G. Federico et al., Int. J. Sus. Dev. Plann. Vol. 1, No. 3 (2006) 287–302

AN INTEGRATED AND SHARED APPROACH TO SEA OF THE REGIONAL TOWN MASTER PLAN OF SICILY

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ABSTRACT

The work addresses one of the most important problems in contemporary environmental land planning. Already existing procedures, in fact, must now conform to the new requirements imposed by the recent national and international regulations and standards that call for a more conscious approach to the use of natural resources. Strategic Environmental Assessment (SEA), for example, takes into account, the different effects of a plan in various fields such as the environment, the economy and the development. This obviously calls for global analysis tools that could help administrators, stakeholders and technicians in the decision-making process of such complex systems. SEA of the Town Master Plan of the Sicilian region is here utilized for demonstrating the effectiveness of a continuously concerted action with the stakeholders in the decision-making processes involving wide and complex territories. For this purpose, the Dashboard of Sustainability is applied to the Sicilian Town Master Plan by comparing the performances of nine Sicilian provinces in terms of different policy scenarios, through a consideration of the effects on the environment, mobility, society and town planning issues. This consultation procedure results in a very effective tool for politically ranking, within a shared frame, different alternatives referring to land developing interventions.

Keywords: Dashboard of Sustainability, environmental analysis, indicators, land development, plans and programs, Sicilian Town Master Plan, Strategic Environmental Assessment, risk analysis.

1 INTRODUCTION

Recently, a new approach to the drafting of town planning projects has been widely used. In fact, many issues that until a few years ago were not taken into account during the planning stage, or which were considered only during the last phase of the planning process as a means of mitigating possible critical points, have now been included in the main body of project planning. Essentially, this new approach attempts to include not only urban issues, but also environmental, social and cultural ones. In turn, this requires the application of integrated analysis methods, which, among other things, should allow a useful comparison between the various options.

In this context, Strategic Environmental Assessment (SEA) of plans and programs has been introduced by the European Community [1] as an effective tool for guiding administrators and stakeholders towards the most sustainable choices when making land development decisions. One of the most relevant features of SEA is unquestionably represented by the strong call for a shared action between stakeholders, institutions and the different subjects involved in the design, realization, management and fruition of a given plan.

In this work, the experience of the application of SEA to the Land Town Master Plan of the Sicilian Region (PTUR) is discussed, with particular attention to the role of the different subjects involved in it. These contributions have been suitably emphasized by means of the institution of a permanent 'partner table,' where the stakeholders' needs are compared with the positions of administrators and with the solutions proposed by technicians. This methodological approach, apart from creating an effective shared working frame, allows a comparison of the environmental, economic and social performances of the nine Sicilian provinces, which is one of the results of the present application.

ISSN: 1743-7601 (paper format), ISSN: 1743-761X (online), http://journals.witpress.com
DOI: 10.2495/SDP-V1-N3-287-302

2 THE APPRAISAL OF PLANS

In recent years, environmental impact assessment (EIA) has not only redefined its framework and its techniques, but has also introduced a series of new, related instruments such as risk analysis, overall impact assessment, public health assessment, environmental management system and so on. These features have been introduced in order to better identify and evaluate the impact of development plans on the environment. They also have the aim of establishing mitigation measures for developing proposals.

However, EIA focuses its attention on a specific project at a specific site, thus limiting its effectiveness when comparing potential actions, or when trying to assess whether or not a project will have negative impacts on the local environment.

As Arce [2] noted, 'environmental assessment should be extended to early stages of the policy-making and planning process, when the strategic decisions have not yet been made'. But strategic decisions regarding territorial planning should properly involve different kinds of effects, including economic, social, cultural, biophysical and environmental issues. Therefore, EIA does show some limits in the context of assessing environmental policies, plans and programs.

It is in this perspective that SEA provides a useful answer to these questions: the recent EC Directive 2001/42/EC [1] regarding the assessment of certain plans and programs, also called the 'SEA Directive', has introduced significant challenges to environmental administrators.

Presently, SEA is gaining widespread recognition as a decision-making support tool for the process of comparing policies, plans and programs aimed at a sustainable development [3–6].

In recent years, the amount of literature about SEA has increased considerably. Noble [7], Partidário [8] and Therivel [9] have defined SEA principles; Noble and Storey [10], Brown and Therivel [11], Verheem and Tonk, [12] have proposed methodologies of analysis; while Fischer [13], IAIA [14], Nitz and Brown [15] have defined some useful performance criteria. However, as Bonde and Cherp [16] suggest, considerable improvements in the quality of SEA decisions are still required [17, 18].

The analytical strategic environmental assessment (ANSEA) approach can serve as a tool for turning the directive and its requirements into practical assessment processes. ANSEA may be considered as a kind of bridge between environmental assessment and the decision-making process [19].

But the discussion concerning the methods, the approaches and the geographical scale of the SEA (and EIA) application is far to be considered as concluded: the criticism against rationality in the decision-making process, for example, represents a crucial point of this debate [20]. Anyway, the confrontation between the quantitative and qualitative methods that always cross this debate has been recently put in a different perspective [21] by arguing that quantitative approaches could provide more effective results in the case of a comparison between different alternatives, while the identification of critical aspects or mitigation strategies would require more qualitative methods.

However, the application of SEA cannot be pursued without a thorough knowledge of land features, which, in turn, are based both on the organization of geo-referred data into suitable archives and on the use of proper software tools such as geographical information systems (GIS).

This knowledge has an importance that overcomes the mere availability of data. It has been in fact noted [22] that the environmental impact could depend on the spatial distribution of the involved environment. Moreover, it has been recently pointed out [23] that the infrastructure of the spatial data has a great influence on the effectiveness of EIA and SEA analyses. More specifically, the extent of the geographical scale utilized for the analysis could affect the results of a given environmental impact assessment. In this regard, it has been observed that there is a need for new EIA guidelines on scale [24].

In addition it must be underlined that, despite some proposal for a structured approach to SEA [10], there is a wide variety of methods and approaches that seem to depend on the specific application under analysis [25, 26].

From this intense debate, which is still in progress, some common considerations seem to arise among the various approaches and the different cultural extractions of the analysts, that is:

- the strategic level decision, that is the policy intervention, must be supported and guided by expert review panels and by the opinion of the involved stakeholders;
- the strategic evaluation of land plans should be characterized by an integrated (holistic) approach, in order to provide synthetic judgments about the effectiveness of the proposed actions;
- qualitative and quantitative analyses are both required in the SEA application;
- it is still difficult to single out a generalized approach for SEA;
- there is clearly a need for new agendas [27] for the appraisal of plans and programs.

3 STRATEGIC ENVIRONMENTAL ASSESSMENT OF THE SICILIAN LAND TOWN MASTER PLAN

The Sicilian regional government recently charged the Department of Energy and Environmental Researches (DREAM) of the University of Palermo, the job of preparing a framework for the SEA of the regional Town Master Plan.

The framework was intended as a working scheme aimed at supporting the regional administration in managing SEA of the Town Master Plan through the three classical phases of its application, that is, the *ante operam*, the *in itinere* and the *post operam*. The characterizing idea for developing such a scheme was trying to embody in it the outcomes of the previously cited debate concerning SEA, with a special emphasis on the role played by the subjects involved in the process.

The resulting structure in the approach to land planning is thus characterized by a high level of concert among these subjects.

The working scheme is described in Fig. 1, where its four main steps are described. Starting from the definition of the guidelines ('Land planning requirements') for the drawing of the Regional Master Plan, a first concert phase takes place ('Preliminary concerted actions') where the subjects involved in the design, management and fruition of the plan are singled out, along with their levels of

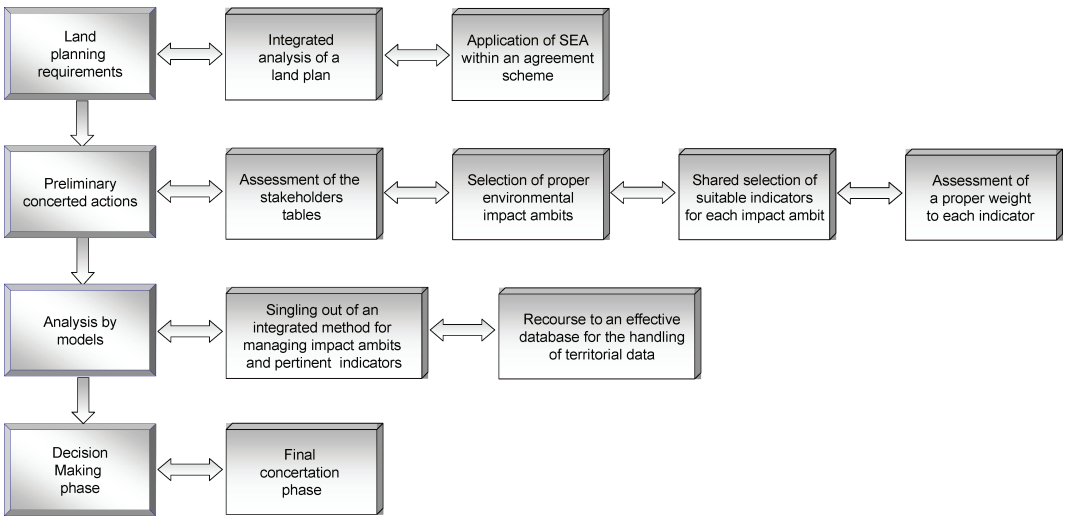

Figure 1: General working scheme of SEA of the Sicilian Town Master Plan.

intervention in the SEA process. Further, there is the selection of the model ('Analysis by models') for the quantitative analysis of the performance of the plan, in the design configuration and in some alternative scenarios. Finally, the decisions about these configurations of the plan ('Decision-making phase') spring from a concerted action involving the expert review panel, the administrators and the categories representative of the citizens of the Sicilian region. In the following, a description of the four phases is provided in which the proposed scheme of SEA is structured, along with the explanation of the sub-steps comprising each main phase.

3.1 Land planning requirements within the Strategic Environmental Assessment approach

Sicily, the largest Italian island, has a special statute, giving it almost the status of a country. It covers an area of about 25,000 km^2 and has a population of approximately 5 million. Its economy is characterized by several activities including chemical and transformation industries, engineering, tourism, high quality agriculture (oil, wine and fruit) and fishing.

Its gross domestic product (GDP) in 2003 was about €76,925.1 million, representing 5, 9% of the total Italian GDP. The per capita average gross product of Sicilians is €15,375, compared with the Italian per capita average GDP of €22,473.

Sicily's geographical make-up is characterized by a mountainous inland landscape and a level seaboard, where the main urban settlements (Palermo, Catania and Messina) are located. The island's habitat, notwithstanding the disharmonious and disrespectful development of the last years, is characterized by a great richness of flora and fauna and by the presence of many autochthonous species, which contribute to its beauty that is well-known all over the world.

In recent years, the Sicilian regional government has been strongly committed to bring about a radical change in the governmental and cultural models of the public administration. The Land Town Master Plan (PTUR) is part of this new direction. It is intrinsically characterized by its strategic and contractual nature: the principles, strategies and relationships between potential users, institutions and the other planning tools have been greatly improved.

At the same time, a methodological framework has been drawn up in order to organize the island's land information system utilizing a GIS tool.

The PTUR's origins were closely linked to a new-found awareness of the complex development of Sicilian territory and to a new way of thinking based on the belief that the natural and cultural worth of the land can be effectively utilized as a means of propelling its positive development [28].

In short, the PTUR's objectives and roles in the regional planning process can be synthesized as follows:

1. to plan and control regional land transformations, paying particular attention to the prevention of hazards and the evaluation of land sensitiveness;
2. to make a proper evaluation of the consistency of regional territory so as to be able to outline a clear land reference framework;
3. to supply guidelines for provincial and municipal planning;
4. to ensure a connection between economic development and environmental protection;
5. to guide development interventions toward more environmentally sustainable solutions;
6. to promote a new, more responsible attitude to land management.

A planning tool showing such a level of complexity is naturally a candidate for the application of the SEA, not only as a claim of the SEA Directive of the European Union, but also for the possibility of developing, within the SEA approach, a methodology of analysis able to continuously check the effectiveness of the performance of the plan.

The proposed scheme for SEA of the Sicily's PTUR has been designed having in mind these requirements.

3.2 Preliminary concerted actions

The first step in the aim of defining a framework for SEA has been the assessment of a suitable 'partners table,' that is, the proper ambit where a forum between the subjects involved in the process is continuously open. In practice, the technical proposals of the experts' panel, once compared with the administrative requirements, are undertaken based on the judgment of the stakeholders, that is, representatives of the categories of interested citizens.

This simple scheme will allow the comparison of the technical assumptions with the stakeholders' requirements, thereby facilitating shared decisions concerning the actions and the interventions to be adopted. Therefore, this working structure is particularly effective in singling out the ambits for which the impacts must be computed and the indicators that are representative of each ambit.

In this way, five influential categories that represent the impact ambits of the plan have been established, that is:

- environment;
- mobility;
- society;
- urban – building sector;
- urban – service sector.

Along with the selection of the impact ambits, the technical panel has also proposed a grid of indicators for each of these issues.

The list of these indicators, within the scheme proposed here, must be submitted to the stakeholders' table, where the various interests of the citizen categories are supposed to find a suitable equilibrium. As a result of the stakeholders' table, some indicators can be removed from the list or substituted by other ones.

An outline of the selected issues and of the respective indicators adopted in the scheme of application of SEA to the Town Master Plan of Sicily is reported in Tables (1–5).

Table 1: SEA of the Sicilian Town Master Plan: environmental indicators.

Code	Indicators
A01	Annual total emissions of CO_2
A02	Annual total emissions of SO_2
A03	Daily per capita production of urban solid wastes
A04	Percentage of separate gathering out of household waste
A05	Percentage of preserved coastlines
A06	Percentage of natural reserves and regional parks out of the regional surface
A07	Provincial distribution of enterprises with the risk of relevant accidents
A08	Percentage of soil subjected to hydrogeological restrictions
A09	Number of towns or resorts owning an ISO 14001 certification
A10	Annual per capita energy consumption

Table 2: SEA of the Sicilian Town Master Plan: mobility indicators.

Code	Indicators
M01	Air traffic – number of passengers per year
M02	Number of docked ships per year
M03	Number of registered vehicles per year
M04	Number of passengers per year (public transport)
M05	Infrastructural index referring to the railway system

Table 3: SEA of the Sicilian Town Master Plan: building sector indicators.

Code	Indicators
E01	Natural balance
E02	Migratory balance
E03	Building number out of inhabitant number
E04	Percentage of urban areas out of the provincial land
E05	Percentage of illegal surface out of the provincial land
E06	Percentage of municipalities with a general regulation plan out of the total municipalities
E07	Percentage of municipalities with other urban tools out of the total municipalities
E08	Percentage of soil subjected to hydrogeological restriction
E09	Percentage of urban green areas
E10	Percentage of natural reserves and regional parks out of the regional ones

Table 4: SEA of the Sicilian Town Master Plan: service sector indicators.

Code	Indicators
U01	Percentage of population using of waterworks
U02	Annual per capita water loss in sewerage system
U03	Percentage of resident population using of sewerage systems
U04	Percentage of resident population using of purification plants
U05	Index of the presence of banking network and similar services
U06	Index of structures and buildings for educational purposes
U07	Index of health services

By way of example, a graphical representation of the regional distribution of some of these indicators is shown in Figs 2 and 3.

Once the impact ambits and the pertinent indicators are established, another problem does arise, that is the value of the relative weight with which each indicator contributes to the whole impact. This is a typical problem in the application of such analysis tools: in the scheme proposed here and can be solved by means of effective cooperation among the partner tables.

Table 5: SEA of the Sicilian Town Master Plan: society indicators.

Code	Indicators
S01	Number of per capita cinemas
S02	Percentage of provincial enterprises out of the total regional ones
S03	Occupational rate
S04	Annual per capita income
S05	Annual per capita energy consumption
S06	Annual presence of tourists per km^2
S07	Number of per capita accommodation facilities
S08	Index of telephone and telematic structures and networks
S09	Index of cultural and recreational structures
S10	Number of registered vehicles per year

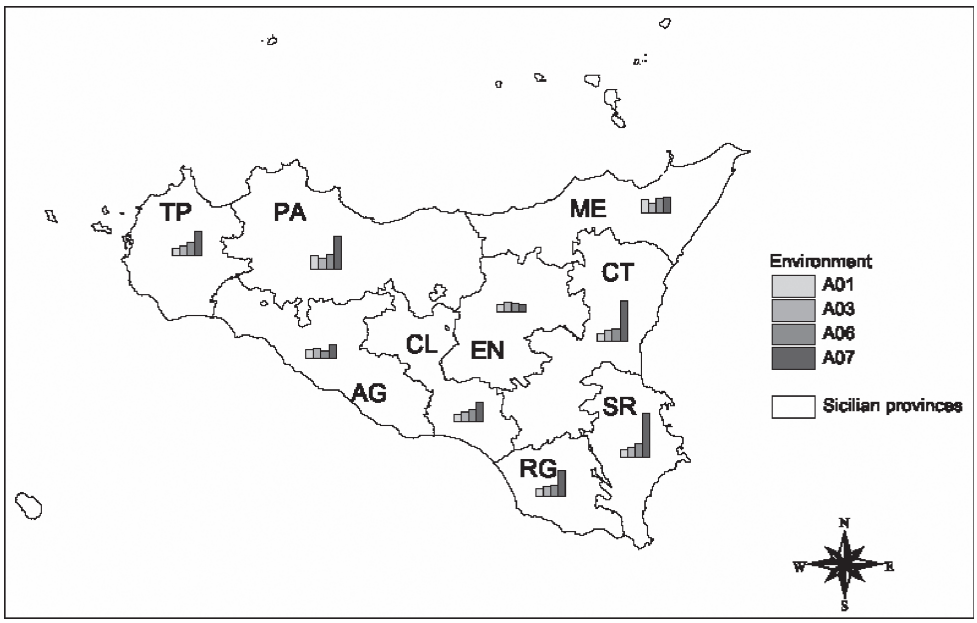

Figure 2: Spatial distribution of the indicators A01, A03, A06 and A07, representative of the environmental issue.

3.3 Analysis of Strategic Environmental Assessment by models

As previously described, the effects and the performance of the PTUR have been synthesized into a formalized structure constituted by impact ambits and pertinent quantitative indicators. Consequently, the choice of the analysis tool to be adopted is naturally oriented toward models that, by properly managing the 'ambits–indicators' structure, could provide an integrated index of the overall performance of the plan. In this application, the above cited ambits–indicators structure has been utilized as a support for the Dashboard of Sustainability [29] that, in reference to the selected group of special issues (for instance, social, environmental, economic, government ambits

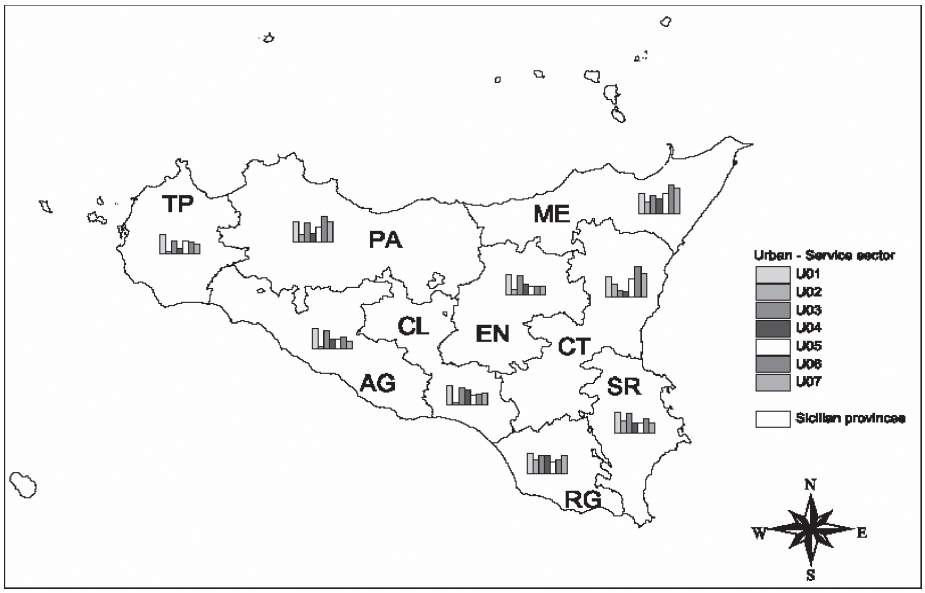

Figure 3: Spatial distribution of the indicators U01, U02, U03, U04, U05, U06 and U07, representative of the urban service sector issue.

and so on) [30] will provide an assessment of the general sustainable performance of the system under examination [31, 32].

As a matter of fact, the Dashboard method was developed as an attempt to create a multidimensional indicator of the 'quality of life' and fits very well with the requirement of establishing the whole effects of a master plan at a regional scale. Moreover, the easy rendering of the analysis results by means of a graphical representation (a cartogram), characterized by a suitable chromatic scale, makes this method very suitable for the application within a concerted decision-making process where nontechnical subjects are also involved.

The Dashboard that depicts sets of indicators in a typical 'pie chart format,' shows the following characteristics:

- the size of the sector of a circle reflects the relative importance of the issue described by the indicator;
- a color code signals its relative performance (compared with the other ones): green means 'good' performance while red signifies 'bad' performance;
- a central circle, Policy Performance Index, summarizes the information of the component indicators by means of the value of the overall index [33].

The observation of the list of the selected indicators (Tables 1–5) shows that SEA approach takes several variables into consideration and controls complex interrelationships, which are supposed to vary in time and space. In this sense, GIS databases are an excellent collection for environmental parameters that show spatial and time changes.

The selection of impact ambits and related indicators within the concerted phase previously described, allowed the definition of the current state of Sicily's provinces. This is assumed here as the reference scenario and is called 'Today's Scenario.' In Tables 6–10, the values of the indicators applying to Today's Scenario are reported.

Table 6: Values of the indicators of the issue 'environment': Today's Scenario.

	Issue: environment									
Provinces	A01 (Mg/inh./y)	A02 (Mg/inh./y)	A03 (kg/inh./d)	A04 (%)	A05 (%)	A06 (%)	A07 (no.)	A08 (%)	A09 (no.)	A10 (kWh/inh./y)
Agrigento	4.96	0.007	1.07	1.58	44.5	0.16	4	49.80	3	2,245
Caltanissetta	13.10	0.065	1.01	1.74	23.9	0.20	6	41.21	10	6,196
Catania	2.60	1.604	1.44	1.42	31.5	3.08	16	40.12	9	2,913
Enna	4.64	0.001	1.00	0.91	0	0.26	0	54.53	2	1,884
Messina	23.17	0.555	1.18	2.25	15.5	3.35	4	78.53	10	3,294
Palermo	4.82	0.006	1.44	4.33	47.2	2.74	12	63.88	12	2,425
Ragusa	3.76	0.004	1.16	1.76	11.5	0.12	10	18.39		3,607
Siracusa	32.75	0.122	1.20	1.12	47.3	0.23	18	24.37	2	10,519
Trapani	3.73	0.001	1.20	2.88	56.3	0.25	10	24.09	13	2,535

Table 7: Values of the indicators of the issue 'mobility': Today's Scenario.

	Issue: mobility				
Provinces	M01 (no./y)	M02 (no./y)	M03 (no./y)	M04 (no./y)	M05
Agrigento	64,281		231,890		65.5
Caltanissetta	0	951	136,948		77.1
Catania	3,966,066	970	651,296	44,802,171	61.6
Enna	0	0	84,846		66.5
Messina	0	114,068	361,737	26,024,000	107
Palermo	2,743,790	2,115	671,106	71,382,226	56.8
Ragusa	0	330	174,892		28.7
Siracusa	0	3,166	222,833		73.5
Trapani	45,114	15,116	241,019	3,673,408	32.9

Since not all data are usually available for the same reference period, the data taken into consideration in this application refer to different years, within the period from 1998 to 2002 inclusive. Indeed, this is one of the main problems to be dealt with in the field of environmental and territorial analyses.

3.4 About the decision-making process

As a support tool for local administrators in selecting more sustainable interventions, two different scenarios have been compared here. With the assistance of the stakeholders, some changes have been hypothesized in the performances of the Sicilian territory, which outline a possible future scenario called 'Tomorrow's Scenario'. This future scenario shows some improved features in comparison with Today's Scenario. Generally speaking, a possible increase, ranging from 3% to 10% in the value of some indicators, has been considered.

This application allowed the highlighting of the critical condition of Today's Scenario for all Sicilian provinces; it also suggested the adoption of better actions for Tomorrow's Scenario.

Figure 4, for example, shows a comparison between 'Today's' and 'Tomorrow's' scenarios of the Palermo province for the five adopted impact ambits. The remarkable change in the position of the black arrow, shifting from the left (bad overall performance) to the right side position (good overall performance) clearly indicates the dramatic improvement in the sustainability features of the Palermo province, as a consequence of the modifications introduced.

These improvements can be found in all the nine Sicilian provinces, as indicated by the scores shown in Table 11 regarding the above-mentioned scenarios.

Among other things, these results clarify what we have previously asserted regarding the propensity of the Dashboard to produce comparative evaluations of different scenarios.

Such results, along with the working methodology described in Fig. 1, constitute the basis for the decision-making process in which the public administrators of the Sicilian region are engaged in applying SEA to the Regional Town Master Plan.

It must be noted that the general scheme for application of SEA and the first results presented here refer to the so-called *ante operam* phase, where the master plan is designed and discussed by the technicians and stakeholders. During the building up of the plan (the so-called *in itinere* phase) and

Table 8: Values of the indicators of the issue 'urban – building sector': Today's Scenario.

	Issue: 'urban – building sector'									
Provinces	E01 (ratio per 1000 inh.)	E02 (ratio per 1000 inh.)	E03 (no./inh.)	E04 (%)	E05* (%)	E06 (%)	E07 (no.)	E08 (%)	E09 (no.)	E10 (%)
Agrigento	0.1	−2.0	0.58	2.20	0.033	34.88	65.12	49.80	0.03	0.16
Caltanissetta	0.9	−5.5	0.54	1.73	0.029	81.82	18.18	41.21	0	0.20
Catania	2.2	1.9	0.46	5.32	0.050	53.45	46.55	40.12	0	3.08
Enna	−1.2	−5.1	0.54	0.99	0.021	40.00	60.00	54.53	1.14	0.26
Messina	−2.3	1.2	0.54	4.27	0.049	44.44	55.56	78.53	0.01	3.35
Palermo	1.6	−2.2	0.47	3.17	0.038	42.68	57.32	63.88	0.06	2.74
Ragusa	0.8	6.4	0.58	3.75	0.043	66.67	33.33	18.39	0.01	0.12
Siracusa	0.8	0.6	0.51	3.96	0.034	85.71	14.29	24.37	0.04	0.23
Trapani	−0.4	0.9	0.56	4.37	0.036	20.83	79.17	24.09	0.08	0.25

*Data deduced by means of sector studies.

Table 9: Values of the indicators of the issue 'urban – service sector': Today's Scenario.

	Issue: 'urban – service sector'						
Provinces	U01 (%)	U02 (m^3/inh./y)	U03 (%)	U04 (%)	U05	U06	U07
Agrigento	99	7.50	89	45	42.9	53.4	34.0
Caltanissetta	98	10.80	87	73	44.6	51.0	57.8
Catania	100	62.38	31	24	89.7	148.8	117.4
Enna	97	24.30	93	49	39.8	38.7	37.6
Messina	99	54.29	87	73	96.9	142.6	126.0
Palermo	100	35.09	93	44	73.9	130.1	101.9
Ragusa	98	65.57	90	86	54.8	66.5	88.9
Siracusa	99	55.87	93	46	46.2	67.4	48.2
Trapani	92	10.45	64	26	62.8	59.1	45.4

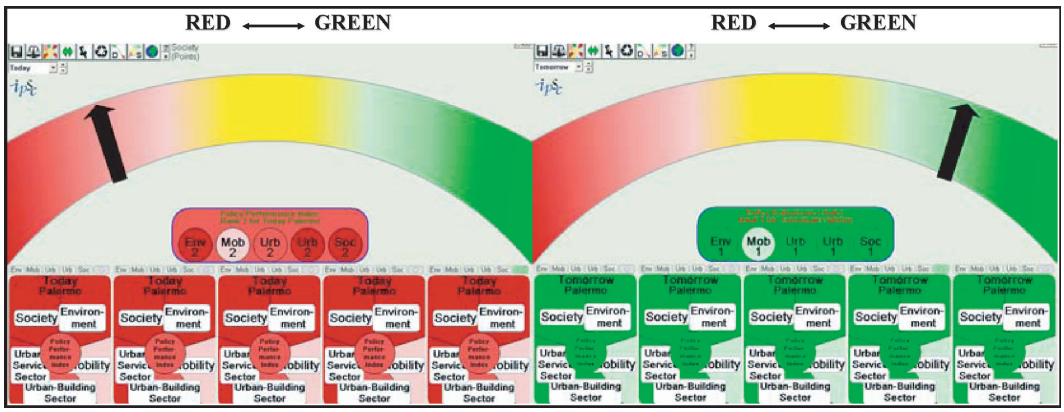

Figure 4: Overall performance of the Palermo province: comparison of Today's and Tomorrow's Scenarios.

following its coming into force (the so-called *post operam* phase), its effects on the selected impact ambits must also be evaluated. With this purpose, the integrated method introduced here presents itself as a very useful tool, allowing the assessment of the performance of different phases of a plan by simply modifying the values of the indicators representative of the impact ambits, provided that they have been properly managed within the concerted 'partner table' action.

4 CONCLUSIONS

In this work, the application of SEA to the Land Town Master Plan of the Sicilian region has been presented. A general working scheme has been adopted with this aim, where technical, administrative and stakeholders' positions could find suitably concerted roles.

Table 10: Values of the indicators of the issue 'society': Today's Scenario.

	Issue: 'society'									
Provinces	S01 (no./ 100.000 inh.)	S02 (%)	S03 (%)	S04 (€/y)	S05 (kWh/inh./y)	S06 (no./km^2/y)	S07 (no./ 100.000 inh.)	S08	S09	S10 (no./y)
Agrigento	3.2	6.1	30.8	11,896.0	2,245.5	373	26.2	56.7	22.8	231,890
Caltanissetta	3.9	4.0	34.4	11,572.7	6,195.9	81	5.7	54.1	15.6	136,948
Catania	6.5	25.6	34.4	13,387.5	2,912.6	480	12.6	99.5	49.8	651,296
Enna	4.4	2.8	29.8	11,357.7	1,883.7	41	17.8	35.2	16.1	84,846
Messina	5.9	15.0	34.4	13,933.0	3,294.4	1,199	73.0	84.7	28.0	361,737
Palermo	5.2	27.5	30.9	12,597.6	2,425.4	723	23.1	94.5	40.3	671,106
Ragusa	7.6	4.6	41.4	14,396.9	3,606.9	475	19.8	74.5	36.0	174,892
Siracusa	3.0	8.4	35.9	14,300.6	10,519.1	490	28.4	71.7	27.5	222,833
Trapani	5.5	5.9	38.8	12,855.6	2,535.0	401	33.5	72.8	41.3	241,019

Table 11: Scores of the nine Sicilian provinces for the Today's and Tomorrow's Scenarios as evaluated by means of the Dashboard of Sustainability.

	Today's Scenario		Tomorrow's Scenario	
1	Enna	264	Messina	840
2	Ragusa	235	Palermo	835
3	Siracusa	235	Agrigento	805
4	Catania	225	Trapani	795
5	Caltanissetta	219	Caltanissetta	780
6	Trapani	203	Catania	774
7	Agrigento	194	Ragusa	764
8	Palermo	164	Siracusa	764
9	Messina	159	Enna	735

This application of SEA has raised some problems and suggested some lessons that can be summarized as follows:

- the continuous concerted action among the subjects involved in SEA would allow achieving shared results, in this way embodying the requirements of the stakeholders within the design process;
- this shared methodology requires time-consuming activities of meetings and discussions, in order to continuously compare the assumptions of technicians and administrators with the needs of the citizens;
- this working method allows to embody quantitative evaluations referring to the features of the Sicilian region (coming from GIS database) into the qualitative framework referring to the SEA procedure;
- although the Dashboard of Sustainability is a viable tool for these integrated evaluations, it must be noted that the indicators adopted within the tool show a problem of homogeneity due to their different issues and measurement units;
- this homogenization can anyway be achieved by means of the intervention of the stakeholders, which will provide hierarchized judgments about them.

In conclusion, this application suggests that the emphasizing of the role of stakeholders in the decision process of a plan, by means of the institution of a continuously operating table involving sensitive subjects (stakeholders, administrators and technicians), is an effective way of dealing with SEA. For this purpose, the definition of a well-structured working scheme (Fig. 1) represented a useful tool for organizing the needed actions.

Anyway, although the working scheme proposed here has been successfully adopted for the Regional Town Master Plan of Sicily, it must be observed that, at the present stage, a generalized procedure cannot be established for the SEA of any plan; this calls for new researches in the field of formalizing the appraisal of plans and programs.

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