environmental project
990 million euro - the overall cost