

Urban sprawl over countryside. The case of the Landscape Protection Plan in Sicily

Landscape protection: a complex issue

The idea of protecting the landscape as a fundamental component of the cultural heritage is deeply rooted in many countries and poses a number of conceptual and operational problems. A never-ending debate that started after the industrial revolution in England, is assuming different tones in each country. In Italy, starting from first modern legislation in 1921, the landscape safeguard apparatus has been rooted in a landscape concept typical of 18th century painters. In addition, the landscape safeguard has been traditionally intertwined with the more robust practice aimed at the protection of isolated cultural heritage items, mainly archaeological sites or monuments.

An updated vision of landscape, initially proposed by geographers and that nowadays includes the environmental component, is emerging only recently in official documents and legislation, even if it has been common among researchers (Naveh, 2000)

The European Landscape Convention, signed in Florence in 2000, deeply innovates the approach toward landscape protection, starting from the definition of the term landscape: “an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors” (Council of Europe, 2000).

The new concept of landscape defined in the Convention is particularly concerned with recent changes in the settlement system. New developments in agriculture, forestry, industrial production as well as transport, infrastructure, tourism and recreation are in many cases accelerating the transformation of landscapes posing new pressures and threats on it. One of the most relevant challenges to landscape is represented by urban sprawl in its various arrangements (Kasanko et al 2006, Lucy and Philips, 1997; Zhang 2001).

The following notes briefly describe a landscape planning experience that has taken into account the challenges posed by sprawl. The proposed case is located in Sicily where sprawl is also becoming widespread, assuming some specific features, although the region is still at the margin of new economic developments.

Urban Sprawl in Italy

Sprawl has been considered typical of Northern and Central Italy where the phenomenon has two main causes. The first one is similar to what happens in many western countries: the diffusion of the *American dream* model of living in single family detached homes (Peiser, 2001). A central role in the diffusion of these settlements has been played by the complex network system of cities that characterizes mainly northern and central regions of the country (Dematteis, 1997). Low density subdivisions are now forming a sort of almost continuous city that stretches from Turin to Trieste in the river *Po* plane.

The second cause is more specific of Italy, even if there are examples in other countries like the Portuguese region of *Medio Ave* (Portas et Al., 1990). This second cause of sprawl is strictly intertwined with the production system of industrial districts (Piccinato, 1993) that has been defined as *Terza Italia* (Third Italy) by the sociologist Bagnasco (1977). Many authors have pointed out both positive role and risks related to this model that has been key in supporting the industrialization of large areas of the country but have also heavily affected landscape and environment. This system has been particularly efficient for strengthening a production system based on export oriented industrial districts, but the counterweight of this successful development model is the relevant load put on environment and landscape. In other words, these two assets have been quite often exchanged with the increased competitiveness of the national industrial system. Traditional farming settlements were converted in an endless landscape of small factories, often built in the backyards of the existing farms. This production model is extending also to limited parts of southern regions

like Campania, Basilicata and Puglia, but in this part of the country it is possible to find out also different reasons for sprawl.

In general, there is a consensus on the idea that sprawl in Italy is contributing to a general impoverishment of a unique heritage that has been the result of a long-lasting process of stratification of precious abilities in transforming the environment soundly. In many cases, the final result is a monotonous sequence of discontinuous settlements similar to the ones typical of the majority of western countries.

The Sicilian case

In spite of their different social and economic model, all Southern Italian regions are marked, more and more, by low density diffused settlements often built according to very elementary land use plans. The same is happening in Sicily where residential subdivisions are spreading both in densely populated coastal areas and in inner agricultural localities, even in those that are decaying economically and demographically.

Looking more in detail, the sprawl phenomenon in Sicily shows some particular features and it can be classified into two main types.

The first one characterizes coastal areas and is quite similar to what is happening everywhere in western countries. It includes residential settlements around main cities and holiday houses, these latter, mainly built along the shores. Residential and holiday houses were normally separated but, in the vicinity of main cities, they are now partially overlapping, since holiday houses built during 1970-80s are now frequently used as year-round dwellings by people that commute for work, study and leisure within a range of approximately 10-20 km.

Along the island shores, the diffusion of this type of settlements, both residential and summer holiday houses, has already formed an almost continuous ribbon (Fig. 1 and 2). Considering the eastern coast, this system is now interrupted only by ports, industrial estates and areas reserved for archaeological or environmental protection.

The second type can be found mainly in the inner areas of the island. It has a completely different nature, considering that these parts of the region are characterized by a lower population density. People are mainly concentrated in agricultural towns and there are limited motives for new developments. In spite of this more aggregated settlement pattern there is a relevant quantity of areas that can be defined as *urbanized countryside*, discontinuous settlements that have thickened the settlement fabric. The result is a considerable increase both in the number and size of the existing farms and sheds that dotted the countryside around existing towns. This type of settlements can be found near towns that have a population approximately between 5.000 and 20.000 inhabitants. It produces a substantial amount of new houses that are used by their inhabitants in a way that stands in between a condition of main home and holiday house.

This is due to several reasons that include:

- a typical social habit of living for long periods in the countryside, from late spring to early autumn, moving to the neighboring town or village during the coldest season or just spending the week-end in the country property barbequing or just enjoying the cooler temperatures outside towns;
- an attitude to part time farming for leisure or as a supplement to main sources of income, an activity that requires an increased level of facilities in the farm;
- the common idea that building or expanding a second home is the safest way of investing savings.

Looking at the relationship with planning regulations, it appears that this type of settlement is partially the result of unwise zoning rules. The first effect of zoning can be defined as the “hidden subdivision phenomenon”. This is due mainly to the traditional features of property lots, very narrow and long parcels that minimize the need of public or common roads. Consequently, by applying the minimum building ratio than national legislation allows in agricultural-zoned land (0.03 cubic meters per sq meter of property) the resulting settlements is a 90 sq meters residential unit per hectare. The landowner can be granted this kind of building consent without the approval of any formal subdivision. In many cases, this mere

quantitative zoning system produces a landscape that is quite similar to the one of typical residential subdivisions. There is no control on the settlement quality since, normally, there are no other rules apart from quantitative ones like setbacks and maximum eight.

In addition, regional legislation allows in agricultural-zoned land the possibility of building industrial sheds, initially intended for “transforming agricultural or natural products”, with a floor/plot ratio of 10%. The original rule has been progressively extended to industrial sheds or commercial activities that have been funded with European, national or regional subsidies. These buildings can be consented in addition to residential ones. The result is a settlement pattern that accumulates new buildings of poor quality without any rules apart from quantitative ones. The further paradox is that very often these low quality developments are heavily subsidized by authorities.

Sprawl in Sicily, hints for a taxonomy

Methodology

This paper presents some results of the analysis that has been conducted for the Landscape Protection Plan in Sicily. This activity implied the construction and the subsequent interpretation of a dataset that has been prepared by using extensively Geographical Information Systems (Gis). Data are referred to two provinces, out of nine: Enna (2,555 sq km), the only inland province in the island, and part of Siracusa (1,793 out of 2108 sq km).

The first problem was to find out a method for mapping and classifying speedily residential settlements in a very large area, considering that the existing datasets like Corine are not detailed enough for the required analysis. The available sources are maps surveyed in 4 different periods (approximately in 1930s, 1970s 1997) and aerial photos taken in 1998-1999. National Censuses data, with the detail of census tracts on a Gis, are available only for 1991 and 2001.

Considering that datasets are not homogeneous for the two provinces studied, this paper only shows a very limited selection of data collected.

Built up residential areas have been classified into the following three groups:

- Compact urban (C);
- Low density settlements (S).
- Scattered or punctual settlements (P)

Each patch belonging to C and S groups has been identified by visual interpretation of aerial photos and maps. The compact urban group mainly corresponds to the continuous urban fabric of the Corine, that is defined as areas where 80%, or more, of the land is covered by buildings. The low density one is the most difficult to detect. It includes clusters of buildings that, on the maps, appear as the result of the landowners' will of developing a proper residential settlement. This process is not always the result of a formal subdivision, since it can assume not clearly defined characteristics. For instance, in this category there are areas that include more than three buildings and roads built specifically to support the new settlement even if it does not have the other features of a formal subdivision.

Since this method excludes the scattered settlements that are composed by isolated buildings in areas still used for farming, these last ones have been simply extracted from vectorial maps, selecting all buildings greater than 100 sq meters (gross floor area), outside the C and S patches. These scattered settlements (P) are different from the ones classified as C and S, since they do not include the lots that surround the buildings. In addition, this last group is quite heterogeneous, since it includes some old abandoned farms or buildings used exclusively for farming proposes. However, it represents a good indicator of the way in which local populations are using the countryside for a set of activities that are a mixture of residential, farming and leisure (fig. 3).

The following step was to evaluate the number of inhabitants that can be related to the previous settlements categories, in order to better understand their nature. This has been done by extracting population from the last available National Census tracts (2001) that intersect the patches of the first group C and attributing the population of the remaining tracts to the other two groups (S and P) that represent sprawl.

This method is more precise than the ones proposed in similar studies (Kasanko et al., 2006) since it overcomes the main problem of Census statistical data: the fact that they are referred to the administrative borders of cities and towns, whereas these borders do not reflect the actual settlement distribution. In order to overcome these limitations, Census tracts have been grouped according to the nature of existing settlements.

The last step was to look at a detailed sample of census tracts, extracted across administrative borders, in order to better understand the phenomenon and also to verify the correspondence between census data and the ones obtained from vectorial maps.

Inner areas

From the study conducted (Tab 1, 2 and 3) in the province of Enna the following elements emerge.

With a population of 177,200 inhabitants in 2001 now (2007) reduced to 173,676 it is the less populated province of the region, with an average density of 69 inhabitants/sq km, three times less than the regional average and 4 times less than the densest one (Catania). There are 20 municipalities with a population ranging from 900 to 28,181 and only five towns that have more than ten thousands.

However, the analysis of the built up areas appears in contrast with demographic data. In spite of the limited amount of people living in the province the analysis shows a substantial amount of areas with low density residential buildings that belongs to both the categories defined above (S and P). The comparison with demographic data shows that there is overwhelming unbalance between low density built up areas and the corresponding inhabitants.

Considering only the low density settlements that show a certain level of aggregation (S) these areas sums 1,662 hectares, about 45 % of the total built up zones excluding isolated buildings (P) that are more than 16,000. Summing up all buildings larger than 100 sq meters, they are more than 22.000 with a total area of more than 4.3 million sq meters (Tab 2). In contrast with this massive amount of buildings, the population living outside the compact urban areas in the sprawl (both in C and P) is approximately of 20,000 inhabitants, 12.7 % of the total, less than one person per each building.

Looking in detail at the distribution of the phenomenon, it emerges that the population is quite concentrated, since more than 70% is living in 5 municipalities and also the low density settlements are unevenly distributed. More the 86% of the sprawl patches (S) are concentrated in 7 municipalities that includes the three largest towns (Enna, the provincial capital, Piazza Armerina and Nicosia) but also smaller ones that are both in the surrounding of greater centers, like Calascibetta, or that are completely isolated (Tab. 3).

A closer look

A general overlook shows also that a sprawl cluster of the *urbanized countryside* type is forming near three centers (Leonforte, Nissoria and Agira) along the road that connects them (Fig. 3). This area has been chosen as test sample in order to verify the hypotheses assumed and to look more in details to the nature of this phenomena, by using data from the national Census that surveys both inhabitants and dwellings.

In the chosen area, 15 census tracts have been extracted outside the urban compact settlements, with a total area of 64.88 sq km. Three census tracts out of 15 are without resident population. These are located near the town's borders and for these tracts there are no data available also for buildings. In the remaining 12 tracts, data are confirming the phenomenon as described before (Tab. 5). In spite of the fact that only 1,214 people are living in this area the census records 1,613 dwellings in 1,495 buildings. More than 73 % of the dwellings are empty, and 92% of the buildings are single family homes. More than 67% of the buildings are built after 1972. The comparison with the number of buildings extracted from the vectorial maps with a gross floor area greater than 100 sq meters shows a difference of less than 8%. This confirms that the adopted method is quite reliable. Differences can be explained considering that buildings extracted from the map include abandoned ones or sheds mistakenly classified as residential buildings.

Considering the employment conditions of the residents, people working in agriculture are only 10% of the total, confirming that farming is not the main activity of people living in the area. The majority of people living in the area work in different sectors but in any case dwellings permanently inhabited are only about 26%.

Sprawl in the province Siracusa

The analysis conducted in the province of Siracusa show similarities in the size of the phenomenon but also a more complex scenario (Tab 1, 2 and 4). This area is not as homogeneous as the inner one, since it includes a mountainous part but also a coastal one. In addition, the coastal area is considered one of the best tourist destinations in Sicily and there has been a considerable pressure for holiday houses and other tourist developments from the early 1980s (Fig. 4). The total population of the province in 2001 was 396,167 (341,591 in the study area) with an average density of 187.9 inhabitants/sq km, mainly concentrated along the coast. Out of 21 communes the four ones that have less than 3,000 inhabitants are all in the inner mountainous section of the province. The largest city is 123,000 inhabitants and a sort of conurbation is forming around it.

The analysis of built up areas shows a considerable amount of sprawl, 7,150 hectares, 68,7 % of total excluding the scattered buildings (P) which are about 10,900 with a total gross floor area of 2,4 million sq km (Tab. 2). Also in this case, the population that lives outside the compact built up areas is very limited, only 9.7 % less than in Enna province. Data confirm that development of low density settlements is not related to the need of new dwellings. It produces a considerable amount of built up areas that in many cases are detrimental of the landscape quality but which are non used as main home.

Sprawl (Tab. 4) is mainly concentrated along coastal areas (Augusta, Noto, Avola and Pachino) and around the main city Siracusa and in the surrounding communes (Melilli and Priolo). Inner areas are similar to the ones of the province of Enna with the phenomenon of “urbanized countryside” concentrated in few municipalities (Palazzolo Acreide and Sortino).

The landscape Protection Plan in Sicily

Planning Procedure

Sicily, the largest Italian region (25,707 sq km), enjoys a relevant cultural and environmental heritage, known worldwide. In Sicily, there are 4 *Unesco World Heritage List Designations*, two of them are multi-site ones. Archaeological sites have been studied and protected since the end of 18th century but, in spite of this long lasting tradition, new problems are emerging related to new threats caused by the relative economic development of the region in the last 30 years. In addition, landscape protection legislation suffers from an unclear distinction of competences between the national and regional level.

From 1985, the definition of a Landscape Protection Plan (LPP) is a compulsory duty of the Regional Department for Cultural and Environmental Heritage and Public Education (*Assessorato Regionale dei Beni Culturali ed Ambientali e della Pubblica Istruzione*) that is in charge of the protection of cultural and landscape heritage. In spite of this obligation the definition of the plan started at the beginning of 1990s and it has not been completed yet. Its main features are the following:

- it covers the entire region;
- after its final approval it will be a binding plan for any land use plan (local master plans, provincial, industrial etc.) and for any other planning tool, including the ones of natural parks and reserves.

The first step of the planning procedure was the approval, in 1999, of the Guidelines for the Regional Landscape Protection Plan. This first document, prepared by the above mentioned Regional Department defines general criteria for landscape evaluation and protection, broad-spectrum strategies aimed at “active safeguard” and enhancement of natural and cultural heritage. These criteria are referred both to the ecological safeguard and to the enhancement of landscape specificities and identity.

The Guidelines also include preliminary lists of natural and cultural heritage items (to be refined) and identify 18 landscape sub-regions. In spite of the fact that the Guidelines were prepared before the approval of European Landscape Convention, in 2000, its principles are fully incorporated in it. One aspect that is specific of these Guidelines is the inclusion of historic centers as elements that have to be evaluated in the definition of landscape values. These elements are not formally included in the national legislation even if they represent a key landscape feature, especially in the mountainous localities.

The second step of the planning procedure is the preparation of proper landscape protection plans for each sub-region. The institutions in charge of these plans are the Provincial Branches of the Regional Department (*Soprintendenze*). During this second step two of these provincial agencies (the ones of Siracusa and Enna) appointed the University of Catania as consultant for the sub-regions that are included in their jurisdictions. Within this experience the methodology here briefly described has been defined.

The objectives of the second step were the following:

- enhance the analyses in order to better define the landscape and cultural heritage items lists;
- synthesize the outcomes of the analysis with reference to: landscape values, risks of transformation and landscape vulnerability;
- define general and detailed rules and restrictions according to national legislation for the entire extension of each sub regions.

The analyses include a refinement of existing datasets divided in a-biotic, biotic and human components performed by different experts, mainly from University Departments, that include agronomists, botanists, archeologists, geologists, town and regional planners and zoologists.

Landscape Value, Risks and vulnerability

The landscape value assessment was the starting point of the syntheses. This was the most difficult task considering the conceptual complexity of the issue. The proposed solution is the simplest possible one, considering not only the limited amount of resources but also the main objective of the planning process. The request of the *Soprintendenze* was a planning tool that could be easily implemented and not only the production of a theoretical study. The assessment of values risks and vulnerability has produced grid Gis maps, with a mesh of 40 meter square cells, that have been used in the definition of rules and restrictions.

Accordingly, the landscape value assessment has been performed considering two elements: the areas already listed as landscape heritage items, according to legislation in use, and the value judgment of the experts that worked on the refinement of landscape heritage items lists.

The first group of elements is the result of prior studies that produced the issuing of the official listing. They have been classified according to the institutional level of recognition of the value. According to this principle, areas that are in *Unesco World Heritage List* or that have been classified according to *European Union Environment Directives* score the maximum value whereas the ones identified in local master plans the lowest.

The second group of value judgments was based on the separate evaluation of the experts. All the experts were asked to give a value judgment, on the basis of general criteria defined in the guidelines, within a range of values between 1 and 5. Considering the heterogeneity of all these value judgments, the synthesis was made just by summing up the values of each judgment. The result was drawn in a map that classify the sum of the values by using a continuous color ramp. The result was a representation that gives only a qualitative information about the intensity of value, since they are not comparable (fig. n. 5). However, the final map gives a clear indication of the convergence on a precise area of different value judgments. Even if the method can be not considered rigorous it was extremely helpful for speeding up the planning process, especially for the definition of rules and restrictions (Fig. 6).

The Landscape Risk evaluation was the following step. The considered risks were the erosion of soil and the transformation of natural and agricultural landscape into developed areas.

The following elements were considered:

- density (percentage of land covered by buildings in the S patches) and average terrain slope for each existing sprawl patches;
- proximity to roads and existing urbanized areas;
- zoning related risk of the area (all areas zoned as developable but not already built up have been considered).

The first element was worked out in order to roughly identify sprawl patches which can be transformed with more relevant effects on landscape. If the density is low the patch can become denser, increasing its negative effect if proper developing rules are not defined. By the same token, if the patch is located in a steep area it tends to be more visible and requires greater care for development.

Vulnerability, is the result of the overlay of value and risk. The analysis was performed selecting the most relevant classes resulting by crossing the classes of the previous syntheses (value and risk). High vulnerable patches are the one with higher value and higher risk which have to be considered more carefully in the phase of definition of rules and restrictions.

These syntheses were intended as tools for orienting the subsequent choice of areas to be restricted in the normative proposal. They have never been considered as automatic devices that produce prescriptive maps. The underlying concept is that landscape is too complex to be planned without a wise evaluation made directly by an expert. All available geo-referenced information represents an auxiliary device helpful for speeding up the process and for managing the overwhelming amount of element that shape the landscape but, in the end, the planner is the player that has to take the final responsibility of the prescriptive rules.

The planning proposal

The Italian legislation on landscape protection is based on the principle of declaration of an area as landscape heritage component.

According to national legislation the LPP has to distinguish four categories for operating the protection of landscape. However, the law does not give precise definition for these categories. Accordingly, the first step was to work out definitions that can be enforceable.

The following ones have been proposed:

- **Safeguard:** conservation of the existing highly valuable conditions as result of interactions between natural and human components, aimed also at including the sustainable usage of the resources.
- **Rehabilitation:** reconstruction of lost or heavily compromised environmental or landscape values.
- **Upgrading:** achievement of better environmental and landscape values to be accomplished also by proposing new landscape values.
- **Valorisation:** actions aimed at favouring the fruition of the landscape respecting the existing values. These include linear elements like greenways or paths for hiking, horse riding and punctual ones, like scenic points, or existing buildings that can be converted into facilities (visitor centres or accommodations for tourists).

Rehabilitation is the category that includes areas of high value that have been heavily damaged by inadequate development and require an in depth action of landscape reconstruction. Inevitably, these are limited in quantity, due to the high cost of these actions. To apply this category even to a minor part of the sprawl settlements described above would be not feasible.

The categories of safeguard and upgrading are the most relevant ones as far as sprawl control is concerned.

Safeguard

These areas are the ones with the highest level of value which are still unspoiled or only partially spoiled.

Within safeguard areas three levels of protection are devised:

- *Level 1* These areas can be zoned in local master plans for uses different from agricultural ones but any transformation has to be submitted to the Landscape Protection Agency that can grant the consent, subject to the described conditions. In agricultural areas rural buildings are allowed including sheds for transforming agricultural products.
- *Level 2*. In new master plans these areas can be zoned only for parks and agriculture. In agricultural areas rural buildings are allowed only if they are designed respecting the features of traditional buildings but industrial sheds for transforming agricultural products are not permitted. Detailed plans can be defined aimed at enhancing the value of the landscape or at reducing the impact of existing detrimental infrastructures.
- *Level 3*. These are the most valuable part where development is not allowed. Farming, if permitted, has to be aimed at maintaining and improving traditional cultivation methods. It is possible only to maintain or upgrade existing buildings for uses that are related to agriculture or valorization.

The level 1 areas are mainly the ones that have been already declared as landscape heritage components, according to previous listing, even if their value is not very high. Today, these areas are subject to the existing level of control that consists in the obligation of obtaining a landscape consent (*Autorizzazione Paesaggistica*) issued by the *Soprintendenza*. So far, these consents gave only prescription about minor aspects such as the shape of the roof or the color and nature of the outdoor plaster decided on ad hoc basis. The proposed rules are imposing a set of defined restrictions including proper planning ones like a minimum lot size requirement and a setback from property borders of 30 meters, in order to avoid the hidden subdivision phenomenon described above.

Upgrading

This category is divided in several subcategories, according to the nature of the settlements. It has been applied mainly to areas that had certain landscape values and have been already developed modifying the original features. They include many areas classified in the analytical phase as (S), especially the ones that are mainly within or in the vicinity of areas subjected to safeguard. These areas have been classified according to their features distinguishing between the urbanized countryside, summer holiday subdivisions along the coast and residential low density developments in the vicinity of main cities.

Rules devised for these areas vary according to the nature of the settlements but the general idea is that, in these areas, the existing landscape changes have to be taken into account in order to define rules for future development. The plan identifies only general rules and requires a detailed plan to be approved by the *Soprintendenza*.

One of the main issues is the destiny of the vast holiday houses subdivisions along the coast (fig. 4). For these existing developments the plan devises a scheme that includes the possibility of complete redevelopment, to be performed according to a comprehensive plan. Redevelopment has been considered a feasible option taking into account that poor quality of the existing building stock in these areas. In order to increase the possibility of demolishing and rebuilding these settlements the plan include the option of increasing the existing floor area. The new development is intended as a way to enhance the present condition, introducing elements like larger setbacks from the sea shore, pedestrian and bike access to the beach and landscaped areas. More detailed rules for these redevelopments should be defined later within Municipal Land Use Master Plans (*Piani Regolatori Generali*). These plans have to include implementation elements that should incorporate incentives like development right transfers.

Conclusion

Sprawl control is considered an burning issue in many planning systems. Several attempts have been made to find a way to control this phenomenon but results are controversial (Peiser, 2001; Bourne, 1996). In the proposed case study this phenomenon is diffusing in

very fragile landscapes that risk to be completely altered without any rule. Moreover, it shows specific features that make even more difficult to find out feasible ways of regulating it.

The proposed regulations are applying principles that, in some cases, are similar to the one of *transept based development* proposed by new urbanism adepts (Duany et al. n.d). The basic idea is to find the proper balance between rural and urban elements, concentrating urban development in the surrounding of already urbanized areas and maintaining a rural character to areas that still preserve this aspect.

The proposed plan focuses mainly on existing sprawl areas defining general rules for upgrading them. The underlying concept is to try to avoid further consumption of valuable agricultural or natural land, concentrating future developments on already transformed areas. The idea of beginning a new season where landscape should be planned not only according to quantitative zoning rules represents a considerable challenge for the future of heritage safeguard in Sicily.

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	Enna		Siracusa*	
Compact urban (C)	2,078.9	55.6%	3,262.1	31.9%
Low Density (S)	1,662.1	44.4%	6,915,3	68.7%
Total	3,741.0		10,162,2	
Areas in hectares				
* Study area in Siracusa does not cover the entire province				

Tab.1 Total built up areas (C and S) in Siracusa and Enna

	Enna				Siracusa *			
	# of buildings	Total gross floor area	Average gross floor area	Prospective inhabitants	# of buildings	Total gross floor area	Average gross floor area	Prospective inhabitants
Scattered (P)								
Buildings larger than 100 sq meters outside S patches	16,239	3,417,150	210	113,905	10,909	2,400,006	220	80,000
Buildings larger than 100 sq meters inside S patches	6,170	959,883	155.57	31,996	36,798	5,185,663	141	172,855
Total	22,409	4,377,033		145,901	47,707	7,585,669		252,855
Area in sq meters. Prospective inhabitants are calculated considering a floor area of 30 sq meters each								
* Study area in Siracusa does not cover the entire province								

Tab.2 - Scattered buildings (P) in Siracusa and Enna

Municipality name	Total inhabitants	Inhabitants in compact C	Inhabitants outside C (S and P)	Inhabitants outside C as % of Tot	Area Compact C patches	Area Low density S patches	Area of S as % of Tot. *
Agira	8,348	7,172	1,176	16.4%	88.9	44.7	33.5%
Aidone	6,057	5,900	157	2.7%	77.0	0.0	0.0%
Assoro	5,393	4,934	459	9.3%	66.8	41.9	38.5%
Barrafranca	13,115	12,309	806	6.5%	144.5	108.1	42.8%
Calascibetta	4,829	3,823	1,006	26.3%	41.9	214.5	83.6%
Catenanuova	4,876	4,514	362	8.0%	71.1	36.4	33.9%
Centuripe	5,903	5,706	197	3.5%	50.7	2.8	5.2%
Cerami	2,462	2,397	65	2.7%	36.3	2.7	6.9%
Enna	28,983	24,499	4,484	18.3%	507.0	320.0	38.7%
Gagliano castelferrato	3,772	2,788	984	35.3%	38.9	25.1	39.2%
Leonforte	14,145	14,060	85	0.6%	123.2	6.6	5.1%
Nicosia	14,812	11,750	3,062	26.1%	121.0	171.3	58.6%
Nissoria	3,014	2,527	487	19.3%	38.5	116.1	75.1%
Piazza armerina	21,038	16,399	4,639	28.3%	230.8	349.3	60.2%
Pietraperzia	7,340	7,054	286	4.1%	104.6	154.5	59.6%
Regalbuto	7,744	7,169	575	8.0%	73.7	13.8	15.8%
Sperlinga	963	880	83	9.4%	13.8	0.0	0.0%
Troina	10,061	9,486	575	6.1%	116.7	40.5	25.7%
Valguarnera caropepe	8,649	8,448	201	2.4%	64.2	8.3	11.5%
Villarosa	5,696	5,348	348	6.5%	69.3	5.6	7.5%
Total	177,200	157,163	20,037	12.7%	2078.9	1662.1	44.4%
* Scattered settlements P are not included							

Tab. 3 - Inhabitants and Built up areas per municipality in Enna

Municipality name	Total inhabitants (2001 census)	Inhabitants in compact C	Inhabitants outside C (S and P) compact C	Inhabitants outside C as % of Tot	Area Compact C patches	Area Low density S patches	Area of S as % of Tot. **
Augusta	33,820	25,557	8,263	32.3%	185.0	1,405.3	88.4%
Avola	31,289	28,446	2,843	10.0%	271.6	405.9	0.0%
Buccheri	2,320	1,976	344	17.4%	27.8	47.5	63.1%
Buscemi	1,200	1,163	37	3.2%	26.8	7.4	21.6%
Canicattini Bagni	7,519	7,203	316	4.4%	85.1	118.5	58.2%
Carlentini *							
Cassaro	909	887	22	2.5%	17.6	0	0.0%
Ferla	2,760	2,647	113	4.3%	34.4	8.8	20.3%
Floridia	20,675	20,300	375	1.8%	225.3	56.3	20.0%
Francofonte *							
Lentini *							
Melilli	12,216	8,988	3,228	35.9%	112.0	692.0	86.1%
Noto	23,065	19,566	3,499	17.9%	220.4	933.2	80.9%
Pachino	21,324	19,302	2,022	10.5%	193.8	322.5	62.5%
Palazzolo Acreide	9,109	8,504	605	7.1%	119.8	176.5	59.6%
Portopalo di Capo Passero	20,152	18,680	1,472	7.9%	35.1	153.8	81.4%
Priolo Gargallo	23,657	114,812	8,845	7.7%	120.1	244.3	0.0%
Rosolini	7,199	6,843	356	5.2%	256.0	148.5	36.7%
Siracusa	9,092	8,809	283	3.2%	1,148.5	1,859.4	61.8%
Solarino	3,500	3,305	195	5.9%	77.5	132.1	63.0%
Sortino	11,785	11,568	217	1.9%	90.0	203.3	69.3%
Total	341,591	308,556	33,035		3,246.9	6,915.3	
* Not included in the study area (only 19 municipalities out 21)							
** Scattered settlements P are not included							

Tab. 4 - Inhabitants and Built up areas per municipality in Siracusa

Inhabitants		
Total	1214	
Employed		
Industrial sectors	79	21%
agriculture	39	10%
Other sectors	264	69%
Total Employed	382	100%
Dwellings an Buildings		
Total dwellings	1,613	
Empty Dwellings	1,189	74%
Inhabited dwellings	424	26.3%
Total Buildings	1,495	
Single dwelling buildings	1,380	92%
One floor buildings	835	56%
Built before 1971	488	33%
Built in 1971 - 2001	1,007	67%
Sample area across the towns of Leonforte, Nissoria and Assoro		

Tab. 5 - Sprawl sample Area in Enna. Detailed Data from 12 Tracts (Census 2001)

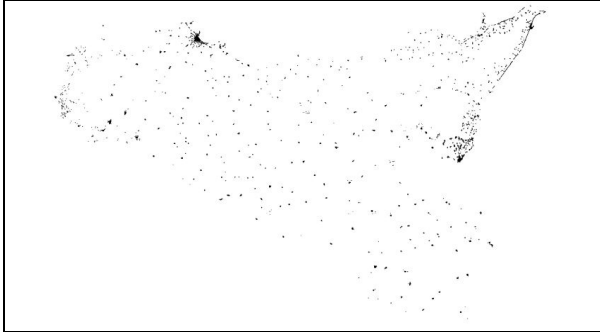


Fig. n.1 Sicily: the image that appears including only built up areas at the end of 19th century.

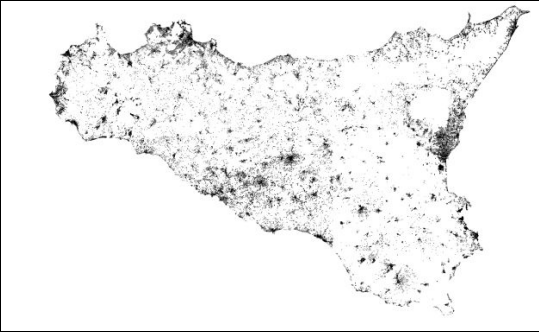


Fig. n.2 The same of fig n. 1 at the end of 20th century (1994).



Fig. 3. Sprawl in inner areas (Yellow contour: (S) patches; Red dots: (P) settlements).



Fig. 4. Holiday houses along south-eastern coast.

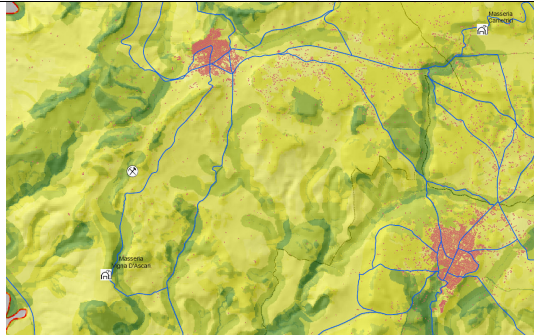


Fig.5. Landscape Protection Plan. Landscape Value.

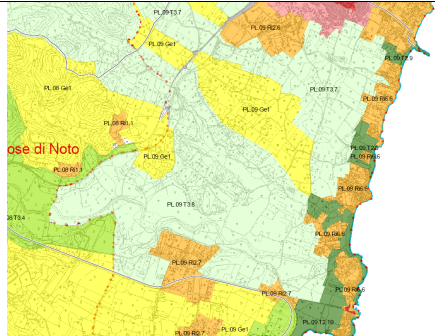


Fig. 6. Landscape Protection Plan. Rules a Restrictions (Green: safeguard Orange: upgrading).