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*Environmental Impact of  
Urbanization and  
Industrialization in the Greater  
Florence Area 1945-1995,*

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**Environmental Impact of Urbanization and Industrialization  
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This paper presents the results of a research whose objective was to analyze the processes which have characterized the environmental transformations of the Florence-Prato<sup>1</sup> area during the second half of the 20<sup>th</sup> century.

The character of the Florence-Prato conurbation has been prompted by two series of reasons.

The first rests within its environmental character: the area consists of hills and plains and it is characterized by an important water system centred upon the river Arno (which crosses its entire territory) and upon seasonal but relevant tributaries.

Thanks to its peculiarities, during the second half of the 20<sup>th</sup> century this portion of territory has preserved, notwithstanding a high rate of population increase, a significant degree of biodiversity which spans from deciduous woodlands to wetlands.

The second concerns the nature of development occurred in the Florence - Prato plain, which from 1946 to 1971 has changed from a district of fields, villages and small to medium size towns to a conurbation with a strong industrial vocation placed within a highly urbanized rural context. The area, therefore, is highly suitable as the subject of a work aimed at examining the processes by which urbanization and industrialization have profoundly altered the use of resources thus giving rise to an «environmental question».

***“Fast” development and environmental crisis (1946-1971)***

*The urbanization process*

The principal driving force of the environmental change must be seen in the tumultuous process of urbanization caused by massive immigration both from the surrounding country and from the southern regions to the municipalities of this area characterized by significant incipient industrial activities.

Under the pressure of an unprecedented migratory movement, the reconstruction of Florence and of the other urban centres in the area was guided by a “body of

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<sup>1</sup> The Florentine area includes the municipalities of Bagno a Ripoli, Calenzano, Campi Bisenzio, Fiesole, Firenze, Impruneta, Lastra a Signa, Scandicci, Sesto Fiorentino and Signa. Part of the Prato area are the municipalities of Cantagallo, Carmignano, Montemurlo, Poggio a Caiano, Prato, Vaiano and Vernio.

developers” which brought together the interests of builders, professionals of the building industry, landowners, private speculators and investment banks. Since 1946 the building industry was placed at the centre of the local economic set up: in fact, the principal political and economic actors regarded urban development in the plain west of Florence, namely in the municipalities of Sesto Fiorentino and Prato, the main opportunity for growth for the entire economy of Florence.

Urban expansion was thus characterized by a magnification of any forecast concerning settlement expansion, by the lack of public services, by the conversion of environmentally privileged areas to high quality private building development rather than to public green, and by a system of transport infrastructures favouring roads (planned without a clear notion of functional priorities) to the disadvantage of collective forms of transport. The future of urban structure of Florence was fatally established beginning from 1958 when a plan was approved allowing intensive urban development in the plain (with a density of from  $7 \text{ m}^3/\text{m}^2$  up to  $20 \text{ m}^3/\text{m}^2$ ), it allowed development in the hills, leaving, at the same time, the historical centre without adequate conservation measures<sup>2</sup>.

The municipal administration tried to mend the disarray by passing a measure known as the Detti Plan of 1962 – the urban plan promoted by Edoardo Detti, the Councillor for urban development – which established as a priority the conservation on the historical centre, reduced the density of buildings, allowing more space for services and green and redirecting urban expansion in a north westerly direction. Following the crisis, which in 1964 led to the dissolution of the centre-left Council Cabinet, the Detti Plan was, to all intents and purposes, shelved without any opposition from the public opinion of Florence: the numerous amendments to the plan, passed during the 60s and 70s, favoured, despite a modest rate of population growth, a very high rate of building expansion which almost doubled the extent of the city.

A lack of public green contributed to aggravate the problem: in 1972 population density allowed  $3,62 \text{ m}^2$  of space per inhabitant, a very small rate and also unevenly distributed. This situation, characteristic of the city, was mirrored by the other municipalities of the province with a strong industrial vocation: Prato, Campi Bisenzio, Scandicci, Sesto Fiorentino, Calenzano, Lastra a Signa and Signa, which expanded geometrically, thus generating a single conurbation where industrial estates were mixed up with residential estates, the latter mostly inhabited by the workers employed by manufacturing

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<sup>2</sup> For a comprehensive account of the developments in the planning of Florence cf. G. Campos Venuti and O. Reali, “Firenze: l’urbanistica contrattata”, *Cinquant’anni di urbanistica in Italia 1942-1992*, Campos Venuti G. and Oliva F. (eds), Laterza, Roma-Bari, 1993, pp. 313-327.

industries.

During the mid Sixties, the only commune provided with a development plan was Impruneta. Furthermore, although since 1951 authorization to elaborate a comprehensive joint development plan (PIF)<sup>3</sup> had been requested to all municipalities, any attempt to put such planning under way was made ineffective by continual quarreling among the public administrations of the hinterland - they were only interested in privileging new industrial plants and workers housing on their own territory – and of Florence which regarded instead as a priority the development of services and of residential quarters. To be fair, there was a political reason behind this: from 1951 to 1957, in fact, the municipality of Florence had been the only one in the hands of centre-left administrations led by Christian Democrats<sup>4</sup>.

Notwithstanding conservation laws and measures covering land waters and forests, urban development caused major negative consequences for the entire Arno basin – seriously affected, as it was, by the spread of industrial and residential estates<sup>5</sup> – and for the hills. The most blatant cases concerned the Monte Morello area, which was deeply scarred by quarrying<sup>6</sup>, as well as an alluvial plain measuring 270 hectares (an area called «i Renai») lying between the Arno and the Bisenzio, north west of Florence. Until the 1950s this area had been rendered highly fertile by the silt deposited by the regular floods of the Bisenzio and was intensely cultivated. In the course of the 1960s and 70s, a portion of 210 hectares, rich in gravel of high quality under its soil, was subject to unchecked quarrying which caused a high degree of environmental damage. Quarrying – halted in 1978 by an order from the Mayor of Signa – had caused vast depressions, which in reaching the water table originated numerous ponds (today these have turned into valuable wetland populated by herons and other wading birds)

### *The processes of industrialization*

The Florence-Prato area began to acquire the aspect of an important industrial centre,

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<sup>3</sup> In 1951, Firenze, Fiesole, Bagno a Ripoli, Impruneta, Scandicci, Lastra a Signa, Signa, Campi Bisenzio, Sesto Fiorentino, Pontassieve, Prato, Vaglia e Vaiano, were part of the Piano Intercomunale Fiorentino (PIF) In 1956 Montemurlo, Cantagallo e Vernio were also included in the PIF; and in 1971 Poggio a Caiano, Carmignano, Barberino di Mugello, Greve and S. Casciano Val di Pesa, were also added.

<sup>4</sup> With the exception of the commissarial administrations (1957-1961, 1965-1966, 1969-1970) and of the mayorship of socialist Lelio Lagorio (1965), the first citizens of the chief town of Tuscany had always been appointed by the Democrazia Cristiana (Christian Democrats Party).

<sup>5</sup> Cf. Autorità di Bacino del Fiume Arno, *Trasformazioni del territorio e sviluppo dell'edificato lungo il corso dell'Arno e degli affluenti (1954-1993 e 1995)*, Firenze, 1997.

<sup>6</sup> Cf. "Scempio a Monte Morello", *La Nazione*, 2 July 1971.

with a type of settlement not unlike that of the more intensively built up North of Italy at the end of the 19<sup>th</sup> century.

In 1892 an enquiry carried out by the Ministry of agriculture, industry and commerce, recorded 557 factories in the Florentine district, employing 13.194 workers<sup>7</sup>. Industrial plants were chiefly found in the municipal territory of Florence (which hosted 49.55% of all factories and 72.92% of all the industrial workforce), Fiesole and Sesto Fiorentino.

About twenty years later, the industrial census of 1911 listed 3.839 businesses employing 36.110 workers: the chief sectors belonged to the food processing area (1.715 businesses), textiles (722) and metalwork (692). In 1927, the sole manufacturing sector boasted 8.112 firms and 44.758 employees. Florentine manufacturers operated chiefly in the fashion sector (3.016), mechanical (1.427), food (665), minerals (438), textiles (239) and leather (175).

The above figures show how industrialization in the area had acquired, by the first decade of the 1900s, a well defined shape, characterized by a manufacturing vocation and small size plants (in 1927 the average was 6 employees). As regards the Prato area, in 1888, the German «combination» Kossler and Mayer set up in Prato the so called «Fabbricone» (big factory), a vast textiles plant which with its 1000 workers gave a decisive boost to the vocation already existing in the area. In 1927 the textiles sector employed 12.500 workers, 1.500 of which in the «Fabbricone» and over 1.000 at Forti (the largest firm based on local capitals).

After the Second World War, from 1951 onwards, the entire area was subject to an intense process of industrialization causing an extraordinary growth throughout the municipalities of the Florentine belt<sup>8</sup> (meanwhile the municipal territory of Florence itself shifted to services) and the consolidation of small enterprises (the mean rate was of 6.9 employees per local unit in 1951, of 8.3 in 1961 and 7 in 1971).

In the Prato district, war damages suffered by major plants, favoured a fragmentation of industrial activity: damaged looms were in fact bought up by former workers who after repairing them started their own small businesses.

Chronologically this process may be divided into two phases. Between 1951 and 1961,

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<sup>7</sup> Data refer to censuses of 1892, 1911, 1927, 1951, 1961 and 1971 reported in P. Innocenti, *L'industria nell'area fiorentina*, Firenze, Associazione degli industriali di Firenze, 1979 and G. Lorenzoni, *Lo sviluppo industriale di Prato* reported in *Storia di Prato*, vol. III, Prato, Cassa di Risparmi e Depositi, 1980, pp. 483-574.

<sup>8</sup> This increase in percentage of local units in the Florentine area in the period 1951-1971: Calenzano +460.56%, Scandicci +211.38%, C. Bisenzio +176.45%, Sesto F. +121.07%, Signa +94.47%, Impruneta +67.89%, Lastra a Signa +55.23%, Firenze +38.02%, Bagno a Ripoli +36.93%, Fiesole +25.47%.

new plants tended to grow up along the Florence to Prato route, and particularly in the municipal areas of Sesto Fiorentino and Calenzano. During this decade the number of employees rose from 58.815 to 90.235, of which 73.678 (81.65%) employed in manufacturing plants. The number of workers in the Prato textile industry rose from 21.160 to 35.735.

Between 1961 and 1971, the lack of a plan for urban development led industrial expansion to spread haphazardly over the entire territory, and particularly along a second line joining Peretola-Osmannoro-Campi Bisenzio and along a third southern line connecting Scandicci-Signa-Lastra a Signa<sup>9</sup>. Furthermore, in 1964, the demands put forward by the textile industry for its development induced the municipal administration of Prato to the approval of a plan which allowed industry to spread right up to the limits of the alluvial plain (this is the area between the rivers Bisenzio and Arno) as to occupy the entire territory where water was obtainable by tapping the water table. In this way the entire area became one single manufacturing district, characterized by the widespread presence of small to medium local units on the territory<sup>10</sup>.

In the course of this second phase the workforce rose from 90.235 to 101.539: manufacturing industry went on increasing its weight (84.64%), whereas industries connected with agriculture and quarrying were shrinking.

Conversely, the building industry progressively increased its magnitude: between 1951 and 1981 the number of dwellings in the province of Florence rose from 210.980 to 410.299 (+98.26%) and the number of rooms from 971.849 to 1.873.536 (+92.78%).

### *Environmental emergencies*

The repercussions upon the environment of urbanization and industrialization processes have been so considerable as to speak of a true «ecological crisis» from the second half of the 1950s onwards. The most pressing emergency concerned the water cycle. Around the mid 1950s, health inspectors began issuing alarming reports on the state of the

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<sup>9</sup> On the formation of the Florence-Prato metropolitan area cf. L. Bortolotti and G. De Luca, *Come nasce un'area metropolitana. Firenze, Prato, Pistoia: 1848-2000*, Firenze, Alinea, 2000; M. Tinacci Mossello, *L'organizzazione del territorio pratese durante la seconda guerra mondiale e la ricostruzione*, Firenze, 1983.

<sup>10</sup> Manufacturing industries operated chiefly in the following sectors: mechanics and metals (Firenze, Scandicci, Sesto Fiorentino, Calenzano), fashion and clothing (Firenze, Campi Bisenzio, Sesto Fiorentino, Calenzano, Signa, Lastra a Signa), chemistry (Firenze, Calenzano, Sesto Fiorentino, Scandicci), textiles (the whole Prato area, Campi Bisenzio, Calenzano, Signa, Lastra a Signa), wood and furniture (Firenze, Scandicci, Sesto Fiorentino, Bagno a Ripoli, Lastra a Signa), printing–publishing (Firenze, Scandicci, Sesto Fiorentino), non metallic minerals (Sesto Fiorentino, Firenze, Lastra a Signa, Campi Bisenzio, Impruneta), leather (Firenze, Scandicci, Signa, Lastra a Signa), food–tobacco (Firenze, Scandicci, Sesto Fiorentino, Calenzano, Campi Bisenzio, Lastra a Signa, Fiesole).

tributaries of the Arno requested by the Province's Health Official. The alarm concerned, in particular, the discharges of textile industry plants as well as domestic drains, which lacking adequate structures, emptied directly into the streams.

The situation appeared difficult to tackle right from the outset, since industrial plants and craftsmen's laboratories were scattered over a vast area, often inside residential estates. This made the organization of an efficient drainage network very difficult – the drainage network of Florence was still the old one built between the 1860s and 1870s – and yet more difficult was to find a site where to set up a purification plant: Florence did not possess adequate council property where to build such plant. Besides, entrepreneurs – albeit aware of the need to treat liquid discharges – were not prepared to foot the bill. To the aggravation this state of affairs – around the mid 1960s streams in the entire Florence-Prato area were, de facto, biologically dead<sup>11</sup> – contributed the seasonal character of the Arno and of its tributaries. During the Summer months, in fact, the mean volume of the water carried by the river and its tributaries decreased considerably causing serious problems both to production and to plants for purification located along the river upstream (Anconella) and downstream (Mantignano) from Florence.

This caused a twofold conflict concerning the use of water supplies. The first put Prato against the municipalities of the Florentine area – faced, as they were, with a chronic shortage of drinking water due to a considerable population increase – and against Florence whose administrators continually delayed the creation of a consortium for the collective management of water supplies. This delaying tactic was due to the fact that the city was not prepared to finance the entire operation as the smaller towns requested. The second conflict concerned the associations of industrialists (Prato's in particular) and municipal administrations. Significant lowering of the water table prevented, in fact, any possibility to increase pumping of water from wells, which constituted the primary water supply for industry, which – although they were unwilling, due to greater costs<sup>12</sup> – were compelled to resort to surface waters hitherto only utilized by municipal aqueducts for public water supply.

This state of affairs lies at the roots of a pressing request to devolve an ever increasing

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<sup>11</sup> The most polluted tributaries of the Arno were the Bisenzio, very highly polluting since it received the discharges of the textile industries of the Prato area along with those of Calenzano, Sesto Fiorentino, Campi Bisenzio and Signa; the Vingone, which crossed two of the most densely industrial areas of the province (Scandicci and Lastra a Signa); the Ombrone, whose waters contained high concentrations of cleansing agents, sulphur, ammonia, phosphates, sulphates, chlorines e cyanides; the Elsa, contaminated with phosphates, cleansing agents, chlorures, chromium e cyanides.

<sup>12</sup> The cost of 1 m<sup>3</sup> of self produced water by means of wells, amounted to 10 or 20 italian lire, that of 1 m<sup>3</sup> bought from the municipality-owned enterprises varied from 45 to 90 italian lire.

quantity of Arno and Bisenzio water to industry.

Pollution and scarcity of water resources were not the only causes of the «ecological crisis». Since the second half of the 1960s the district of Florence was, in fact, one of the most polluted in so far as air quality was concerned. Industrial plants were voracious energy devourers (about 17% of the regional demand) which derived mostly from oil products (76%) and, on a lesser degree, from methane gas (12%) and electricity (11%). To the high rate of energy consumption, corresponded a significant volume of obnoxious emissions, so much so that by the end of the 70s, the communes of Florence, Calenzano, Campi Bisenzio, Scandicci, Signa and Fiesole were included within the control zone «A» as contemplated by law 615 of 1966. If we add to industrial emissions the fumes of domestic central heatings and vehicle exhausts, it will not be difficult to imagine the quality of the air in the city, which in fact contained high percentages of sulphur dioxide, robust doses of lead and polycyclic aromatic hydrocarbons and traces of minerals (silica, magnesium, copper, zinc, nickel, manganese, calcium, vanadium) and maleodorant substances (in the main phenoles and fat acids, emitted by food processing industries and tanners).

The third emergency concerned the disposal of solid waste. The constant increase in industrial production and high rate of acceleration in private consumption made evident by the end of the 1960s the magnitude of the problem. The main problem concerned Florence which was unable to get rid of its household waste with only the two civic dumping sites of Mantignano (where, incidentally, the second inlet to the aqueduct was located). Beginning from 1966 Florence had to “export” its own refuse (and along with it, its own «ecological crisis») well beyond its borders: first into the territory of San Piero a Sieve (Mugello) and, from 1971, in that of Certaldo (Valdelsa). Over the years, Florentine administrations had to face numerous controversies with those of the above communes, whose citizens did not take well the problems created by the dumps. During the various periods of crisis the Municipal Department for the Collection of Urban refuse (ASNU) had to place the waste in an area on its own premises (within a residential district of the urban area) or in provisional sites. In the early 1970s a case of unauthorized dumping in the Santerno valley (Imola) caused harsh reactions from the administrations of both Ravenna and Bologna. The situation found a provisional solution with the opening of the San Donnino incinerator in 1973.

Finally, we may regard the swift progress of the hydro geological degradation a fourth emergency. The principal agents for the depletion of the soil were the quarrying industry (numerous quarries, often unlicensed, were scattered along the bed of the Arno) and the



building industry. In fact, beginning from 1951, started a progressive invasion of the river bed – in other words, of those areas of adjacent to the river which served as natural expansion basins in case of exceptional floods – which were now destined to industrial use or, to a lesser degree, to housing.

### *The environmental crisis and the citizen*

Between 1946 and the early 1970s, ecological issues enjoyed limited consensus among the people in the street, attracted as they were by the idea of coming out of a condition of mere survival and by the possibility of reaching levels of consumption hitherto enjoyed only by the rich. Consensus towards a swift shift to industrialization was almost total, and any voice which may be raised questioning such economic development was strongly opposed. For this reason, notwithstanding the incipient deterioration of the urban environment, no organized opposition emerged. There were only reports to the Provincial Health Office (the only full-time authority in charge of monitoring the environment, under the National Health Service) regarding blatant episodes of pollution, made by individuals or small groups of citizens annoyed by the fumes or by the discharges issued by industrial plants situated next to their homes. The objects of these complaints were episodes of water and air pollution and also the conditions of life in new housing estates on the margins of the city. In so far as streams were concerned, complaints came from citizens exasperated by the smells issuing from numerous small streams crossing the Florence-Prato area (many of these, directly receiving domestic sewerage and industrial discharges, had become true open air drains) and from fishermen's sports associations alarmed by the shrinking fish population. There were also reports from health inspectors who highlighted the fact that river banks had become dumps where any kind of waste (often including industrial waste) was abandoned.

The presence of factories within densely populated urban districts fuelled numerous protests from those who lived in the vicinity. In the course of inspections requested by Provincial Health Officer, it often happened that the municipal police had to intervene to sedate quarrels between citizens annoyed by industrial fumes and workers who did not welcome health inspections in fear of a possible closure (however temporary) of their workplace.

Finally, numerous complaints concerned the living conditions of residents (often insufficient and unhealthy dwellings) in new suburbs, lacking even the most basic hygienic amenities (water supply, drainage), public green and socializing centres.

## *The coming of awareness (1971-1982)*

### *The first measures*

By the beginning of the 1970s an environmental emergency manifested itself chiefly with a shortage of water supply: the most apparent problem was surface water pollution, highlighted by a whitish froth floating on the Arno, and by the extravagant colours acquired by the water in the streams where the textile plants discharged their liquid waste. In an attempt to halt such pollution, the municipal Council Cabinet of Florence passed a by law forbidding the use of non biodegradable detergents to be enforced from the 20<sup>th</sup> of January 1971. The measure – as Mayor Luciano Bausi explained at a meeting called to illustrate the initiative – had become necessary in an attempt to halt water contamination with anionic surfactant chemicals whose level had reached high above the figures established by the World Health Organization (500 gamma/litre): in fact, in December 1970, tests carried out by the District Hygiene and Prophylaxis Office had shown values ranging between 1.900 and 3.800 gamma/litre<sup>13</sup>. Although its significance was little more than symbolic – since it ignored the sewerage and the liquid discharges dumped into the Arno by industry and containing chemical (chromium cyanide) even more toxic than detergents – the Florentine measure prompted a debate which acquired a national dimension since it caused the passing of a legislation concerning the “biodegradability of synthetic detergents”, presented by the Health Minister, Mr. Mariotti<sup>14</sup>.

In 1972 the Regional Council passed a resolution with which it invited the communes to unify quality standards for “domestic and industrial liquid effluents” along with those suggested by the Regione Toscana<sup>15</sup>.

Two years later the first *Water Pollution Map* was published and a regional law (27<sup>th</sup> May 1974, N. 22) was passed which provided funds for a programme of «works for the search and utilization of water resources and for the disposal and purification of liquid waste». There were measures essentially aimed at solving the shortage of drinkable water – regarded as a priority since the Florence's aqueduct was fed mostly by

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<sup>13</sup> Comune di Firenze, *L'inquinamento delle acque. Atti ufficiali del convegno*, Firenze, 29 January 1971.

<sup>14</sup> *Law 3 March 1971, n. 125*. The measure prohibited the production and trade, import and employment of 80% non biodegradable detergents.

<sup>15</sup> “Proposti valori standard unici per gli effluenti domestici e industriali”, *Toscana Consiglio Regionale*, vol. II, 1972, pp. 53-55.

the Arno – which could not however cope with the crisis of the entire Florentine water system, afflicted as it was by two more problems now turned endemic: a scarcity of water resources and a serious impairment of the water system, which had been brought home by the great flood of November 1966. Notwithstanding the flood, during the first half of the 1970s, the political debate still languished around the proposals put forward by the *Inter ministerial commission for the study of water and soil management*, jointly instituted in 1967 by the Ministries of Public Works and Agriculture. In order to protect Florence from new disastrous floods, the Commission had proposed a system of 23 reservoirs whose role would be to sedate the flood wave before it reached the city centre. In 1970 this project was heavily criticised during a meeting called *A plan for the Arno*, since, according to its critics, it confronted the problem of defense against floods in «a most traditional and narrow minded manner, in the way of a true *war to water*» without contemplating an assessment of future needs for drinking, irrigation and industrial water supplies, or a balanced distribution of available resources<sup>16</sup>.

The situation came to an impasse difficult to overcome. Due first of all to a latent conflict between the regional administration – which, since its creation, appeared prepared to face the «*environmental question*» – and the communes, much cooler with respect to ecological problems. The administrations of the industrialized municipalities of the area were, in fact, staunchly opposed to any measure aimed at restricting the expansion of residential and industrial estates: the haphazard urban and industrial development was tolerated since administrations believed it would alleviate social tensions generated by unemployment and lack of housing.

In the second instance, pressures exercised by industrialists who - notwithstanding their apparent support in principle for projects aimed at controlling the Arno basin – showed firm opposition to any revision of urban planning and were scarcely inclined to foot the bill for environmental cleansing programmes<sup>17</sup>.

Finally, a legislative *Scheme for a pilot project for the control of the Arno basin*, was passed, which envisaged protection of the city of Florence from floods and the monitoring of the Arno river according to a «coordinated programme for the use of water and the control of its quality»<sup>18</sup>.

Five years later, in 1978, the final text for the Pilot Project was presented and this

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<sup>16</sup> “Una nuova politica del suolo e delle acque per lo sviluppo economico-sociale del bacino dell’Arno”, *La Regione*, n. 19-21, November 1970.

<sup>17</sup> “Osservazioni su Le linee del programma regionale di sviluppo economico”, *Toscana Domani*, November-December 1973.

<sup>18</sup> “Approvato lo schema di progetto pilota per la sistemazione del bacino dell’Arno”, *Toscana Consiglio Regionale*, vol. III, 1973, pp. 55-60.

envisaged the «building a series of dual purpose basins (to regulate and contain floods) or for the sole purpose of regulating the water flow», the «realization defences against floods» also aimed at reducing by 90% the pollution caused by civic and industrial liquid waste.

The document highlighted the chronic lack of drinking water resources and stated that the building of new aqueducts was « a matter of utmost urgency» and «prejudicial to any development programme». As to industrial uses of water, it established two priorities: insuring supply for industry – those of the Prato textile industry in particular – and making the process of industrialization compatible with available water resources<sup>19</sup>.

Notwithstanding such disconcerting picture, actions – even those regarded as priorities – remained, however, at the stage of projects: among these were a basin for the prevention of floods, two more reservoirs destined to feed the civic aqueduct, an outlet canal for the Arno, four purification plants for the Florence-Prato area.

In 1980, in observance of measures established by laws N. 319/1976 and N. 650/1979, the Regione Toscana approved the first biennial programme (1980-1982) of the *Regional Plan for the Purification of Waters*. This document too was, in actual facts, little more than a declaration of intent which reiterated intervention lines already included in the *Pilot Project*. Concerning the Florence-Prato area, the document spoke of «intervention schemes at a considerable level of definition and depth» listing a series of actions all in the early stage of hypothesis<sup>20</sup>.

In conclusion, twelve years of discussions had produced a significant amount of documents which never came to fruition in so far as the water system was concerned.

The realization that a serious «environmental question» existed, only led to the approval of a number of sectoral policies aimed at insuring the availability of resources in order not to hamper economic development and to alleviate the negative effects produced by the more urgent problems (water and air quality, chaotic urban development).

We have spoken of water resources, now, as to air quality, the main initiative undertaken by local authorities to reduce air pollution, was the setting up of a consortium for the distribution of methane gas, whose objective was to encourage the shift from oil to gas for central heating systems. By the end of the 1970s, however, the area south of

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<sup>19</sup> Cf. Regione Toscana, *Progetto pilota per la sistemazione del bacino dell'Arno. Rapporto finale. II: Organizzazione del progetto*, Firenze, 1978.

<sup>20</sup> Cf. Regione Toscana, *Piano regionale di risanamento delle acque. Primo programma di intervento 1980-1982*, Firenze, 1980.

Florence still did not have methane gas supply and methane gas pipelines did not reach any of the other communes.

Lastly, choices in matters of building industry, remained based upon a policy of variants and with no strategy. The result was the failure of a concerted strategy involving all communes – Comprehensive communal plans of 1973 and 1978 were nullified by the attitude of municipal administrations which continued to ignore the guidelines contained in the territorial documents – and the doubling of the urban perimeter of Florence which resulted from the development of vast popular residential estates around the extreme periphery of the city, as well as from the sale by allotment of the hills, which were built up with a high concentration of volumes.

### *The early steps of organized environmentalism*

During the second half of the 1970s the environmentalist movement began to make its first steps. The main associations (the most firmly rooted in the Florentine-Prato area were Italia Nostra, WWF and Pro-natura)<sup>21</sup> still privileged the conservationist approach: at the core of their action was, in fact, the conservation of the landscape (woodland and mountains in particular) the protection of fauna, and the awareness of public opinion towards the establishment of protected areas. As to the urban environment, environmentalist organizations focused their attention essentially on water resources (pollution, problems caused by an irrational use of water) and upon some urban planning questions (building abuses, conservation of historical centres).

For these years we cannot yet speak of an environmentalist movement capable of influencing political choices since the various organizations were not capable of mobilizing a significant number of people prepared to take action in “defense of the environment”. The interest of the people at large for environmental issues was still bland since they appeared not so relevant as compared to problems of an economic nature (these were the years of reshaping of the systems of production which involved termination of old industrial activities and sacking of workers) and of a public nature (the 1970s are identified with the age of terrorism).

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<sup>21</sup> Pro-natura was created in 1959 and in 1970 it assumed the name of “Federazione nazionale Pro natura”; Italia nostra, an association for the conservation of historical, artistic and natural heritage was founded in 1955; the Italian office of the WWF was instituted in 1966.

## *Interventions for improvement (1982-2001)*

### *Persisting problems*

The Commune of Florence in a book published in 1987, described environmental problems of the area as «evident» and «of a considerable gravity»<sup>22</sup>.

The most pressing emergency continued to concern water resources. Every year, only in the Commune of Florence water consumption amounted to 70 million m<sup>3</sup> (10 of which pumped out of underground wells), 5-6 of which by resident enterprises. The chief problem remained that of water quality since almost all untreated liquid waste was discharged into surface waters: treatment, in fact, interested less than 10% of all discharges (industrial discharges represented around 4-5% of the whole). In Summer, chiefly in August, Florentine drains carried as much water as the Arno (4m<sup>3</sup>/sec) so much as to induce the inlet of the Mantignano aqueduct, west of the city, to frequent halts. A very worrying situation was that of the water table, which resulted polluted with numerous chemicals (organic chlorines in particular).

The second problem was represented by air quality. The chief responsibility lied on road traffic which every year discharged into the atmosphere as much as 15.000 tonnes of carbon dioxide, 1.500 unburnt hydrocarbons and 3.500 of nitrogen oxides. Domestic central heating, now largely fuelled by methane gas (80%) produced around 300 tonnes of sulphur dioxide. Industrial activities emitted SO<sub>3</sub>, heavy metals (lead, zinc, cadmium, chromium, mercury and copper), acids, phenols, aldehydes, compounds of carbon, sulphur and nitrogen. Air was also affected by acid depositions chiefly made up nitric, sulphuric, chloridric acid, and heavy metals (lead, zinc, cadmium, mercury and copper). The most serious consequences were visible in the historic centre of Florence – where the surface of marble monuments turned into chalk – and in the forest of Vallombrosa. Unsolved remained also urban planning problems.

The document assessed the municipal territory of Florence as having «reached saturation» and the outskirts of the city expanded «beyond measure» with housing. In view of this it hoped into a transformation of the city from *monocentric* into bipolar, in such a way as to «greatly relieve from the historical centre the pressure» of a built up periphery<sup>23</sup>.

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<sup>22</sup> Comune di Firenze, *Firenzecologia*, Il Ventaglio, Roma, 1987, p. 85.

<sup>23</sup> Ibid., pp. 74-84.

There was finally a further problem which concerned urban solid waste. Already in 1978 the production of solid waste (160.000 ton./year) surpassed the capacity of disposal of the incinerator situated in San Donnino (130.000 ton./year), a highly polluting old plant as it was<sup>24</sup>. The closure of this plant, decided by the Provincial Administration in 1986, resurrected the problem of disposal, forcing the municipal administration to send its waste wherever in Italy there was a plant prepared to take it.

The picture presented by the Florence administration enables us to highlight the twofold nature of the «environmental question». On one hand, this was the direct result of the model of development which had seen its driving forces in the building and manufacturing industries, both voracious consumers of resources (soil, water, energy). On the other, however, it largely depended on the rising of living standards and the consequent high acceleration of consumption, so as to speak of a pollution «caused by life styles and consumption habits».

The most prominent fact, but not the only one, is the deterioration of air quality due to traffic. Between the end of the 1960s and the first half of the 1970s, for example, washing machines – which has swiftly supplanted hand washing based on home made soaps and lye – were to blame for the pollution of water with industrial soaps. The «refuse emergency» was a further such example. The problem, in fact, became urgent in the first years of the 1980s when mass distribution, encountering a wide consensus from the consumer, contributed to the establishment of the *use and dispose* theory: the consequence of which was the rapid growth in waste to be disposed of, made by 31% of paper and plastic, the chief materials of a new style in consumption.

#### *The hard way to create an infrastructural network for the environment*

During the first half of the 1980s, environmental policies were characterized by a significant degree of attention on the part of the Regione – the chief actions concerned the cleansing of the Arno<sup>25</sup>, territorial planning<sup>26</sup> and energy<sup>27</sup> – to which trade corporations were against, along with trades unions and municipal administrations,

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<sup>24</sup> The plant produced 300-500 kg per day of chloridric acid ; 2-4 kg of heavy metals (led, zinc, mercury and cadmio) and 20-40 g of organic chlorine derivatives of which 5 g of dioxine. Cf. Comune di Firenze, *Firenzecologia*, cit., p. 93.

<sup>25</sup> “L’inquinamento dell’Arno: il risanamento è un problema di priorità nazionale e regionale. Approvata una mozione per la realizzazione degli obiettivi previsti dalla legge 319/76 e dal piano regionale di risanamento”, *Toscana Consiglio Regionale*, vol. 14, 1984, p. 81.

<sup>26</sup> “Integrata la disciplina urbanistica per una migliore pianificazione territoriale”, *Toscana Consiglio Regionale*, vol. 14, 1984, p. 521.

<sup>27</sup> “L’energia in Toscana: problemi e prospettive”, *Toscana Consiglio Regionale*, vol. 16, 1986, p. 377.

which caused, de facto, a continual postponement of the enforcement of regional provisions. The result of this was that the updating of the civil and industrial cleansing structures, according to the terms established by the «Merli» Law of 1976 was further delayed to the 13 June 1989. The communes only received a minimum portion of the guidelines for urban planning, and the energy deficit (Tuscany used more energy than it produced) remained high (18.7%) and consumption continued to rely on the dual source of oil and methane gas.

This new impasse had been caused by the pressures exercised by small-medium industry in particular and by trade unions upon municipal administrations.

The first demanded significant contributions as a condition for adopting anti pollution technologies. The second, while denouncing «environmental impact» problems, placed the energy deficit and the safeguard of jobs at the core of their worries<sup>28</sup>. In a period in which serious restructuring of businesses was in progress, the administrations of industrialised communes of the Florentine and Prato areas, preferred, once again, postpone the adoption of concrete environmental measures which great numbers of citizens perceived as an obstacle to economic development.

In the early 1990s, when the need to improve the quality of the urban environment became urgent, local administrations approved some measures aimed at insuring an acceptable quality level for air and water, by means of new infrastructures: ten new cleansing plants for the purification and treatment of civil and industrial liquid discharges became available (the capacity of such plants, however, could not suffice for more than 88.000 inhabitants); a new monitoring network checking on air quality was then set up; a «Provincial Plan» for the disposal of household and industrial waste was also set up; in the Prato area a special aqueduct for carrying purified water was built; the construction of a dam at Bilancino<sup>29</sup> (Mugello) went under way to resolve the perennial shortage of water which afflicted the Florence area in Summer (the reservoir, completed in 1995 was put into operation only by 2002).

In this way the most blatant effects of water pollution were dealt with, and the levels of atmospheric pollution were put under control thanks to the introduction of methane gas, led free petrol and special filtered exhausts.

### *Environmentalism and nimbyism*

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<sup>28</sup> Cgil Regionale Toscana, *Seminario sui problemi energetici*, Impruneta, 9-10 September 1986.

<sup>29</sup> The function of the reservoir was to stabilise the flow of the Arno in a way that it granted the functioning of purification plants and the tapping of water for industry.



In the Florence-Prato area the first action of an environmental character which acquired a mass dimension was that against the incinerator opened at San Donnino in 1973. The protest went under way during the course of 1982, following the results of tests which had detected traces of dioxine in the cinders produced by the plant<sup>30</sup>. This news prompted a popular uprising which in November 1984, culminated in the seizure of the office of the Provincial Administration. Popular protests led to the permanent closure of the plant, which occurred in 1986. The end of this activity (which disposed of 44% of urban refuse produced in the Florentine area) made it, de facto, impossible to dispose of refuse in the provincial territory, forcing the administration to ship refuse wherever in Italy there was a dumping area prepared to receive it.

Beginning from the 1990s, notwithstanding the presence of environmental associations deeply rooted in the area, by virtue of a significant membership, urban protest evolved into the formation of numerous “citizens committees” which have gained the leadership in all matters dealing with subjects defined as “ecological”. Some such “committees” have played a propositional role (demanding of the municipal administrations the closure to traffic of some streets in the city, or the openings of new public gardens, cycling lanes, etc.). Others, (more firmly rooted on the ground) have opposed the realisation of infrastructures (such as a new incinerator, the new tramway line, and high speed railway) actions acquiring a character proper of *nimbyism*.

Very often relationships between “committees” and environmental organizations have turned out complicated and quarrelsome: on one hand the first regard the second as actors in the institutional game which tends to suffocate issues cropping up from the grass roots, on the other associations mistrust committees on account of their *nimbyism*. After all, even their aims are distinct: committees aim at improving the quality of life (or at preventing it worsening) within a well defined area of the city (a street or a quarter); associations, instead, confront the environmental question in a more complete (or complex) way with actions which span from the conservation of historical buildings to the fight against pollution, passing through the information of the public on themes such as the conservation of fauna on the brink of extinction or global warming.

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<sup>30</sup> On this event cf. A. Giuntini, *Cinquant'anni puliti puliti. I rifiuti a Firenze dall'Ottocento alla Società Quadrifoglio*, Milano, Angeli, 2006, pp. 160-167.