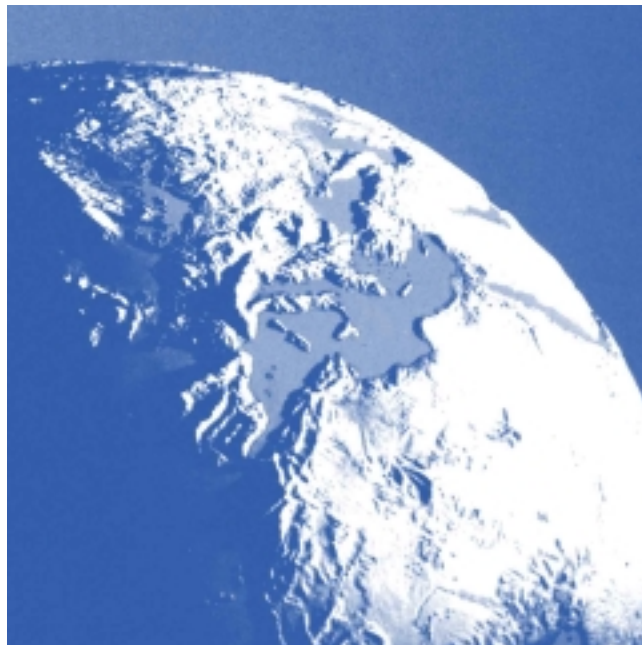




UNEP



**FINAL REPORT ON
THE SYSTEMIC AND PROSPECTIVE
SUSTAINABILITY ANALYSIS PROJECT WITHIN
CAMP « MALTA »**



Ministry for
Economic
Services
Malta

Blue Plan
Regional Activity Centre

Sophia Antipolis,
April 2002

The activity described in this document is undertaken in co-operation between Maltese Authorities (Ministry for Economic Services, Planning Authority, National Statistics Office, Environment Protection Department and Economic Policy Division) and Mediterranean Action Plan-Blue Plan Regional Activity Centre.

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Acknowledgements

The preparation and finalisation of this report would not have been possible without the contributions of a number of people. The inputs provided by the members of the SPSA team, which included Mr. Ray Cachia Zammit – Ministry for Economic Services who was the co-ordinator of the project team, Mr. Dennis Grech – Economic Policy Division who replaced Ms. Claire Albani Wilson and Ms. Moira Catania, Ms Joslyn Magro – National Statistics Office and Mr. Andrew Vella – Environment Protection Department, were important to ensuring that the report addresses all the five thematic projects.

I also wish to thank the respective thematic project team leaders – Ms. Michelle Borg and Mr. Adrian Mallia (Coastal Zone Management), Dr. Lucianne Licari (Tourism & Health), Ms. Christine Tanti (Soil erosion and Desertification Control), Ms. Prassede Grech (Marine Conservation Area), Mr. Paul Micallef and Dr. John Mangion (Integrated Water Resources Management). The support of the team leaders and the members of their teams was invaluable to the success of this project especially in their participation during the workshops. Valuable input during the workshops was also provided by Ms. Carol Agius (Data Management) and Mr. Louis Vella (Public Participation and National Co-ordinator for CAMP Malta).

Mr. Ernest Azzopardi, Director of the Institute of Water Technology, was very helpful in providing the facilities to organise the project's various workshops.

The input of all stakeholders has been greatly appreciated since without their ideas and comments, the whole exercise would not have progressed as expected and hopefully, their participation opened a new horizon, probably a complex one, but nonetheless and interesting and challenging one.

A final thanks goes to Mme. Elisabeth Coudert from Blue Plan who co-ordinated the whole project and her Director, Mr. Guillaume Benoit, for the support given by Blue Plan and to Dr. Simon Bell, Blue Plan Lead Consultant, and Dr. Steve Morse, Blue Plan Consultant, for their direction in the whole exercise and the interesting workshop sessions which, as all agree, were FUN.

Introduction

The Mediterranean Action Plan (MAP) is one of the regional plans of the Regional Seas Programme of the United Nations Environment Programme (UNEP). There are currently 12 Regional Action Plans being implemented around the world. The legal basis of MAP, which started in 1975, is the Convention for the Protection of the Mediterranean Sea against Pollution or, as it is more popularly known, the Barcelona Convention, and its related protocols. The Convention was revised in 1995 and all Mediterranean Coastal states plus the European Community are the Contracting Parties to the Convention.

Since 1995 MAP has been working on the Phase II Action Plan and on the Priority Fields of Activities for the Environment and development in the Mediterranean basin (1996 – 2005). These priority fields are related to the following aspects:

- a) integration of environment and development;
- b) integrated management of resources;
- c) integrated management of coastal areas;
- d) activities of particular importance for environment protection and sustainable development;
- e) assessment, prevention, and control of marine pollution;
- f) conservation of nature, landscape and sites.

The institutional structure of MAP consists of the MAP Co-ordinating Unit – MEDU in Athens and its 6 Regional Activity Centres amongst which the Blue Plan Regional Activity Centre (BP/RAC) in Sophia Antipolis, France and the Priority Actions Programme Regional Activity centre (PAP/RAC) in Split, Croatia. These two Regional Activity Centres are actively involved in the Coastal Areas Management Programme – CAMP - (Malta) Project with the Blue Plan/RAC piloting the Systemic and Prospective Sustainability Analysis Activity.

Blue Plan Regional Activity Centre activities focus on systemic and prospective studies in order to evaluate current situation before exploring the possible futures of relationship between development and environment as well as on observation through indicators of progress towards sustainable development in the Mediterranean. In addition, Blue Plan has also a mandate to assist Mediterranean countries in addressing up sustainable development problems and in this task the development of indicators for sustainable development play an important role. Blue Plan worked with METAP on Environmental Performance Indicators and with the Mediterranean Commission for Sustainable Development (MCSDD) on indicators for sustainable development. The work with METAP resulted in the identification of 34 Environmental Performance Indicators relating to air, solid waste, water resources and pollution & air quality. The work on sustainability indicators with MCSDD produced a common set of 130 Mediterranean Sustainable Development Indicators. The report of this work was published in 2000.

It is in this context that Blue Plan sought to introduce the Systemic Sustainability Analysis (SSA) based on its previous work and on the approach developed by Dr. Simon Bell and Dr. Steve Morse, in the formulation of sustainable development indicators for the various projects that formed part of the Coastal Areas Management Programme (CAMP) Malta Project. The CAMP is the MAP Programme for sustainable coastal management, integrating environmental concerns with development planning. The conceptual framework of CAMP is based on the principles of sustainable development and integrated coastal area management.

The SSA project is one of three cross-cutting projects, which assisted the five individual thematic projects, which formed part of the CAMP (Malta) Project. The individual thematic projects are:

1. Sustainable Coastal Management
2. Marine Conservation Areas
3. Integrated Water Resources Management
4. Erosion/Desertification Control Management
5. Tourism and Health.

The other two cross-cutting activities are:

1. Participatory Programme
2. Data Management.

The Systemic Sustainability Analysis (SSA) activity is co-ordinated by Blue Plan, with the assistance of two consultants and a local team composed of representatives from the following Government agencies – Ministry for Economic Services, Planning Authority, Environment Protection Department, National Statistics Office and the Economic Policy Division.

The SSA activity consisted of five workshops during which participants, which included team members of the various thematic projects and cross-cutting projects, were taken through the various stages of the process. The approach was an interactive one during which the different participants were given the opportunity to work in groups adapting the process to their own individual thematic projects. The outcome of the various workshops is presented in the workshop reports, which are reproduced as appendices to this report.

This report will primarily summarise the achievements from the workshop sessions and seek to relate the findings to the sustainable development of the North West of Malta, which was the area chosen for the CAMP Malta Project, and the significance of this to the sustainable development of the Maltese Islands. A final section will outline the main lessons learned through this experience and which would prove useful for the implementation of this approach in other countries or regions.

Tasks and objectives

The main tasks to be implemented within the SSA are the following:

- identification and agreement on the system, the stakeholders and the main sustainability indicators;
- participatory development of the systemic sustainability analysis with description and assessment of the system by main indicators;
- provision of inputs to final Project documents and post project activities (level of sustainability, critical points, future activities toward sustainability).

The main objectives of this activity are:

- to contribute to efforts towards a sustainable development of the island, and in particular of its north-west area by preparing a set of sustainability indicators and a systemic sustainability analysis, to be made on the primary basis of a description and assessment of the level of sustainability by consideration of the main indicators and the process which generated them;
- to introduce and apply the systemic sustainability analysis as a specific tool for empowering sustainable management, in this case coastal and marine areas;
- to contribute to the preparation of comprehensive integrated final Project documents, by presenting significant analysis; and,
- to create inputs of interest for the programme and activities of the Mediterranean Commission for Sustainable Development.

As stated previously these tasks and objectives were achieved through the series of workshops conducted by the consultants, meetings with stakeholders and discussions between the local team members together with members of the various thematic and cross cutting projects. The intensive group work that constituted most of the workshop sessions and the sharing of experiences with stakeholders proved to be the salient elements of this project which besides a learning experience for the local teams provided Blue Plan and the consultants with a basis on which to test the approach in a particular context and determine its application. The next section will explain the approach identifying the main phases through the use of examples from the various workshop sessions.

The SPSA methodology

Before outlining the methodology, it is important to state at this early stage that the Systemic Sustainability Analysis (SSA) project has subsequently been revised and is now being referred to as the Systemic and Prospective Sustainability Analysis (SPSA) project. Thus, throughout the rest of the report the project will be referred to as the SPSA.

The basis of the SPSA is three-fold - systemic analysis, the concept of sustainability and prospective. It is these pillars that steer the approach. The SPSA combines the main themes of systemic analysis, core elements from sustainability indicators and long term visions, i.e. it allows a team engaged in analysis to explore, describe and assess the level of sustainability of an agreed system by the use of indicators, in the past, present and future.

SPSA provides a global approach and has a dynamic characteristic because it takes into account the relations between the indicators, which describe the elements of the system and their interactions. The system is represented by indicators chosen by the team of participatory stakeholders engaged in the SPSA – it is decided from the perspective of the contributing stakeholders. The external context is considered in term of beneficial or harmful influence. The level of sustainability is assessed by the team according to a deep understanding of the relevance and interpretation of the combined messages of the selected sustainability indicators.

Systemic analysis, sustainable development and prospective

It is appropriate at this stage to explain in brief the thinking behind systemic analysis, the concept of sustainable development and prospective. The Blue Plan's definition of a system is the following – ***a system is an intellectual construction, for a certain purpose, constituted by chosen elements in dynamic interaction in order to describe and represent a complex reality or phenomenon.*** Figure 1 is an overall diagram of the main components of the environment-development system, designed by Blue Plan for the purpose of making Mediterranean scenarios¹.

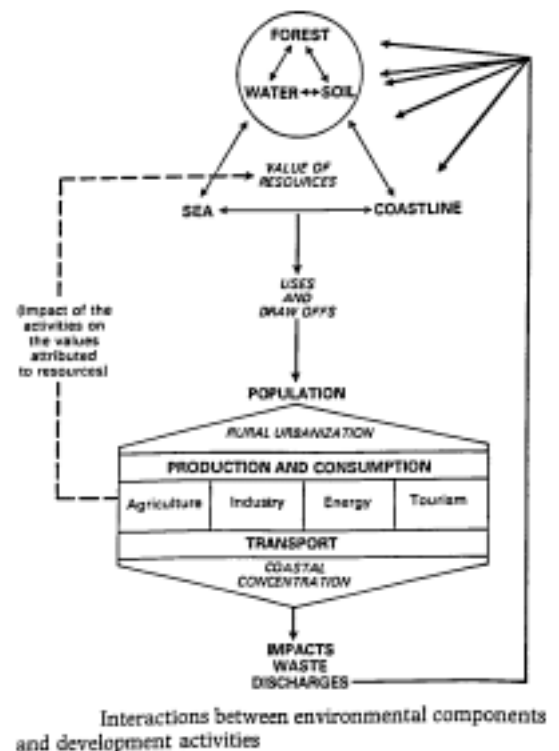


Figure 1. Main components of the environment-development system

¹ Grenon M., Batisse M., 1989. Futures for the Mediterranean Basin, the Blue Plan. Foreword by M.K. Tolba. Oxford University Press.

The purpose of developing a systemic approach to problem solving is generally to gain an in-depth perception resulting in knowledge of a complex reality or phenomenon represented by the system. The systems approach makes intelligible and understandable the complexity of a particular system and allows analysts and stakeholders to concentrate attention on mutually agreed elements and above all on the relationships between these elements. The approach is global in its scope and considers the system as a whole capable to change under the interactions of different elements within the internal and external context.

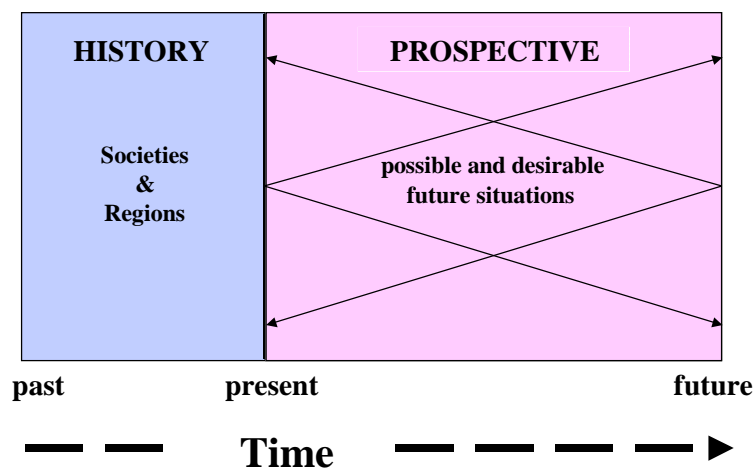
A system has a boundary with the external context or the external environment and within a system there are subsystems operating which need to be carefully defined as well as their own boundaries.

Systemic analysis can be applied in improving knowledge about each element in relation to other elements, defining inter-linkages, identifying actors who control these elements, quantify the weight of the elements in the potential change of the system, and therefore develop an intimate understanding of the interests and complexities associated with the actors.

Systemic analysis requires defining and agreeing the system to study as well as the relevance of each chosen element and the boundaries of the system and sub-systems. The next stage is to gain a thorough understanding of trends within the system and the system context, made from such items as – current analysis of stakeholders perceptions, review of past data and examination of present significant activities in order to identify constraints and seeds of change.

Prospective approach allows the projection of past and current trends into the future to identify the system's possible changes in the future, according to various hypothesis of evolution and according to actions that can be undertaken to achieve future desirable and feasible situations, which help to anticipate needs or negative impacts.

The Future : Subject of the Prospective



source : d'après K. Valaskakis , 1994

Figure 2. Looking into the future: the prospective.

Source: Blue Plan

The term "sustainable development" has probably been one of the most widely used (and sometimes abused) terms throughout the last decade. Emanating from the 1987 report – Our Common Future – or better known as the Brundtland Report, sustainable development rose to international concern following the Rio conference in 1992.

Sustainable development has been defined in the Brundtland report as '**development that meets the needs of current generations without compromising the ability of future generations to meet their needs and aspirations**' (WCED, 1987). Blue Plan's definition is '**a development which is respectful of the environment, technically appropriate, economically viable and socially acceptable to meet the needs of present generations without compromising the ability of future generations to meet their own needs**'.

The Blue Plan definition identifies the three elements of sustainable development – economic, social and environmental. The sustainability concept is the outcome of societies' political ability to put its wishes into action, in accordance with its environmental, social and economic concerns. It is important to measure sustainability and to explore the possible outcomes of current actions and policies in order to attempt to avoid crisis and environmental breakdown.

Sustainability Indicators (SIs) have been designed to measure impacts of practice and policy. There is a vast literature on the subject and little agreement matters of detail but it can be argued that indicators have as their primary aim the need to give useful information about:

- The State of the environment as well as social, economic and ecological components of development and changes observed – Examples of **State SIs** include threatened species; population growth in coastal areas;
- Pressures, which act to the detriment of an already degraded status by breaking the highly fragile balance between development and the environment. These pressures can also be essential Driving Forces for economic and social development whose impact on the condition of the environment is not directly perceivable or quantifiable – Examples of **Driving Force SIs** include number of tourists per km of coastline, loss of arable land due to urbanisation.
- Economic, political and institutional Responses which aim to reduce these pressures and improve the situation – Examples of **Response SIs** include public expenditure on conservation and value enhancement of natural, cultural and historic assets, waste water treatment rate.

Sustainability indicators are intended to give the level of sustainability in the past, for the current situation and in the future according to certain assumptions about change and evolution. The definition of the level of sustainability for any given indicator is a difficult task, which assumes an acute knowledge of both the indicator and its milieu. Developing and evaluating indicators is further complicated because this process as applied in the current context is being undertaken in a subjective and participatory manner.

The SPSA approach

Systemic and Prospective Sustainability Analysis (SPSA) has, therefore, been designed to produce SIs in a manner which maximises their chances of producing an *holistic perception* of the context in question, and in an *inclusive and participatory* manner. The stages followed in this approach are briefly described below.

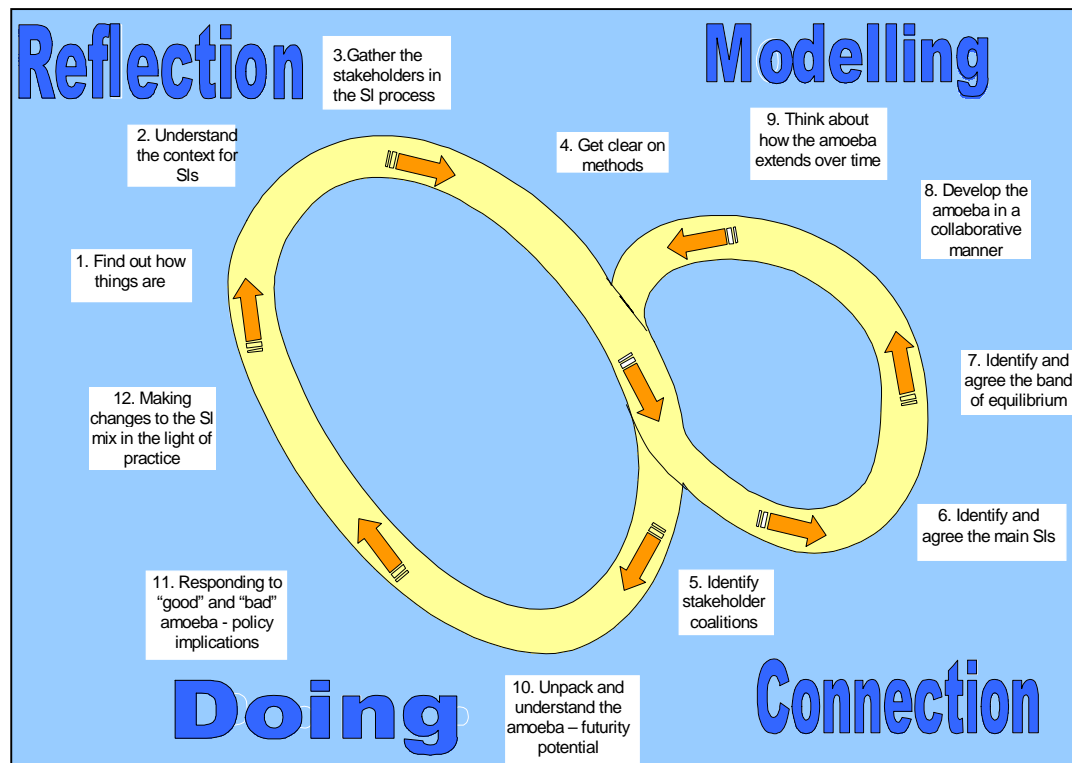


Figure 3. The SPSA process

The main stages of the SPSA approach are shown in Figure 3 above. The SPSA approach makes use of the soft systems approach to understand complex situations. This includes using main elements of the soft systems method such as rich pictures, root definitions and conceptual models. Each stage of the SPSA will be briefly described in the following sections.

STAGE 1 - FINDING OUT HOW THINGS ARE

The first stage in the process is to understand the prevailing mood within the system being addressed. This is done by bringing into play the various actors involved and stakeholders to identify the controversial and common interests in the system. This initial 'soul-searching' exercise identifies the problems to be addressed, the players and their roles, the strengths and weaknesses as well as opportunities and threats (SWOT) as well as the inter-relationships between the various actors. This approach sets the mood of the issue and the particular climate within which the various stakeholders are to operate – whether a climate of conflict or cooperation. "The outcome of this stage is insight into the potential for the people involved in the project intervention to deal with the

issues and tasks which the context may throw up. It also provides an opportunity for emerging new themes and ideas².

STAGE 2 - UNDERSTANDING THE CONTEXT FOR SIS

This stage is very much an extension of the first and both can be regarded as integrally linked. This second stage extends the first by pictorial representation of the system under review through the use of the 'rich picture'. The rich picture as applied in SPSA summarises what has been identified and what is known about the system under review in a manner that can be easily understood in a 'cartoon-type representation'. The rich picture represents formal and informal elements, structures and processes (things and activities), which are then translated into tasks and activities necessary to address the various problems of the system.

The result of these first two stages would provide a clear understanding of the 'prevailing states of mind' of the various actors and stakeholders involved and the complexities of the system being reviewed.

STAGE 3 - GATHER THE STAKEHOLDERS IN THE SI PROCESS

The main characteristic of this approach is stakeholder participation. This approach advocates the participation, learning about and respecting the views of stakeholders. It is also important to find a common definition of sustainability with regard to the system being reviewed, since various stakeholders may be viewing this concept from a personal perspective and it is important to find common trends to come to an agreement on sustainable development within this context. This will condition the process and the outcomes of the subsequent stages.

Stakeholder participation is not only consultative but stakeholders are to influence decisions. This, however, must stem from an informed basis since the diversity of interests and experiences may risk turning this exercise into a power game rather than a collaborative effort. Ways of getting stakeholders together must be identified – workshops, seminars, focus groups, meetings, etc. Once stakeholders are brought into the mechanism they become an integral part of the approach, although it may often be the case that stakeholders have to be selected to ensure a manageable forum.

STAGE 4 - GET CLEAR ON METHODS

Having identified the context, the tasks and activities to be carried out as well as the stakeholders to be involved it is now important to be clear on the outputs and the form these would take, and therefore, the methods to be used. The issues of sustainable development and hence SIs may be new to stakeholders and thus the level of understanding of this concept will determine the form the approach would take and the methods to be used.

² Bell S and Morse S, Sustainability Indicators: Measuring the Immeasurable?, 1999, Earthscan

STAGE 5 – IDENTIFY STAKEHOLDER COALITIONS

The identification of and bringing together the stakeholders is a crucial stage in the SPSA process, particularly to define the sustainability system expected to be achieved at the end of the project process. The stakeholder group becomes the basis for future decisions taken with regard to the project. The sustainability system is now transformed into a **root definition**. In simple terms this root definition becomes the mission or the vision of the system, which stakeholders agreed is to be created.

The root definition is a short paragraph (around 30 words) and includes the following elements:

- **C**ustomer of the system i.e. who will benefit from the system or who is financing the system;
- **A**ctors in the system i.e. the players that will engage in the work of the project;
- **T**ransformation of the system i.e. the change desired after following the whole process;
- **W**orldview refers to a set of assumptions which condition the system;
- **O**wner of the system i.e. who will own the project at the end;
- **E**nvironmental Constraints refer to those constraints which affect the system and within which it has to operate.

These elements are referred to as CATWOE with the root definition being a statement similar to the following: *The project will achieve the **transformation** for the **customer** by the **actors** based on the **worldview** and within the **environmental constraints** and will be owned by the **owner**.*

The basic vision of the system is now defined and agreed. The next task is to identify the SIs that will measure the sustainability of the system.

STAGE 6 – IDENTIFY AND AGREE THE MAIN SIs

The composition of the stakeholder group will determine whether the SIs identified will cover the major aspects of the system. It is important that the identified SIs provide a snapshot of the sustainability of the system. State SIs provide this snapshot whilst Pressure SIs show why the desired situation is or is not being achieved. Agreeing on the final list of SIs might be an extensive exercise and the process may take different formats – e.g. brainstorming amongst stakeholders or use already established and relevant SIs.

STAGE 7 – IDENTIFY AND AGREE THE BAND OF EQUILIBRIUM

This is a delicate stage in the SPSA process particularly since it may entail compromises to determine what stakeholders consider as sustainable. The band of equilibrium is simply a range within which a particular indicator can be considered as having reached a sustainable level. Below or above this range

would not necessarily be considered as sustainable. Determining what is the acceptable and agreed band entails having relevant data and both professional and practical expertise. This may turn out to be a tug of war but indicates that sustainability is also somewhat a subjective concept and what is sustainable for one may not be sustainable for another.

STAGE 8 – DEVELOP THE AMOEBA IN A COLLABORATIVE MANNER

The AMOEBA is simple in presentation but rich in information and serves to map out the SIs indicating the level and extent of the overall sustainability of the system. The SIs are distributed into four categories – Economic, Social, Environmental and Technological – represented on the AMOEBA in four quadrants. The band of equilibrium is represented by an inner circle in the AMOEBA and each SI is represented by a line from the centre of the circle radiating outwards towards the band of equilibrium circle. Should the line stop within this band, the specific SI is considered to be within the agreed sustainability range, but if outside this band the SI is not within the agreed range and it may be the case to investigate why. The AMOEBA immediately shows, though visual representation, where intervention is needed and may also indicate relationships between the SIs, thus emphasising the importance of a holistic approach to sustainable development.

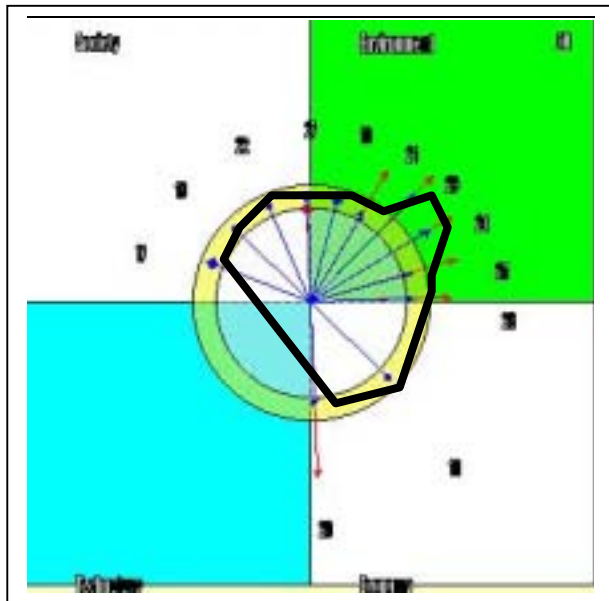


Figure 4. The AMOEBA

Figure 4 shows an example of the AMOEBA indicating the four quadrants together with a sample of SIs and their relation to the band of equilibrium. The AMOEBA is actually formed by joining each indicator to obtain a shape within the circle.

At this stage the team has an information product, the means to produce it, a set of agreed SIs and a methodology for formulating SIs.

STAGE 9 – THINK ABOUT HOW THE AMOEBA EXTENDS OVER TIME

The stage is extending the AMOEBA over time and projecting SIs into the future to gain an understanding of what is likely to happen based on past trends and data. Producing AMOEBAE allows monitoring of specific indicators over time to evaluate whether actions being taken are being effective in achieving the desired result. The important aspect of the AMOEBA, as already stated, is the possibility to see a holistic picture of the level of sustainability of the system and identify which indicators may be affecting each other. Reducing sustainability to

a mere index is misleading and does not identify where action needs to be taken or where intervention is giving results.

STAGE 10 – UNPACK AND UNDERSTAND THE AMOEBA (FUTURITY POTENTIAL)

The scope of the AMOEBA is to be an action oriented tool. This stage identifies which SIs are showing an existing problem or a tendency towards a problem. Thus where corrective or preventive action has to be taken. This stage again brings into play the vision of stakeholders with regard to the sustainability of the system and, therefore, which actions are giving the desired results and which are not.

STAGE 11 – RESPONDING TO ‘GOOD’ AND ‘BAD’ AMOEBAE (POLICY IMPLICATIONS)

An AMOEBA, which tends to be close to the band of equilibrium signifies that all sectors are operating satisfactorily, however, this still should not leave room for complacency since further analysis may be necessary to determine with certainty that the system has actually reached a sustainable level. Other aspects may have been missed and this is why the AMOEBA looks ‘Good’.

In the event AMOEBA looks ‘bad’ action must be directed to those areas where SIs are not performing to the desired level, and particularly those tasks which are not assisting in achieving this desired state. The evaluation of the SIs over time may indicate whether the remedial action undertaken has in fact solved the problem.

STAGE 12 – MAKING CHANGES TO THE SI MIX IN THE LIGHT OF PRACTICE

The AMOEBA is intended to provoke. It is the means to an end. It should encourage debate and subsequent action to achieve the desired state. This is where the prospective aspect of the SPSA comes in. Trends in SIs indicate potential future scenarios and stimulate discussion on the tasks to be undertaken to reach the transformation necessary for the desired scenario.

Scenario building and marketing

SIs are a means to an end. It is a means to provoke change where it is needed. The SPSA is a cyclical process and is continuous since the SIs may need to change and new ones introduced, bands of equilibrium may also change. SIs in the SPSA approach provide the basis for scenario building, identifying what is likely to happen and what could happen should certain tasks be undertaken. The marketing of SIs is equally important to encourage change in the direction desired. Marketing change is not easy, but through promotion of a better environment or better income and social conditions, the general public might be encouraged to change customs and methods moving towards more sustainable practices.

The SPSA (CAMP) Malta Project

The SPSA project was undertaken through a series of five main workshops, conducted by the consultants engaged by Blue Plan to apply this innovative approach to SI formulation and scenario building as part of the CAMP (Malta) Project. A team, chaired by the Ministry for Economic Services, was formed in February 2000 composed of officials from the Government agencies mentioned above. The main tasks of this team were:

- To get hands on knowledge of the SPSA approach;
- To steer the project locally among the project teams;
- To organise the workshops planned for this project;
- To assist project teams in every stage of the SPSA exercise;
- To produce the Final Project Report.

Copies of the workshop reports are included as appendices to this document.

The selected approach

Five main workshops were held between March 2000 and May 2001. The workshops were generally held over two to three days with an average participation of between 15 – 25 participants and sometimes even more when stakeholders were invited to attend. The workshops helped participants in gaining a thorough knowledge of the approach and what are the required outputs for each stage of the process.

Whilst learning the SPSA methodology, the participants were also applying this approach in the context of their particular thematic activity. Workshops generally consisted of an introduction, whereby the consultants would explain the theory behind a particular exercise and what is expected from the teams. Following this plenary session the participants would form different groups, generally according to the specific thematic activity, and carry out the exercise in a group. A representative of the group would then give a presentation, after each session, on the results as well as the discussions and issues raised in the process. The workshops also provided an opportunity for team members to discuss any difficulties and problems with the project and how this is relating to each of the thematic projects.

This approach had the advantage of providing participants with a forum to discuss, systemically and analytically, with their colleagues, offered an opportunity to gain hands on experience in the SPSA approach as well as discuss with the consultants any suggestions on the approach and what has/has not worked in the context of the Maltese Islands and particularly the North West.

The SPSA is a cross cutting activity which runs across all the five thematic groups and sought to add a sustainable development dimension in each project with regard to sustainability indicators. Initially most of the project teams felt that this exercise was an additional task to their main project, this was not always seen as being welcome – all teams were already fully engaged in existing tasks. However, the manner in which the workshops were conducted and the

fact that these workshops were some of the few occasions when all project teams met contributed to an interest in the approach and to the success of this particular project. Even though, at times, participation was not as one expected it to be, nonetheless, the few who would attend always found the workshops fruitful and informative.

The SPSA team also participated in the exhibition held in early April 2001 launching some of the work carried out by the various project teams involved in the CAMP (Malta) Project. This exhibition held over a week with a concluding seminar, helped to introduce this approach to visitors who attended the exhibition and the seminar.

Apart from the main workshops, in between workshops, the SPSA team, who were assigned to each project team, would work closely with team members to undertake the work expected from one workshop to another. This often involved meetings with teams as well as with stakeholders, as well as the organisation of half-day workshops. The SPSA team held a series of monthly meetings to keep track of the exercise and to ensure that teams have the necessary support required with regard to commitments concerning the SPSA project. Members of the project teams and the cross cutting activities often attended such meetings.

Progress Report

The following sections will outline the main stages of the SPSA approach undertaken as part of the CAMP (Malta) project as developed during the workshops held.

First Workshop held 27th - 29th March 2000

This first workshop introduced participants to the concept of sustainable development and the use of SIs and how the SPSA methodology can be used to formulate SIs. A presentation was also given of the approach adopted by the Planning Authority in formulating a set of sustainability indicators.

During this first workshop participants were introduced to the first stages of the SPSA approach and particularly understanding the context through the use of the rich picture tool. Each team then prepared a list of major tasks that needed to be addressed and/or major issues, which needed to be taken into account by the respective thematic sub-project. The next stage was to select one major task or issue (or a cluster of tasks/issues), which would form the basis of the SSA/SI project. Teams focused on the system defined and developed the "CATWOE criteria."

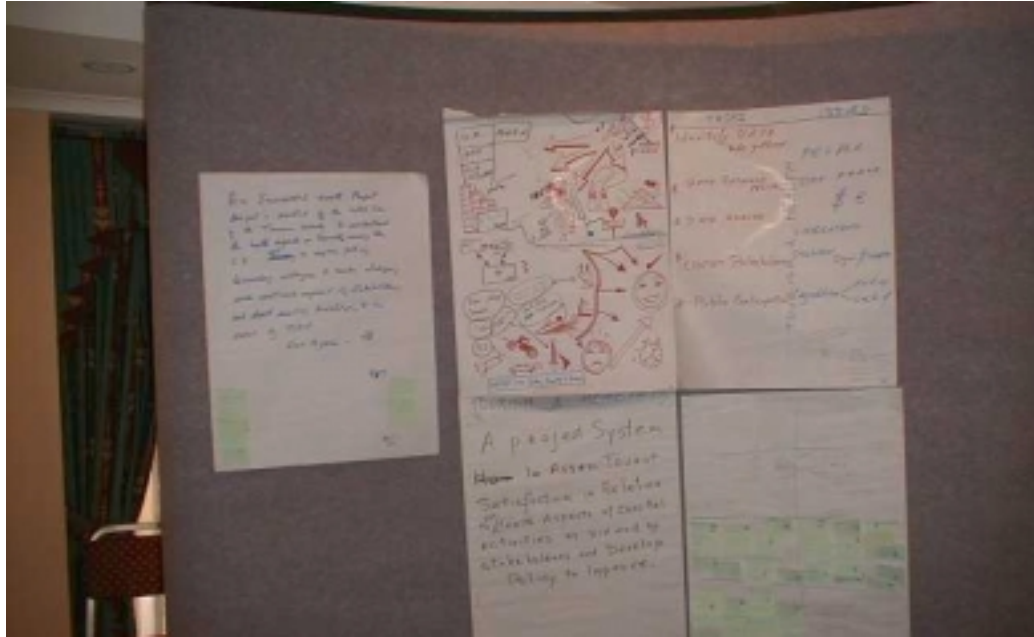


Photo 1. Sample of work produced during the first workshop

The CATWOE was the basis for the formulation of the Root Definition for each thematic project. The Root definition is considered as the 'mission statement' for the SPSA/SI project. Once the Root Definition was agreed, teams identified and prioritised a number of activities (between 30 and 40) to achieve the transformation set out in the Root Definition.

The main activities were then sorted in a sequential process that forms the Conceptual Model. This model was then related to the Rich Picture produced at the start of the exercise, primarily to identify that the process to be followed reflects what is needed to be done to address the issues identified at the outset.

Teams then identified the outputs to be achieved for the main activities of each thematic project. This exercise forms part of the initial stages of the development of the Log Frame. The Log Frame provides a format for the team to set out the formal aspects of the project (activities leading to outputs, resulting in purposes and leading towards the wider strategic goal).

Indicators were produced in order to demonstrate that the outputs for each thematic sub-project were being achieved. At this initial identification stage groups were to include any possible indicator considered to be relevant irrespective of the cost or whether data was available. The teams came up with several indicators, and were asked to consider the linkages between them in driving force-state mode. This first workshop concluded with each team having formulated a list of SIs, which were to be reviewed and finalised prior to the next workshop.

<p><u>Driving force</u></p> <p>rainfall intensity</p> <p>% of watershed which is built</p> <p>% area covered by non-absorbent surfaces</p> <p>% area trampled within fields</p> <p>location & width of foot paths within fields</p> <p>no. of days with gale force winds</p>	<p><u>State</u></p> <p>slope steepness</p> <p>% irrigated land</p> <p>% abandoned land</p> <p>% of land under vegetation cover</p> <p>no. of trapping sites and hunting hides</p>
<p><u>Response</u></p> <p>no. of rills within watershed (depth & width)</p> <p>monetary compensation</p> <p>quantity of natural fertiliser</p>	

Table 1. Some SIs identified by Soil Erosion and Desertification Control team

A field trip to the North West was also organised to familiarise participants with the system being studied. Team members gave an explanation of their particular project as well as some of the problems and issues to be addressed.



Photo 2. Visit to the North West area of Malta

Second Workshop held 29th - 30th May 2000

This second workshop sought to enable thematic teams to feel confident in redefining and establishing the key SIs for each project and introduce the band of equilibrium. This workshop was also an opportunity for team members to present the progress achieved since the last workshop and to highlight any problems encountered particularly with the formulation of the SIs and the interaction amongst teams. The three main strengths and weaknesses identified were:

- Strengths:
 - Commitment from team members
 - Complementary knowledge of team members
 - Data sharing
- Weaknesses:
 - Work constraints and lack of human resources
 - Not enough communication between teams
 - Lack of communication with higher levels of Government.

This workshop introduced participants to two SPSA tools – The Strengths, Weaknesses, Opportunities and Constraints (SWOC) and the Feasibility Analysis. These tools are used in refining the SIs.

The band of equilibrium was explained to the participants, although the next workshop would deal in much more detail with this aspect. Participants then produced initial bands of equilibrium for a set of SIs. This exercise highlighted some initial problems in arriving at bands of equilibrium and the complexity of the exercise, particularly in view of the fact that data on specific SIs was not yet available and the diversity of views in defining the maximum and minimum levels of the band of equilibrium. This short workshop was an occasion to reflect on the approach and any difficulties being encountered by the various teams.

Third Workshop held 2nd - 4th October 2000

This workshop focused primarily on the definition of bands of equilibrium for the SIs which each thematic group identified and also introduced the AMOEBA. This workshop also offered the opportunity for team members to discuss problems and issues with regard to the SSA project as well as the overall CAMP (Malta) project with the consultants and Blue Plan.

The workshop also discussed stakeholder participation and particularly how to get stakeholders interested in SIs and subsequent ownership. This was important since stakeholders were invited to one of the sessions of the workshops. During this session the stakeholders were introduced to the CAMP (Malta) Project and the SPSA project giving a background to what has been achieved so far and what will be their role in the project.

However, most of this workshop was devoted to defining bands of equilibrium for each of the list of indicators identified. At times this exercise was subjective and based upon estimation because no data was available for most of the indicators. Teams also tried their hand at drawing the AMOEBA and using this tool to represent past data and potential future trends.

The session held with stakeholders showed that there existed a large gap in the understanding of sustainable development, let alone the use of SIs. Nonetheless, the discussion provided a forum where the various participants discussed issues, experiences and problems concerning their specific responsibilities. The stakeholder came from diverse areas – tourism, local councils, NGOs, Government agencies and private organisations.

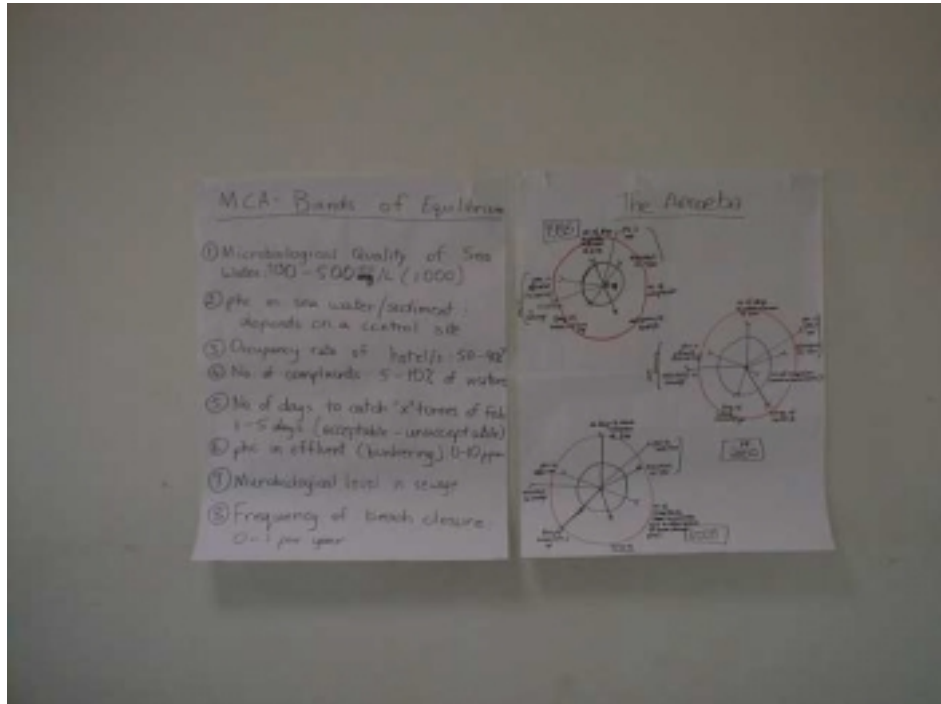


Photo 3. Defining Bands of Equilibrium and producing AMOEBA

This workshop provided an insight into the scope of SIs and the prospective dimension of the SPSA and particularly that SIs are a means to an end and their value is in providing a basis to encourage change and take action where necessary to steer a specific system towards sustainable development.

Fourth Workshop held 5th - 7th February 2001

The Fourth Workshop was important since it was attended by the Director of Blue Plan, Mr. Guillaume Benoit. This confirmed Blue Plan's support to this project and the interest shown in the progress of this approach in the CAMP (Malta) Project. At the end of this fourth workshop the teams had gone through the nine-stage process of the SPSA. This workshop was devoted to the interpretation aspect of SIs and the picture these are giving with regard to the future of the system under review.

The use of a software to produce the AMOEBA, which was developed by Blue Plan in consultation with the consultants, was presented and discussed during this workshop. Participants were able to input their SIs and respective bands of equilibrium and at the stroke of a button the AMOEBA diagram was produced. Participants also provided some recommendations on how the software could be

improved to make it a better planning tool and particularly the possibility of showing relationships between SIs, besides recommendations on design.

Stakeholders were also invited to one of the sessions of this workshop and the SPSA approach and the work done was presented to them. This was an opportunity for stakeholders to see beyond SIs and discover the interpretation dimension of SIs and the SPSA approach as well as the potential offered by marketing SIs to achieve the desired transformation. Stakeholders also suggested some new SIs to be considered.



Photo 4. Discussing aspects of SPSA with stakeholders

Scenario planning was also introduced during this workshop. This identifies what is likely to happen if a particular SI persists and what can be done to reverse or maintain the trend. Bad indicators mean something needs to be changed whilst positive SIs confirm positive action. A strategy is then defined to achieve the desired scenario and actions are identified as to how this strategy might subsequently marketed to stakeholders.

Fifth Workshop held 14th - 15th May 2001

Besides discussing the progress achieved so far, the main purpose of this workshop was the interpretation of SIs through scenario building and the achievement of the desired scenario through marketing and promotion. This workshop was also a precursor to the CAMP (Malta) Project Harmonization and Integration workshop held on the 4th - 5th June 2001.

The final outcome of the whole project is to propose and to provide a monitoring programme in order to follow progress or down turns in the endeavour to achieve sustainable development according to key indicators. An important

stage in this exercise is to identify likely future scenarios and what needs to be done to achieve such scenarios aiming to reach desirable future situations.

The development of a scenario consists of:

1. Having an initial view of the system;
2. Choosing a set of hypotheses of evolution, with criteria of transparency, probability, consistency and relevance;
3. Drawing a pathway which links the past and present with the future;
4. Describing the final situation.

The basis for this approach is the capacity of SIs to provide a foundation for frame-by-frame review of the sustainability of a given context. With Scenarios the thematic teams can develop possible future situations based upon a considered understanding of the themes, which the SIs demonstrate.

During the workshop scenarios were developed for two SIs by making use of Soft Systems Methodology. The teams worked on SIs identified for the Marine Conservation Areas project and the Soil Erosion and Desertification Control Management project. Teams were once again asked to draw a 'rich picture' of what the SIs were indicating. Three possible scenarios were identified and what actions were necessary to achieve those scenarios.

The second part of the exercise was to produce a root definition using CATWOE indicating the transformation desired, how this can be marketed and what is to be done for the promotion to succeed. The three rules in marketing are for the client to relate to the system, feels that is right for him/her and desires that system (simplified to the statement: 'that's me, that's right, yes please').



Photo 5. Using the 'rich picture' to project future scenarios

This workshop concluded the full-cycle of the SPSA approach and methodology. However, the SPSA is continuous and therefore, the exercise does not stop there,

but is continually revised and the whole process starts all over again, with new stakeholders coming in, formulation of new SIs and actions to be undertaken.

It was decided to present the project during a concluding workshop/conference to be held in January 2002. There should be two events, one for external stakeholders (Heads of Governments Departments, Ministers and Parliamentary Secretaries) and one for internal stakeholders (project teams, project team stakeholders). This conference should primarily seek to present the project and its results and obtain a commitment to ensure the continuity of the project.

Concluding Seminar

The concluding seminar was held on 7th – 8th January, 2002. The purpose of this concluding seminar was to present the results achieved by this project and discuss the post project activities. The first day was directed towards the thematic project members and the stakeholders who have attended previous sessions. This was important for teams and stakeholders to provide feedback on their experience of the project highlighting what knowledge they have obtained and any critique of the approach. For the second day Directors of the key Government organisations, which were involved in the CAMP Malta Project, were invited primarily to get their feedback on the possibility of taking the SPSA beyond the CAMP Malta project.

Following the initial presentations, stakeholders expressed their appreciation of having been given the opportunity to participate during the various sessions. Some of the main issues raised concerned the following:

- The publication of the studies not only the SPSA but for all CAMP Projects. There will in fact be a Final Integrated Report, apart from the publication of the individual project reports.
- The SPSA project served as an Integrating function for all projects.
- The commitment by Government to take the project post CAMP. Some suggestions were put forward during the second day's session
- Project must influence the main planning tools particularly the North West Local Plan and the Coastal Zone Management Topic Study. Some SIs can be monitored to assess the sustainability of implementing the North West Local Plan policies whilst there were close links between the Coastal Zone Management Topic Study and the Sustainable Coastal Management thematic project.

The second day saw the participation of the Director of Planning, Planning Authority and the Director of the National Statistics Office (NSO). The two-year work and achievements were presented, however, the emphasis was on the way forward. SIs should become an integral part of any planning and management process for the country. An outline of the possible responsibilities of the Malta Commission for Sustainable Development, even though this had not yet been set up was given by Mr. Louis Vella. This would be a potential set up to continue the project or at least take on Board the process which has been initiated through the CAMP Malta Project in this regard.

A presentation was given by the Director NSO on work being carried out on Indicators.

In terms of sustainable indicators, within NSO an Environment Unit has been established in the past three years and one of its tasks is to co-ordinate the collection of indicators related to social, economic and business aspects. In addition, the Environment Unit has also been compiling environmental data from a variety of sources which will be included in a national compendium that will be published by NSO. This compendium includes a number of environmental indicators related to waste generation, weather, water consumption, transport and energy.

At the end of the sessions, although there was no definite commitment by any Department or Agency to continue the project, nonetheless a number of suggestions were in fact made.

The Malta Commission for Sustainable Development might adopt the process for the formulation of National SIs using the experience from the SPSA activity for the North West.

The thematic projects will have a follow up after CAMP and a key set of SIs can be monitored as part of the second phase of the project.

Some funds are available through SMAP and will be used to progress the Marine Conservation Area project. The SPSA process can be part of this second phase.

The selected key SIs can be monitored, updated and distributed to thematic project teams and stakeholders, and published to keep an interest in the project and to highlight the consequences of trends indicated by the SIs.

It was agreed that besides this report a final publication will be produced which would not be as detailed but which would highlight the whole approach and its results as a demonstration project, which would be of interest to other national and international projects. The material produced as part of this project should also be disseminated on the relevant web sites (e.g. Planning Authority, EPD and Blue Plan).

Sustainability in the North-West

The CAMP Malta) Project focused on the North West area of the Maltese Islands retaining the same boundary as for the North West Local Plan. The plan boundary runs from Ghallis Point in the north, to Wied Fulija in the South and includes all the rural, coastal and settlement areas west of Mosta, Siggiewi and Qrendi. The local councils falling within the North West Local Plan area are Rabat, Mdina, St. Paul's Bay, Mellieha, Mgarr and Dingli. However part of the following councils also falls within the North West Local Plan area – Zurrieq, Qrendi, Naxxar, Zebbug and Siggiewi. It also includes the National Recreation Centre at Ta' Qali. The area has a distinctive rural character, but contains historic and relatively modern holiday settlements and is subject to intense pressure in fulfilling its role as a major area for tourism and recreation activities.

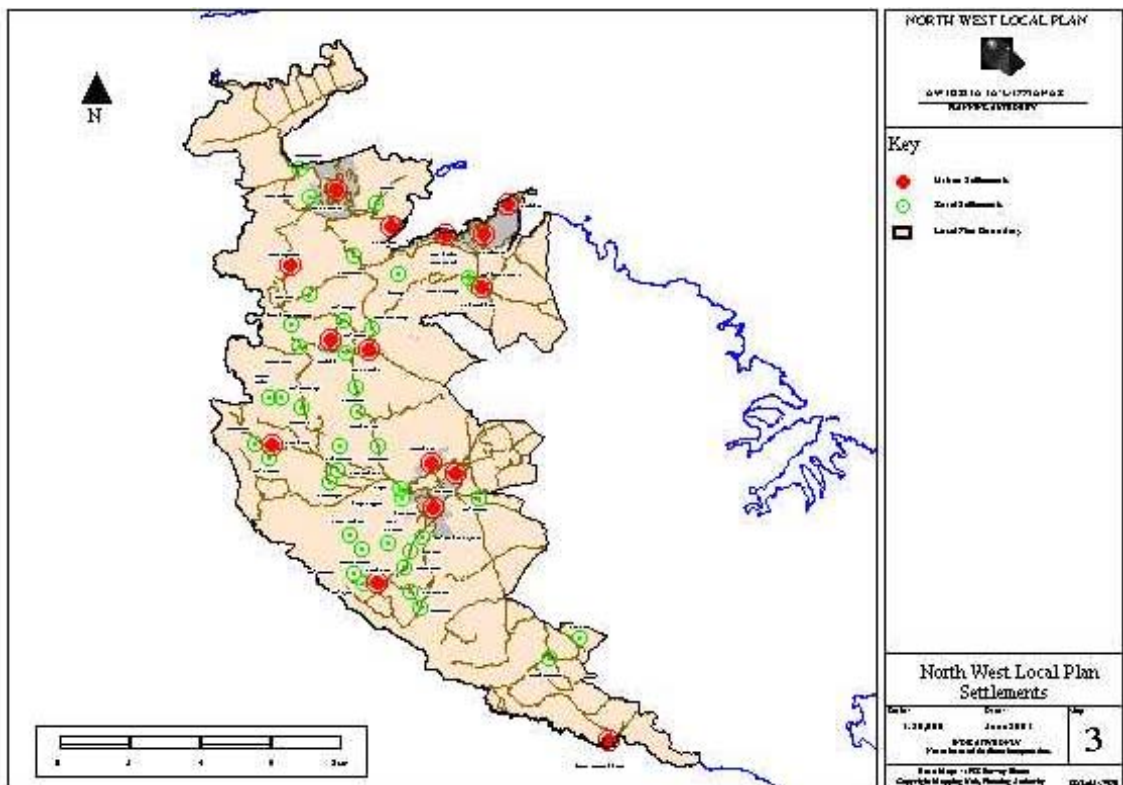


Figure 5. The North West of Malta

Source: Planning Authority

Mellieha and St. Paul's Bay are two important residential and recreational/ tourism centres. Rabat is predominantly residential with Mdina close by being both a tourism attraction as well as a residential area. The localities of Mgarr and Dingli and the settlements of Bahrija, Manikata, Burmarrad and Zebbiegh are closely associated with agricultural activities in the surrounding countryside.

The area is a major 'playground' for the island's resident and visiting tourist population, and is clearly subjected to environmental degradation. Rural recreation as well as diving is important activities in the area. The North West

is also the prime area for bathing, particularly for those seeking sandy beaches. The North West area is unfortunately scarred with illegal dumping of waste material and a number of illegal developments have sprouted over the last decades around the coastal areas, especially the numerous boathouses found in the Marfa area. The area also contains a number of Areas of Ecological Importance, Sites of Scientific Importance and Areas and Sites of Archaeological Importance. The coastal cliffs, particularly those at Dingli are scheduled for protection. The temples at Skorba and Ta' Hagraat house important archaeological remains and the temples of Mnajdra and Hagar Qim are well frequented by visitors. The main strategy of the Draft North West Local Plan ' *is to assess the environmental capacity of the area and protect the natural and man-made environment of both rural and urban areas, provide for economic development needs, accommodate population growth, sustain rural communities and encourage agriculture.*'

The five thematic projects covered a number of the main issues, which concern the North West. The Sustainable Coastal Management project addressed most of the issues relating to the coast such as, illegal developments, recreational activity, tourism development, protection of coastal areas, agricultural activity, hunting and trapping, etc. This project will also produce a Management Plan for the use of the coast. A Strategic Environmental Assessment exercise has been undertaken as part of this project. The Soil Erosion and Desertification Control project focused on the forces, which are resulting in the erosion of the soil cover particularly the abandonment of fields, lack of maintenance of rubble walls, farming practices, etc. The Marine Conservation Area project focusing on the area between Ras ir-Raheb and Irdum Majjiesa has undertaken both land and marine surveys and would produce a management plan for the setting up of the marine conservation area. The Tourism and Health project sought to address health issues in tourist establishments and facilities, as well as beaches in terms of hazards and health risks from waste, food and water quality. The fifth project was the Integrated Water Resources Management project, which had the main aim of looking into water related issues in the North West particularly the supply and quality of water, potential sources of contamination, demand factors, etc.

SIs have been identified for all these projects. Out of the total list of SIs a shorter list of key SIs, which would reflect the level of sustainable development in the NW has been identified and is presented in Table 2. The SIs are also presented using the AMOEBA diagram in Figure 6. The complete list of SIs is presented in Table 3 below.

N°	Indicator	Domaine	Polarity	Note	Maximum	Minimum	2000
1	Scheduled/protected areas in NW	1	>	% of the total coastal area of the NW	80	65	66
2	Abandoned agricultural land	1	>	% of total agricultural land	25	7	15
3	Fish farms in the NW	1	<	number of farms	5	2	5
4	Cars travelling through the NW	1	<	number of cars during peak	3000	1000	4500
5	Marine vessels in the NW	1	<	number of marine craft during peak weekend	700	400	1000
6	Enforcement actions by PA	1	>	annual number of cases	60	25	68
7	Marine conservation/protected areas	1	>	% of coastal length	20	10	0
8	Diving in the NW	1	<	No. of dives	40000	15000	55000
9	Bathing water quality	1	>	% of samples meeting acceptable levels of faecal coliforms (<1000mg/l)	95	85	98.3
10	Number of breaches in rubble walls	1	<	No. of breaches	10	5	11
11	Pollution in ground water	1	<	Level of nitrate (mg/l)	50	25	65.27
12	Unemployed as a % of working population	2	<	% of working population in NW	3	1	1.8
13	Full time farmers	2	>	% of total farmers	50	40	44
14	Tourist accommodation occupancy - winter	2	>	occupancy % during winter	55	35	26
15	Employment in tourism	2	>	fulltime employees in NW % of total	25	15	14
16	No. of claims for storm damage	2	<	No. of annual claims	50	25	72
17	TSE recycled water	2	>	% of water consumed	80	50	4.6
18	leaked water	2	<	cubic metres per hour	600	300	1200
19	level of bunkering operations	2	<	% of total operations in Malta	20	5	19.3
20	Population growth in the NW	4	>	annual rate of growth	5	2	1.4
21	population density in NW	4	>	population per sq km	500	300	328
22	Beach closure	4	<	number of days during summer	15	2	25
23	Tourist resident ratio -summer	4	X	daily tourists as a % of residents	95	70	136
24	Gastroenteritis outbreaks in NW	4	<	No. of total outbreaks in a year	3	1	5
25	Quality of drinking water (1)	4	<	Level of chloride (mg/l)	800	200	517
26	Quality of drinking water (2)	4	<	Level of nitrate (mg/l)	50	15	56
27	Quality of bathing water	4	>	No. of points obtained on faecal coliform readings	50	35	40

Table 2. List of key SIs for the NW

Note: due to the unavailability of data for 2000 some figures represent data for 1999

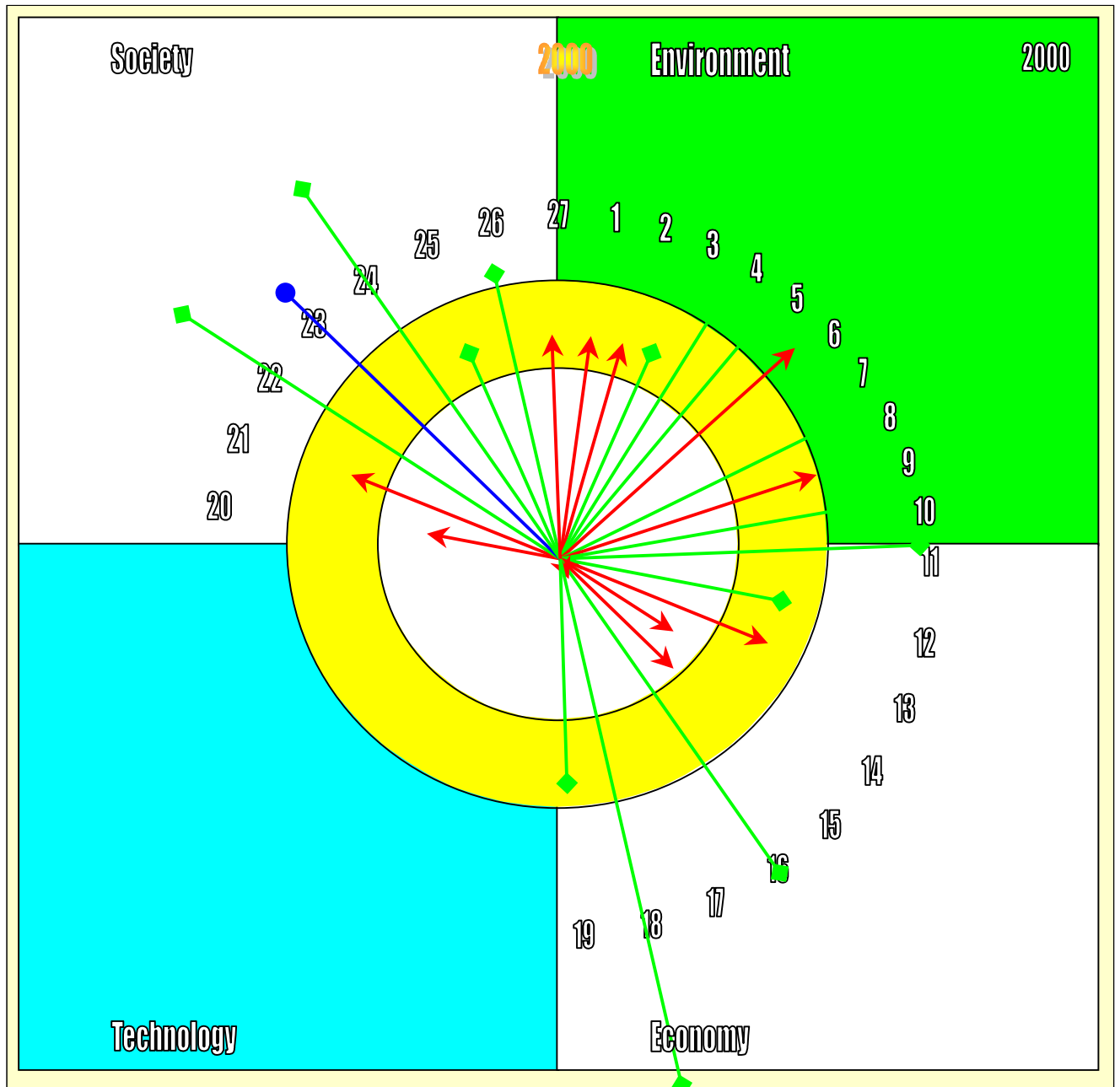


Figure 6. AMOEBA derived from selected SI list

*Final report on the Systemic and Prospective Sustainability Analysis Project within
CAMP "Malta"*

Indicator	Note	Maximum	Minimum	1990	1995	1996	1997	1998	1999	2000
Sustainable Coastal Management										
Applications granted - other	granted as a % of sq m submitted	70	30				1	63		
Applications granted - commercial	granted as a % of sq m submitted	75	40				23	64		
Applications granted - tou/rec	granted as a % of sq m submitted	60	35				34	2		
Applications granted - domestic	granted as a % of sq m submitted	90	80				49	54		
Scheduled/protected areas in NW	% of the total coastal area of the NW	80	65			7				66
Applications granted - agriculture	granted as a % of sq m submitted	95	75				0	24		
Applications granted - listed buildings	granted as a % of sq m submitted	90	70				0	0		
Abandoned agricultural land	% of total agricultural land	25	7			12	12	13	14	15
Fish farms in the NW	number of farms	5	2	3		4	4	4	4	5
Bunkering operations in NW	number of bunkering operations	NA	NA							
Hardstone quarries	size of quarries by surface area (000 sq m)	800	400							775
Production from hardstone quarries	% of national production	80	50			70				60
Cars travelling through the NW	number of cars during peak	3000	1000	1630				4109		
Marine vessels in the NW	number of marine craft during peak weekend	700	400			800				1000
Enforcement actions by PA	annual number of cases	60	25			104	75	67	52	68
Reports to ALE	Annual number of ALE reports	60	25					34	67	109
Unemployed as a % of working population	% of working population in NW	3	1							1.8
Applications granted - industrial	granted as a % of sq m submitted	65	30				0	0		
Applications granted - services	granted as a % of sq m submitted	95	80				100	77		
Full time farmers	% of total farmers	50	40							44
Fish catch	% of total catch	30	15							
Fish farm production	yearly production	NA	NA							
Tourist accommodation occupancy - winter	occupancy % during winter	55	35					39	38	26
Tourist accommodation occupancy - shoulder	occupancy % during shoulder	75	55					65	63	48
Tourist accommodation occupancy - summer	occupancy % during summer	95	80					87	84	67
Employment in tourism	fulltime employees in NW % of total	35	30							14
Population growth in the NW	annual rate of growth	5	2			19	1.6	1.3	1.3	1.4
population density in NW	population per sq km	500	300			310	316	320	324	328
Full time fishermen	% of total fishermen	15	5							
Beach closure	number of days during summer	2	15			36	17	27	28	25
Tourist resident ratio - winter	daily tourists as a % of residents	50	45				48	51	52	51
Tourist resident ratio - shoulder	daily tourists as a % of residents	70	55				92	95	97	95
Tourist resident ratio -summer	daily tourists as a % of residents	95	70				122	129	129	136
Marine conservation/protected areas	% of coastal length	20	10			0	0	0	0	0
Diving in the NW	No. of dives	40000	15000							55000

Indicator	Note	Maximum	Minimum	1990	1995	1996	1997	1998	1999	2000
Tourism & Health										
Gastroenteritis Outbreaks in NW	No. of total outbreaks in a year	3	1				2	1	6	5
Gastroenteritis cases in NW	No. of total cases in a year	9	5				8	6	5	7
Rodent control – bait placed	No of takes from baits places	3	2							
Bathing water quality	% of samples meeting acceptable levels of faecal coliforms (< 1000 mg/l)	95	85			98.5	98.7	98.6	97.4	98.3
Risk Factor grading of hotels	% of inspections falling within Grade A - C	90	70					76	72	68
Risk Factor grading of catering establishments	% of inspections falling within Grade A - C	90	70							57
Rodent Control – residents' complaints	No. of complaints from residents	5	1	9	6	9	7	14	1	
Beach quality as compared to Blue Flag	In % points attained	210	71							
Beach quality as compared to Health criteria	% of total beach sample observations falling within Grade A	100	80			75.4	80.6	81.6	65.7	71.7
Media interest in tourism health	% of positive/negative media coverage	90	50							
Soil Erosion & Desertification Control										
Official flood warnings	No. of warnings given	10	4							
No. of claims for compensation	annual number of claims	50	25	217			50	72		72
No of breaches in rubble walls	No. of breaches	10	5							11
Length of breaches in rubble walls	Length in metres	100	50							69.8
Land tenure	% of agricultural land owned and farmed by owner	50	25							15
Integrated Water Resources Management										
Quality of drinking water	chloride level (mg/l)	800	200	457	771					517
Use index	% of total users	100	85	>99	>99					>99
Water consumption	litres per capita per day	150	90	77.9	88.2					72.9
Pollution in groundwater	Nitrate levels (mg/l)	50	25	67.4	70.1					65.27
water affordability	Lm/m ³	1.1	0.12	0.105	0.327					0.516
TSE recycled water	% of water consumed	80	50	1.5	1.4					4.6
Quantity of produced water	million m ³ /year	20	10	39.59	51.61					35.15
piezometric levels	metres	3.25	0.5	2.81	2.63					3.11
Quality of drinking water	nitrate level (mg/l)	50	15	75	54					56
Leaked water	m ³ /hour	600	300	2421	2800					1200
Marine Conservation Areas										
phc in effluent (bunkering)	ppm	10	0							
Level of bunkering operations	% of total operations in Malta	20	5				20	17.5	25	19.3
Marine vessels in MCA	no. of vessels	70	30							
Quality of bathing water	Number of points obtained on faecal coliform readings	50	35	40	45	50	45	50	40	
Complaints by visitors	% of visitors	10	5							

Table 3. Complete list of SIs for each thematic project
(Note: Some data is not available or has not been collected.)

The following sections will discuss the level of sustainability for each thematic project in the light of the information available from the SIs.

Sustainable Coastal Management

The vast list of SIs shows that this area is pressured with a number of activities ranging from recreational to tourism to industrial to agricultural to fishing, without forgetting the local communities and the residential aspects. These activities are all competing for the limited resources and creating conflicts between the various uses. For example the bunkering operations, fish farms and the sewage outfall in the vicinity of bathing areas are a hazard to bathers and during the last years beaches in the north experienced closures of several days during the summer months. Most of the indicators are within the band of equilibrium with some being consistent whilst others fluctuate much more, for example the number of cars travelling through the North West. This has increased substantially and is way above the maximum level acceptable.

Tourism activity is also showing signs of instability in the area with average occupancies for 2000, during all seasons, falling outside the band of equilibrium. In previous years this was within the band. The level of diving is considered unsustainable since the estimated number of divers exceeds the maximum acceptable. The level of enforcement actions by the Planning Authority has exceeded the band of equilibrium in various years, indicating an unsustainable level of illegal development.

The indicators show that action in specific areas is giving results in terms of sustainable development, whilst in other areas, particularly certain recreational activities, more management measures are required to ensure a sustainable level of activity. Thus a management plan for the coastal zone in the North West needs to be given immediate attention so as to set up the appropriate structures to implement such a plan and ensure a more sustainable use of the coastal zone.

Three specific indicators were chosen and scenarios identified. This exercise was carried out with the participation of stakeholders. The results are given below.

Abandoned agricultural land

The first SI discussed was the % of abandoned agricultural land. The data collected indicates that this has been increasing over the last years. The following three scenarios were identified.

Scenario 1: A sharp increase in the % of abandoned agricultural land

This scenario can occur should the current situation prevail. Agricultural production exceeds demand, with respect to specific produce and therefore, this brings a low return. Technological improvements have increased production from the same piece of land and thus the farmer has no incentive to add more land into production. The current level of full time farmers is high.

Scenario 2: An increase in the % of abandoned agricultural land but at a lesser rate

This scenario can occur should specific actions be taken up. The most important would entail a re-structuring of the agricultural sector with more co-ordination among the various farmers particularly with regard to what to produce and when, even though this is limited by the type of land being worked and its production potential. The availability of more recycled water would reduce potential abandonment of good quality agricultural land. Better production practices can ensure that supply satisfy demand levels.

Scenario 3: A decrease in the % of abandoned agricultural land

This scenario can be achieved provided the agricultural sector is given the attention needed. Incentives and assistance to ensure that farmers make use of their land rather than abandon it. This can be achieved by providing better information on what produce is required and in which season. The tourism sector has indicated that certain products are scarce when most needed and this collaboration between the sectors can bridge the gap directing farmers to produce what is in demand. The availability of second-class water through the sewage treatment plants would encourage the conversion of abandoned land into productive land.

During the discussion it clearly emerged that the transformation to achieve is THE RESTRUCTURING AND AN IMPROVED ORGANISATIONAL STRATEGY FOR THE AGRICULTURAL SECTOR.

In terms of the marketing activities that need to be undertaken the following were some of the suggestions:

- a) Information sessions amongst the farming community to encourage improved agricultural practices particularly in keeping an eye on demand.
- b) Training sessions on the presentation of agricultural produce.
- c) Information leaflets issued by Pitkali (the agricultural market depot) to farmers indicating the likely demand for specific produce during the different seasons.
- d) Collaboration between the agricultural sector and other interested sectors (e.g. Tourism) through joint committees and exchange of information.
- e) More publicity of the local agricultural products to promote the quality of local produce.
- f) Training programmes for farmers to ensure a quality product.
- g) Information leaflets on the use of abandoned agricultural land for production of products in demand.

Some of the problems identified concern the quality of the agricultural land, which constitutes a constraint on how much this land can be worked and for what type of produce, as well as the lack of water resources and competition from products imported from abroad. These are also other issues, which need to be addressed.

Tourism accommodation occupancy - winter

The second SI discussed referred to the level of occupancy of tourist establishments during the winter season. The North West is a seasonal resort and high occupancies are achieved during the summer months. Occupancies during the winter months are low and recent data has shown that average occupancies are decreasing. This SI has taken the average occupancy for all forms of accommodation. During the winter months there is a decrease in usage of self-catering accommodation and therefore hotel accommodation experience an above average level of occupancy. For the sake of this exercise we will stick to the occupancy in hotel accommodation. The following three scenarios were identified.

Scenario 1: Stabilisation of hotel occupancies at current levels

This would require more promotion to attract increased levels of tourists since the average length of stay has been decreasing and more tourists would be needed to sustain current levels. The development of new hotels bringing new beds onto the market is also contributing to the difficulty existing establishments are having in keeping occupancies at acceptable levels during the winter months. Establishments should have to resort to further discounted rates to maintain current and better levels of occupancy. New products to attract tourists during this season need to be developed since the main product offered is summer based.

Scenario 2: Occupancy levels experience a slight increase

This can be achieved with a restructuring of the accommodation offer in the area, particularly to cater for the demands of the winter tourist through innovative facilities and activities. This will also entail a moratorium on new beds with some flexibility being given to existing establishments that wish to re-develop and thus offer a better product. The current bed capacity can be reduced with the removal of low standard accommodation facilities and their redevelopment into other sectors/ facilities.

Scenario 3: A significant increase in hotel occupancy levels

This would require a total moratorium on accommodation development coupled with a reduction to acceptable levels of the current accommodation provision. This should improve occupancies not only in the winter months but also during other seasons. The North West constitutes almost 40% of total accommodation. This level places pressure on existing establishments to achieve acceptable occupancies during the low season. The resort needs substantial improvement to change its image from a seasonal mono-functional resort to an all year round multi functional destination. This will also ensure that hotels achieve better rates.

The transformation to achieve is THE REDEFINITION AND RESTRUCTURING OF THE NORTH WEST TOURIST PRODUCT TO ACHIEVE A CHANGE IN THE IMAGE OF THE RESORT THROUGH INNOVATIVE PRODUCT OFFERS ASSISTING THE PROMOTION OF THE AREA AS AN ALL YEAR ROUND DESTINATION.

In terms of the marketing activities that need to be undertaken the following were some of the suggestions:

- a) Promotion of existing features that would diversify the product offer of the area – historical and ecological features.
- b) Promote activities during the winter and shoulder months to assist accommodation establishments in attracting clientele that would otherwise go to other localities.
- c) Promote investment into family attractions since this is the main market for this area, although the winter months can attract a more senior citizen.
- d) Due to favourable weather conditions tour operators can market the area as a summer during winter resort.
- e) Work with tour operators to promote the resort differently than is being done, highlighting the offers and product of the North West capitalising on the natural areas and attractive coastal features.
- f) Promote new market niches with tour operators – e.g. rural tourism activity, country walks, cycling, diving, etc.

The new design of the Malta Tourism Authority (MTA) brochures should also assist in achieving a better image of this resort. However, this must be coupled with the right policies, which should steer the resort towards a different image than it is currently associated with. This also requires the collaboration and participation of the existing establishments particularly in a programme of product renovation. This is long term but should lead to a more sustainable tourist destination in the future.

Diving in the North West

The third SI discussed concerned the level of diving activity in the North West and specifically the number of annual divers in the area. The North West has a number of popular diving sites, particularly the Cirkewwa site. However, the lack of proper management and organisation is resulting in the crowding of specific diving sites. Although this indicator refers to the annual number of divers one should possibly consider the annual number of dives, since divers dive more than once during their stay and specifically the number of dives during a particular time, say one day. This is an indicator of the pressures in the area resulting from this activity. However, there might be some problem to collect data and the annual number of divers is a proxy indicator.

Scenario 1: Numbers of annual divers increases

The annual number of divers to the area will continue to increase without proper controls and management measures. The popularity of specific sites will result in further concentration of divers in the same sites creating additional damage. Promotion of these sites will also lead to additional divers.

Scenario 2: Number of divers increases but crowding levels reduced

Through the introduction of management measures the diving activity can be regulated ensuring that an adequate and suitable number of divers dive in a specific site at the same time. Although annual numbers of divers increase, yet these are spread both spatially and temporally. This would require less

promotion on the popular sites and increased promotion of other sites as well as the improvement of facilities at such sites e.g. access. Diving schools also need to co-ordinate amongst themselves and organise better their diving programmes to avoid crowding at diving sites.

Scenario 3: Annual number of divers increases but dives at specific sites are limited

This scenario allows an increase in the number of divers but placing a capping on specific sites to limit the crowding in these areas. This will entail introducing management measures at these sites to regulate usage and possibly introducing group booking procedures. This scenario will entail setting capacity limits for the number of divers at one time.

The transformation to achieve is TO GAIN SUPPORT FOR THE SETTING UP OF MARINE CONSERVATION AREAS WHICH INCLUDE THE DIVING SITES.

In terms of the marketing activities that need to be undertaken the following were some of the suggestions:

- a) To promote other potential diving sites thus reducing crowding in the popular sites.
- b) Improve facilities at other sites to encourage their use and enhance their attractiveness.
- c) To formulate a Code of Ethics for divers
- d) To promote co-operation between the diving schools through the Diving Schools Association and through the use of information leaflets for divers and tour operators operating in this sector.

Marine Conservation Area

The evaluation of the SIs with regard to the Marine Conservation area shows that the locality is currently under risk particularly as a result of the pollution activities in the form of the bunkering operations and the nearby sewage outfall. Although the quality of the marine environment, particularly bathing water showed some improvement during recent years, the risk still exists and this is shown by the decline in water quality between the 1999 readings and the 2000 readings. This further emphasises the need for a management structure and measures for the area as well as continual monitoring of the MCA and the various activities being undertaken in the vicinity. The risk of further development along the coastal stretch is a threat to the conservation of this relatively pristine coastal stretch, even though some tourism development has occupied a prime coastal site.

The following represents the scenario building and marketing exercise undertaken in collaboration with the Marine Conservation Area (MCA) project team. The geographical area investigated by the MCA team within the Northwest region extends from Irdum Majjiesa in the North to Raheb Cave in the South.

The Sustainability Indicators (SIs) highlighted below and which will be analysed for this scenario building and marketing exercise have been selected from a number of indicators gathered with respect to the MCA project:

- a) seawater quality;
- b) pleasure craft; and
- c) bunkering operations.

The following were the main criteria considered when undertaking the selection of these indicators:

- a) relevance to this particular exercise;
- b) data availability, probably the most important of the criteria considered;
- c) stakeholder availability, in order to assist in gathering data and to provide guidance if possible; and
- d) marketing possibilities, given that this is a primary objective of the exercise.

Lack of adequate data led to the elimination of recreational diving. However, it is important to note that recreational diving activities in the region under consideration are limited primarily to instructor-guided tours in the Anchor Bay area. This indicator may thus be considered as not being highly relevant for the purposes of this exercise.

Seawater Quality

This first indicator measures the *faecal coliform* count of the seawater, thus highlighting the suitability of the water for bathing purposes and consequently the level of risk to human health. A number of sea water samples are collected from five stations located at Golden Bay, Ghajn Tuffieha and Gnejna, on a weekly basis between May and October. These samples are then analysed for *faecal coliform* count and classified according to the Barcelona Convention Criteria, that is:

- *First class water*; stations in which *faecal coliform* counts are less than 100 per 100 millilitres (ml) in at least 95% of a minimum of ten samples collected throughout the whole bathing season;
- *Second class water*; stations in which *faecal coliform* counts are less than 100 per 100 millilitres (ml) in at least 50% of the samples, and less than 1000 per 100 ml in at least 90% of the samples, calculated on a minimum of ten samples collected throughout the whole of the bathing season; and
- *Third class water*; stations which do not conform to the Barcelona Convention Criteria.

In order to facilitate the analysis of this indicator, a numerical value was attributed to the different classes highlighted above (1st class = 10, 2nd. class = 5, 3rd. class = 0). Given the presence of five stations, the maximum possible number

of points for the whole area was 50. The following results were obtained for the 1995 – 2000 period (Table 4).

Year	1995	1996	1997	1998	1999	2000
Points	40	45	50	45	50	40

Table 4. Points attained with regard to faecal coliform readings

During the years under consideration, the area was characterised by either a first or second-class water quality, with the former one predominating. It is important to highlight the fact that the decline recorded between 1999 and 2000 was probably due to factors such as sewage pollution from Anchor Bay, which lies just outside the area investigated, being carried southwards under certain meteorological conditions. According to official plans, operations at this outfall should be terminated by 2005/2006. For the purposes of the current exercise, scenarios have been developed which involve the possibility of the sewage outfall plant at Anchor Bay continuing with its operations. Three scenarios have been identified with respect to this indicator.

Scenario 1: The sewage outfall at Anchor Bay remains operational with a concurrent increase in development in the region

Given the projected higher local population, the number of tourists residing in or visiting the area and the subsequent expansion in the total number of amenities, it is to be expected that the amount of liquid waste in the area's sewerage system will increase. Hence, the load on the outfall at Anchor Bay would rise significantly, posing a greater environmental threat to the area under consideration.

Scenario 2: The sewage outfall at Anchor Bay remains operational with no concurrent increase in development in the region

Although this scenario still involves an operational sewage outfall at Anchor Bay, the lack of any notable increase in developments in the area implies that the environmental threat is reduced significantly. The situation would subsequently be very similar to the *status quo*. This should not be considered as an altogether negative outlook, especially in light of the figures highlighted in the table above, which indicate that the seawater quality is quite acceptable.

Scenario 3: The sewage outfall at Anchor Bay ceases operations and a wastewater treatment plant used in its place

In the event that operations at the sewage outfall at Anchor Bay are wound up and replaced by a waste water treatment plant, then it stands to reason that the significant reduction in the threat of sewage pollution in the area is practically eliminated. The seawater quality in the area would thus be expected to improve.

The transformation to be achieved thus involves THE ELIMINATION OF THE SOURCES OF SEWAGE POLLUTION IN THE AREA. Subsequent marketing activities designed to achieve this aim may thus involve the following:

- a) Promoting the closure of the outfall thereby completely eliminating the major sources of sewage pollution in the area. This may also involve

marketing campaigns amongst the general public in support of this objective;

- b) Promoting the adoption of the MCA for the area; and
- c) Limiting the number of inland developments in the region. This may involve promoting the development of tourist facilities in the south of the island or other locations, away from the already congested north.

Pleasure Craft

This second indicator is also considered to be important in light of the environmental and sound pollution usually created in the areas these pleasure craft operate in. Given that the number of pleasure craft that berth in the area under consideration is limited and given that other boats that berth in other parts of the island may sail there, it was decided to take into consideration the latter data. This indicator thus reflects the number of seacraft registered in the Small Ships Register since this accounts for those craft that are licensed to sail strictly in territorial waters.

Table 5 highlights the increase in the registration of seacraft in the Small Ships Register from 1996 until July 2001.

Year	1996	1997	1998	1999	2000	Jan–July 2001
New Registrations	581	607	511	442	521	406

Table 5. Annual new seacraft registrations

As highlighted by the data in Table 5, there does not seem to be any real verifiable trend in the number of new registrations. The increase recorded in 1996 - 1997 was quickly followed by a decline throughout 1997 - 1999. The number of new seacraft registered seems to have risen. The following scenarios are illustrated with respect to this indicator.

Scenario 1: An increase in the number of pleasure craft sailing in the area

Such an increase in the number of pleasure craft can be caused by several factors. These include additional marina developments, since this should lead to an overall increase in the number of craft berthing in Malta. Introducing sailing restrictions in other parts of the island may also lead to an increase in pleasure craft activity in the area under consideration. Other factors include promoting the area for recreational and diving activities as well as granting permission for land developments, such as hotels, which operate marine craft for use by their residents.

Scenario 2: A more subdued rate of increase in the number of pleasure craft

The number of pleasure craft that may make use of the area under consideration may possibly be controlled through enforcement measures including security patrols. Controlling the number of land developments should help in controlling the number of craft berthing in the area under consideration.

Scenario 3: No increase or a decline in the number of seacraft

A number of policies may halt the increase in the number of registered seacraft or even lead to a decline. Limiting marina developments on the island, banning

the number of seacraft that can sail in the area and implementing the MCA plan may all help in achieving this objective.

The transformation to be achieved thus involves RESTRAINING SEACRAFT ACTIVITY IN THE AREA UNDER CONSIDERATION. Marketing may involve the following:

- a) Limiting the development of yacht marinas on the island;
- b) Promoting alternative sites for tourism and diving purposes; and
- c) Using the media to promote the need to protect the area.

Bunkering Operations

The third indicator related to the number of bunkering activities. These are undertaken around the Maltese Islands, primarily at a site offshore from ic-Cumnija, in the North West of the island as well as, more commonly, at a site located off the North East coast. The nature of the activities undertaken involves the transfer of fuel to ships at anchor and poses several environmental risks. Data for the total number of bunkering operations undertaken around the Maltese islands as well as off the NW coast were supplied by the Malta Maritime Authority and are highlighted in the following table.

Year	1997	1998	1999	2000
Total	440	498	559	669
NW Malta	88	87	139	129

Table 6. Number of bunkering operations

As highlighted by the data in Table 6 above, the total number of bunkering operations around the Maltese Islands rose throughout the 1997 – 2000 period. With respect to operations off the Northwest coast, an increase was recorded between 1998 and 1999, with a slight decline following in 2000. It is thus noteworthy that (a) the number of bunkering operations off the Northwest in 2000 exceeded that during 1997 by a significant margin and (b) the total number of operations has been rising. The following scenarios are investigated for this particular indicator.

Scenario 1: The *status quo* prevails

In this scenario the *status quo* prevails and bunkering activities continue to be undertaken off the Maltese coast in the same locations. This could occur if no actions are taken to limit the level of business in this particular sector and if no limitations are imposed on where such bunkering activities take place.

Scenario 2: Limit bunkering activities in other areas without limiting the overall level of such activities

This is probably a worst case scenario since it could lead to an increase in the number of bunkering activities undertaken off the NW coast. Policies that may lead to this outcome would include implementing environmental management plans in other coastal areas, such as the North East, or imposing tighter regulations because of other economic activities.

Scenario 3: Limits are imposed on bunkering activities in the North West

This represents the best case scenario since it directly limits bunkering activities near the area under consideration in this exercise. Implementing the MCA plan is one such policy within this respect.

The transformation to be achieved involves RESTRAINING THE LEVEL OF BUNKERING ACTIVITY OFF THE NORTH WEST COAST OF THE ISLAND. The marketing could involve some of the following:

- a) Using advertising/media techniques to promote the concept of reducing bunkering activities off the island's coast;
- b) Highlighting real accidents that occurred abroad; and
- c) Emphasising the use of alternative sites.

Integrated Water Resources Management

Within the CAMP project context, an exercise was carried out to develop some indices, which could be used to assess the sustainable use of water resources in Malta and specifically for the North West. Ten indicators were short listed. Although the project did not envisage a public participation exercise, the SIs were identified as being important indicators for water resources management. Data on these SIs have been collected for a number of years and the bands of equilibrium or the maximum and minimum levels, in most of the SIs relate to quality standards that need to be adhered to (e.g. EU water quality directives).

The following is the list and description of the SIs for this project:

- use index: This index has been defined as the percentage of actual public water users to the maximum potential public water users,
- water affordability: This index refers simply to the water tariff charged to domestic consumers,
- water consumption: This is the amount of water consumed and includes all metered water consumed per capita per day,
- leaked water: This refers to the amount of water produced which is leaked during distribution and is measured in m³/hour.
- Treated Sewage Effluent (TSE) recycled water: This refers to the amount of recycled treated wastewater and is measured as a percentage of water consumed.
- quality of drinking water: The quality of water indicators is evaluated on the basis of nitrate and chloride levels in the water consumed.
- quantity of produced water: This indicator refers to the amount of water produced through Reverse Osmosis plants in the NW (Cirkewwa and Lapsi).
- piezometric levels: Piezometric level is the height of the water table above the mean sea level.
- pollution in groundwater: This indicator is measured on the basis of the nitrate levels in the groundwater.

Comments on the indices

Table 7 illustrates the bands of equilibrium for each indicator and data for each indicator for specific years. Most of the bands of equilibrium, as indicated above, have been defined by using established standards, whilst the bands for some indicators were established during workshops.

Sustainability Indicator	Note	Maximum	Minimum	1990	1995	2000
Use index	% of total users	100	85	99	99	99
Water affordability	Lm/m ³	1.1	0.12	0.105	.327	0.516
Water consumption	Litres per capita per day	150	90	77.9	88.2	72.9
Leaked water	m ³ /hour	600	300	2421	2800	1200
TSE recycled water	% of water consumed	80	50	1.5	1.4	4.6
Quantity of water produced	Million m ³ /year	20	10	39.59	51.61	35.15
Piezometric levels	Metres	3.25	0.5	2.81	2.63	3.11
Pollution in ground water	Nitrates (mg/l)	50	25	67.4	70.1	65.27
Quality of drinking water	Chlorides (mg/l)	800	200	457	711	517
Quality of drinking water	Nitrates (mg/l)	50	15	75	54	56

Table 7. List of SIs for Integrated Water Resources Management Project

The thematic team on this project has identified possible future scenarios with regard to specific SIs. These scenarios and implications are presented below.

Treated Sewage Effluent (TSE) recycled water

This is likely to increase in future particularly since Government is committed to meeting the wastewater directives in this regard and will be constructing sewage treatment plants in the near future. To date, there is only one plant in the South East area of the Island. Thus, the flushing of untreated liquid waste into the sea will be stopped and an amount of secondary class water will be available for use. However, it would seem that the nitrate levels, which will still be present in the recycled water would limit its use for irrigation. Other types of waters exist which can be used and reused including potable water in households. So, there is still some doubt whether such an index can be reliable and useful in water management terms. But it is useful to start thinking in this way where it comes to sustainability since recycling and reuse of water in general will surely benefit to a sound sustainable water management.

Quality of drinking water

Two SIs have been identified measuring nitrate and chloride levels. Data collected with regard to nitrate levels are above what is considered as a sustainable level whilst chloride levels are within the band of equilibrium.

With regard to nitrate levels in drinking water the following potential scenarios may occur:

- a) Nitrate levels will increase – This scenario will result should farmers increase their use of fertilisers coupled with the use of recycled wastewater.
- b) Nitrate levels will stabilise at current levels – Education and training on new cultivation methods and the implications of current practices would

encourage a reduction in the use of such fertilisers, especially if the public will become more conscious on eating safe food. The Water Services Corporation will increase its efforts in polishing ground water to achieve acceptable levels.

- c) Nitrate levels will decrease – The practices of organic farming should these increase through information and training as well as incentives would result in a decrease in the nitrate levels in ground water and subsequently in the drinking water.

Actions to be taken to continually improve the quality of drinking water include:

1. Inform and train farmers with regard to organic farming;
2. Leaflets to consumers on aspects relating to consuming organically farmed produce;
3. Information to farmers encouraging a reduction in the use of chemical fertilisers and pesticides;

The two SIs need to be monitored since they can have an effect on each other (e.g. more intrusion of chlorides from sea may lower the nitrate content).

Quantity of water produced

The likely future scenario would be a decrease in the water produced through Reverse Osmosis Plants in the short term but the production of water may increase in the long term following an increase in the resident population in the NW. This is the result of a number of initiatives since the mid-90s whereby Government launched awareness campaigns for the public to save on water, improved the distribution systems to reduce leakages and through water conservation measures e.g. recycling and re-use.

The production from the plants in Cirkewwa and Lapsi have shown decreases in production, which although decrease production costs, nonetheless result in an excess capacity. To achieve further decreases in water produced would require the following actions:

1. An ongoing awareness programme on saving water;
2. The reuse of recycled water not only for irrigation but for other appropriate uses particularly in tourist accommodation facilities;
3. Improving distribution systems and enforcing theft of water;
4. Improving water production efficiency to decrease energy generated for this purpose and reduce the level of emissions from the power stations.

Integrated water resources management and sustainable development

One must first comment that the maxima and minima pre-set for the various indices are either standard or based on international standards such as WHO or EU whilst others e.g. use index, TSE recycled water and piezometric levels have been established on the basis of experience and general national objectives. For example, everyone would agree that a 100% use index is desirable. In fact, the use index is already over 99% and has been fixed at 99% since attainment of 100% may never be possible even though current levels are close enough. Thus in terms of servicing the customer with water in the NW region one can say that all water users are serviced through the water distribution system.

The water consumed reflects normally the needs of each consumer. However, such needs may hide wastes within the use itself due to subsidies or low water cost. Hence, the general tendency to reduce water consumption is to be retained as an improvement especially when one considers that post-1995, there was a general improvement in the method to measure and check un-accounted for water. The figures indicate that per capita water consumption is below the minimum level and although not in the sustainability band nonetheless the levels indicate less pressure on demand for water resources.

The tendency in the reduction of leaked water is marked. This is on the decrease although not yet within the band of equilibrium. Further improvements and enforcement actions would further reduce the level of unaccounted for water. However, there is a bottom line below which it may not be economically viable to invest further and concentrate resources to attain a lesser percentage of leaked water.

As mentioned previously, the concept and culture of recycling water is still in its infancy. There is, currently, only one sewage treatment plant with three more plants to be constructed and commissioned within the next few years with one being in the NW. The actual use of the treated water is something else since this has to be combined with a good education to potential users regarding its benefits. Other recycling techniques and other recyclable and reusable water need to be studied and eventually launched. At a private level, little is known regarding any recycling being actually exercised, with the exception of a couple of hotels in the North West. As long as potable water is affordable, there is little incentive for any recycling and the recycling techniques may still be too prohibitive to afford. The figures produced in Table 7 reflect only the TSE use to-date. The maxima and minima are levels that would gradually be achieved once the sewage treatment plant in the NW is in place and with EU directives all sewage should be treated before being

As mentioned previously, there is a general trend to reduce water production especially where Reverse Osmosis (RO) is concerned. More importance is now being given to improve water quality in general by introducing groundwater polishing. Figures included in Table 7 tend to show a reduced production of water especially after 1995, where water conservation schemes and increased production costs have put their mark on the slowdown and reversal of water production. This is positive but there is more room for improvement especially when alternative water resources are efficiently introduced into our daily needs and economic activities, which will eventually limit the use of more costly potable water.

There was a decrease in the piezometric levels between 1990 and 1995. At first, it was thought that this drop was due to over extraction by the Government. However, two surveys (1993 and 1997), indicated that the private extraction had exploded to such an extent that in actual fact, this had exceeded public sector extraction, which was being regulated. This can be corroborated, though not in real figures, by the numerous quantities of boreholes illegally drilled, the capacities of pumps being sold locally for such boreholes, the increase in irrigated areas and the ever decrease in quality of the groundwater quality especially in the increasing chloride levels. These levels are also affected by rainfall. The increase in level for 2000 is mainly due to local effects in one

particular gauging borehole. Unfortunately, this may not reflect the actual situation. With regard to this SI ongoing monitoring of the indicator is important to ensure an adequate water table level.

With regard to the pollution of groundwater, one must note that there was a slight improvement in the index for 2000. This value is an average weighted value. During 2000, certain groundwater sources exhibiting high nitrate values and which fed directly into the distribution network, were put off line and will eventually await polishing to be put again on line. In general, their values are still high for being consumed directly without blending or polishing.

Last but not least with regard to the quality of drinking water, the values taken are also average weighted values and so reflect the total actual production at the time of sampling and testing of the water. It is obvious, looking at the figures that there was a marked improvement in the drinking water quality with chloride readings within the acceptable levels but nitrate levels, although decreasing are still outside the standards expected. The improvement overall is mainly due to shutdowns of sources with high chloride and nitrate levels where these could not be blended with Reverse Osmosis (RO) water prior to distribution.

The main SIs for water resources management indicate that in certain aspects more initiatives are needed to achieve the desired level of sustainability e.g. nitrate levels in drinking water and groundwater, leaked water. Actions are needed to reduce private extraction from the ground water and awareness campaigns to farmers to reduce the use of hazardous pesticides that increase the nitrate levels in the ground water.

The approach taken in this particular activity differed from that taken by the other projects, especially with regard to the interaction with stakeholders. The possible future scenarios were a result of indications given by the team and were not stakeholder generated. It is likely that should stakeholders be involved, the final list of SIs may change and reflect the opinions of the stakeholders. It was also indicated that for the SIs identified it was not necessary to determine bands of equilibrium with stakeholders since the bands of equilibrium were standards already set primarily in EU Directives on drinking water quality.

Tourism and Health

The Tourism and Health activity within the CAMP Project developed a number of indicators that could be used for the monitoring of tourist health in the North West of Malta. These included:

1. Number of outbreaks of Gastroenteritis
2. Number of individual cases of Gastroenteritis
3. Risk Factor Grading of Hotels and Catering Establishments
4. Rodent Control – Number of takes from bait placed
5. Rodent Control - Number of complaints from local residents
6. Beach Quality as compared to Blue Flag Criteria
7. Beach Quality as compared to a list of 'Health' Criteria
8. Bathing Water Quality
9. Media Interest in Tourist health

All the above indicators were useful to help the team monitor the progress of the activity especially during the work phase of the project, in particular, Beach Quality compared to Blue Flag criteria, to health criteria and media interest in Tourist health. Rodent control, using the number of takes from bait, also helped monitor the state of cleanliness of the beaches studied and the effectiveness of the programme used during the field work of the activity. However, such indicators were only useful for the duration of the activity and were therefore short-term indicators, since past data was not available since it had not been collected previously.

In the case of outbreaks and individual cases of gastroenteritis, catering establishment inspections and bathing water quality, these indicators could be compared to previous years to study trends and extrapolate under various scenarios.

Outbreaks and individual cases of Gastroenteritis

Trends can be seen in tables below.

Year	No. of cases in NW Malta	Total number of cases in Malta
1997	8	25
1998	6	18
1999	5	18
2000	7 (1 imported)	19 (1 imported)

Table 8. No. of gastroenteritis cases (whole year)

Year	No. of outbreaks in NW Malta	Total number of outbreaks in Malta
1997	2	5
1998	1	2
1999	6	10
2000	5 (1 imported)	12 (1 imported)

Table 9. No. of gastroenteritis outbreaks (whole year)

Year	No. of cases in NW Malta	Total number of cases in Malta
1997	6	17
1998	5	15
1999	4	15
2000	6	11

Table 10. No. of gastroenteritis cases during study period (end May - end October)

Year	No. of outbreaks in NW Malta	Total number of cases in Malta
1997	2	4
1998	1	1
1999	2	2
2000	4	8

Table 11. No. of gastroenteritis outbreaks during study period (end May - end October)

Catering Establishments Reports

The inspections of all catering establishments showed an improvement over the years as can be seen in the tables and graphs below. The Catering Establishments are given a rating from Grade A to Grade F, with Grade A being the best grade possible. Before such a grading is awarded, the premises are given a risk assessment factor expressed as a percentage. These are as follows:

Risk Assessment Factor	Grading
Up to 29%	A
30% to 39%	B
40% to 49%	C
50 – 59%	D
60% to 69%	E
70% and over	F

Grade	1998	1999	2000	
			1 st inspection	2 nd inspection
A	0	0	0	0
B	1	4	4	3
C	18	14	18	14
D	6	5	3	8
E	0	2	0	0
F	0	0	0	0

Table 12. Grades given to hotels following inspections for specific years in the NW

Source: Catering Establishments Inspections, 2000. Food Safety Branch, Public Health Dept.

Grade	1 st inspection	2 nd inspection
A	1	1
B	2	6
C	37	40
D	27	23
E	11	12
F	4	3

Table 13. Grades given to catering establishments' inspections for 2000 in the NW

Source: Catering Establishments Inspections, 2000. Food Safety Branch, Public Health Dept.

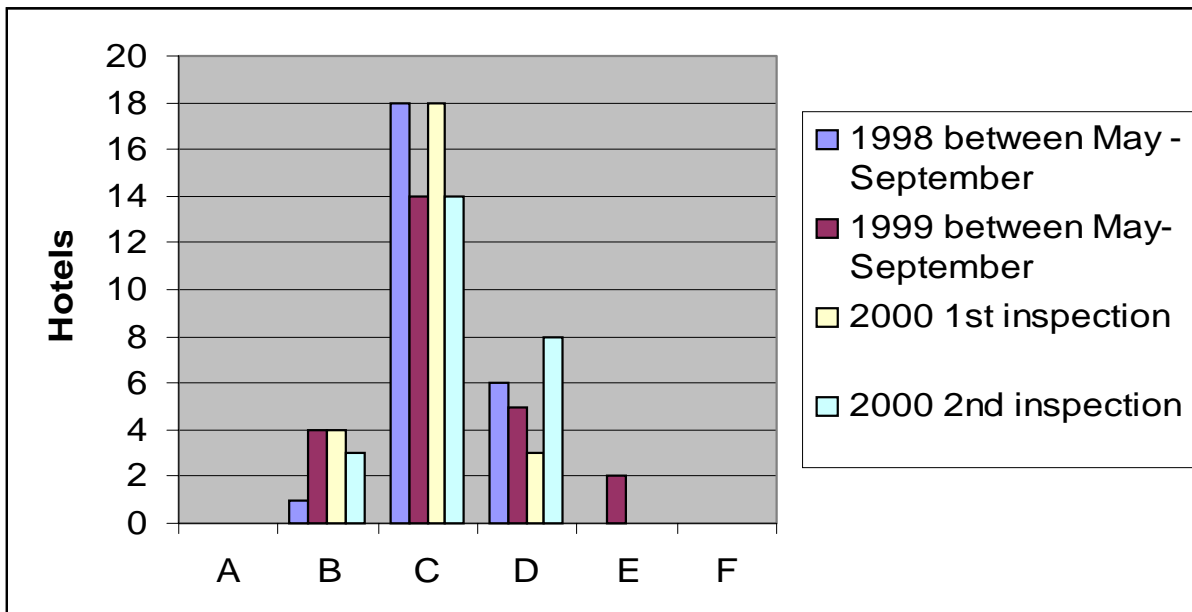


Figure 7 Hotel Inspections

Source: Catering Establishments Inspections, 2000. Food Safety Branch, Public Health Department

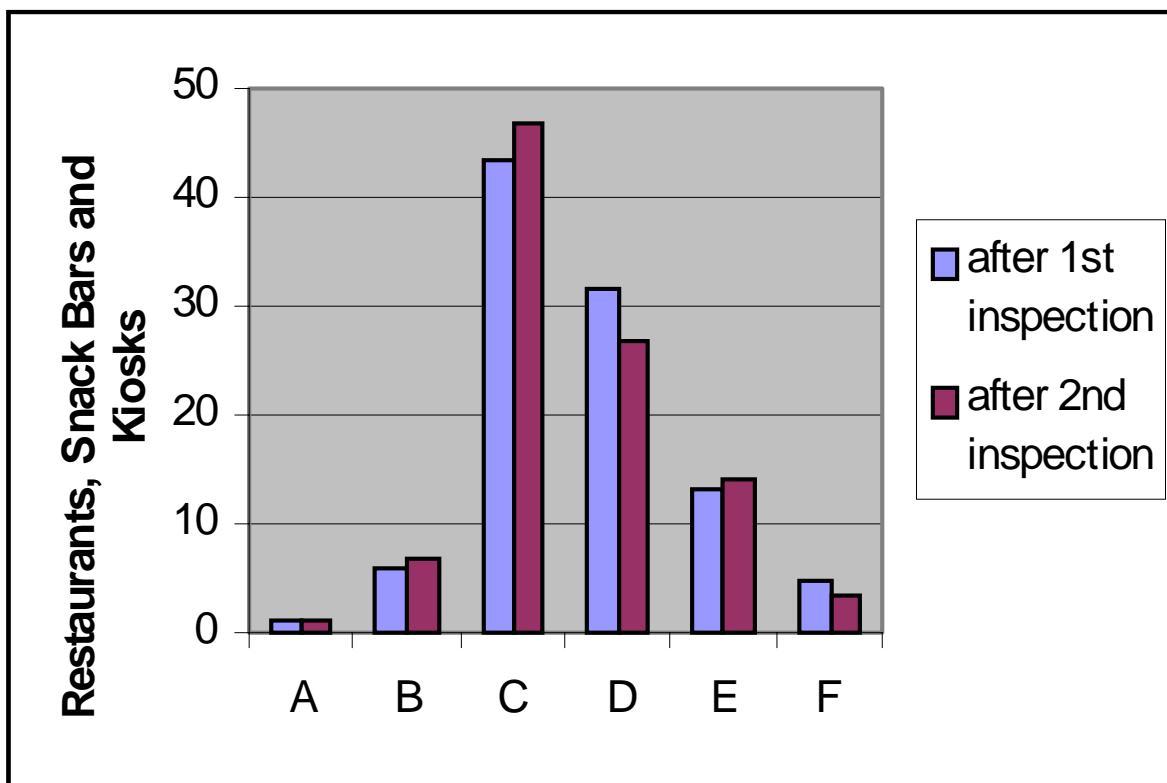


Figure 8. Inspections to catering establishments

Source: Catering Establishments Inspections, 2000. Food Safety Branch, Public Health Department

Pest Control

The success of the intensive programme carried out during the field work phase of this activity can be seen in the table of complaints below which show that there was a marked decrease in registered complaints in 2000 as compared to previous years.

	Suncrest – Fra Ben Area	Fra Ben – Dolmen Area	Xemxija (Church - Simar Area)
1995	3	2	4
1996	2	2	2
1997	6	2	1
1998	4	2	1
1999	6	7	1
2000	0	0	1

Table 14. Complaints lodged at the Rodent Control Office between May and October

Source: Rodent Control Section, Department of Public Health

Bathing Water Quality.

The individual sampling sites were compared to previous years to try to establish the trend at each particular site. There were varying trends at each bay with some showing deterioration, some remaining stable and some improving the quality of their bathing water.

Grade A water is the best quality registering less than 100 coliforms per 100mls of water. Grade B water does not warrant closure but acts as a warning that there may be some sewage effluent at that site and may require closer observation over the next sampling days. This is equivalent to >100coliforms but <999 coliforms per 100mls of water. Grade C warrants immediate action being taken, since such a grading registers a >1000 coliforms per 100mls, with a repeat sample taken immediately to confirm the poor state of the water. If confirmation occurs the length of the beach is immediately closed to bathing till three successive samples are of Grade A quality.

A first glance at the figures in the two Tables below indicate that there is a serious problem in the western coastal stretch of the NW with a low percentage of the readings falling within Grade A for the areas of Golden Bay, Ghajn Tuffieha and Anchor Bay, possibly a result of the sewage outfall in the vicinity of Anchor Bay. Bugibba and Qawra have also shown a decrease in reading falling under Grade A over the last years.

Site	Year	Grade C	Grade B	Grade A
Qawra	1996	2 (1.75%)	28 (24.56%)	84 (73.68%)
	1997	0	9 (8.18%)	101 (91.81%)
	1998	2 (1.81%)	18 (15.65%)	95 (82.6%)
	1999	6 (5.26%)	51 (44.73%)	57 (50%)
	2000	3 (2.6%)	44 (38.26)	68 (59.13%)
Bugibba	1996	1 (1.08%)	28 (30.43%)	63 (68.47%)
	1997	2 (2.17%)	14 (15.21%)	76 (82.6%)
	1998	0	15 (16.30%)	77 (83.69%)
	1999	2 (2.17%)	30 (32.6%)	60 (65.21%)
	2000	1 (1.14%)	23 (26.43%)	63 (72.41%)
St. Paul's Bay	1996	2 (0.87%)	64 (28.07%)	162 (71.05%)
	1997	8 (3.49%)	58 (25.32%)	163 (71.17%)
	1998	2 (0.89%)	41 (18.30%)	181 (80.80%)
	1999	9 (3.96%)	83 (36.56%)	135 (59.47%)
	2000	2 (0.91%)	61 (27.85%)	156 (71.23%)
Golden Bay	1996	2 (4.54%)	11 (25%)	31 (70.45%)
	1997	0	8 (17.39%)	38 (82.60%)
	1998	0	8 (18.18%)	36 (81.81%)
	1999	2 (4.34%)	22 (47.82%)	22 (47.82%)
	2000	2 (4.44%)	19 (42.22%)	24 (53.33%)
Ghajn Tuffieha	1996	1 (2.32%)	4 (9.30%)	38 (88.37%)
	1997	0	10 (21.73%)	36 (78.26%)
	1998	2 (4.54%)	1 (2.27%)	41 (93.18%)
	1999	0	11 (23.91%)	35 (76.08%)
	2000	1 (2.22%)	13 (28.88%)	31 (68.88%)

Table 15a. Frequency of sample readings conforming to each grading

Site	Year	Grade C	Grade B	Grade A
Anchor Bay	1996	0	9 (40.9%)	13 (59.09%)
	1997	0	7 (30.43%)	16 (69.56%)
	1998	3 (13%)	8 (34.78%)	12 (52.17%)
	1999	0	10 (43.47%)	13 (56.52%)
	2000	1 (4.34%)	11 (47.82)	11 (47.82%)
Gnejna	1996	0	3 (13.63%)	19 (86.36%)
	1997	0	6 (26.08%)	17 (73.91%)
	1998	1 (4.76%)	6 (28.57%)	14 (66.66%)
	1999	0	6 (26.08%)	17 (73.91%)
	2000	0	8 (34.78%)	15 (65.21%)
Mistra bay	1996	2 (4.54%)	12 (27.27%)	30 (68.18%)
	1997	0	7 (15.21%)	39 (84.78%)
	1998	1 (2.17%)	5 (10.86%)	40 (86.95%)
	1999	0	6 (13.33%)	39 (86.66%)
	2000	0	9 (20.45%)	35 (79.54%)
Mellieha Bay	1996	2 (1.44%)	24 (17.39%)	112 (81.15%)
	1997	1 (0.73%)	23 (16.91%)	112 (82.35%)
	1998	0	28 (20.74%)	107 (79.25%)
	1999	2 (1.44%)	33 (23.91%)	103 (74.63%)
	2000	3 (2.17%)	23 (16.66%)	112 (81.15%)
Armier	1996	0	3 (13.04%)	20 (86.95%)
	1997	0	2 (8.69%)	21 (91.30%)
	1998	0	4 (18.18%)	18 (81.81%)
	1999	0	5 (21.73%)	18 (78.26%)
	2000	1 (2.17%)	7 (15.21%)	38 (82.60%)
Cirkewwa	1996	0	3 (6.52%)	43 (93.47%)
	1997	0	4 (8.69%)	42 (91.30%)
	1998	0	4 (9.3%)	39 (90.69%)
	1999	0	4 (8.69%)	42 (91.30%)
	2000	0	3 (6.52%)	43 (93.47%)

Table 15b. Frequency of sample readings conforming to each grading

Soil erosion and Desertification Control

The list of SIs for this specific thematic project was drawn up and discussed in detail during the various SPSA workshops. In addition the preliminary list has also been discussed with the main stakeholders, especially the Agricultural Cooperatives.

The final list of SIs is the following.

Official flood warnings – This indicator is measured by the amount and intensity of precipitation and is presented in terms of the number of official warnings. Precipitation intensity and amount is a crucial factor in determining the extent of soil erosion. No data is yet available for this SI.

Scenario 1 – Number of flood warnings will increase

This will come about as a result of more surface areas taken up for urban expansion and also due to the increased connectivity of the road network. The removal of soil cover for urban expansion will increase the number of warnings as more areas become prone to flooding.

Scenario 2 – Number of flood warnings decrease

This will result through a number of factors, which include the increased experience within the Civil Protection Department to handle such eventualities, improved road construction (e.g. culverts and their maintenance) and further control of urban sprawl.

Land tenure – This is given as the percentage of agricultural land owned and farmed by the occupying farmer. If land is owner farmed there is more concern over the maintenance of the field. Recent data for the NW has not been published as yet. Nonetheless, data for specific areas, e.g. Tas-Santi valley has been collected and used.

Year	Total cultivated land	Owner cultivated land	Land leased out
1978	12585 ha	1170 ha	9342 ha
1982	11639 ha	1221 ha	9223 ha
1991		1760 ha	9269 ha

Table 16. Land tenure

Scenario 1 – Land tenure will increase

The amount of agricultural land farmed by owner is increasing as a percentage of total cultivated land as decreases are experienced in the amount of cultivated land leased out to farmers. Farmers owning land they work are more willing to invest in agricultural productivity of their holdings through proper irrigation, water retention structures and maintaining rubble walls.

Scenario 2 – Land tenure will decrease

This may result as the interest in the agricultural sector diminishes particularly as a result of competition from imported products. As farmers grow older they may abandon their fields thus encouraging further erosion due to lack of maintenance.

Number of claims for compensation – This is the number of annual claims filed with the Agricultural Department for compensation as a result of storm related damages. The lesser the claims the lesser the erosion.

It is very likely that the number of claims in the future will decrease and possibly stabilise. This is a result of better maintenance of rubble walls and protection measures that should decrease the prospect of erosion occurring as a result of storm damage. More ownership of cultivated fields should encourage more maintenance. However claims may also decrease, as farmers are discouraged from reporting damages if they perceive that their claims are ignored. It is also important that all farmers are compensated whether owners or not.

Date of Storm	Number of reports filed
November 1998	72
September 1997	50
October 1995	217
December 1988	853
October 1979	104
December 1973	207

Table 17. Claims for compensation following storm damage for specific years

Number of breaches in rubble walls – This refers to the number of points along a rubble wall where the level of soil is higher than the retaining rubble wall and exposing the soil layer at that particular point.

Length of breaches in rubble walls – This SI measures the length in metres of the breaches in the rubble walls.

This SI is very laborious and time consuming due to the fact that measurement and calculation of the length of the breaches have to be done by going on site. Some data for specific areas has been recorded.

Locality	Number of breaches	Length of breaches
Tas-Santi	11	69.8 metres
Burmarrad	11	547 metres

Table 18. Breaches in rubble walls in specific areas within the NW

Scenario 1 – Breaches in rubble walls will increase

This will happen as a result of a decreasing agricultural sector and therefore less maintenance of the fields. Should land tenure decrease this will adversely affect the state of rubble walls that will continue to deteriorate.

Scenario 2 – Breaches in rubble walls will decrease

This will entail specific actions, which include incentives to farmers to maintain their fields, interventions by specific Government agencies to rebuild rubble walls.

The following Marketing actions were identified to encourage good land stewardship, which should decrease soil erosion:

1. Identify core campaign message;
2. Identify main customer (farmers & land owners);

3. Select promotional method – Content, info packs for landowners individually;
4. Identify key persons in co-ops, pitkali (the vegetable market) and extension services, etc. to act as focal points;
5. Info packs, etc., for local persons and cultivate a relationship with them;
6. Sell idea to politicians with cost/benefit analysis;
7. Monitor results and adapt.

Conclusions

The above discussion is in itself an indication that there is still a lot to be done to be able to assess the overall sustainability of the various activities in the North West of the island. Although on the level of specific SIs it would seem that some level of sustainability is apparent e.g. abandoned agricultural land, tourism occupancies, an overall assessment of the North West would indicate that co-ordinated efforts are necessary to ensure an overall sustainable development of the area and not within specific sectors only.

Some indicators may need further examination since they may be showing only part of the picture. For example, although tourism accommodation occupancies are within the bands of equilibrium, room rates may be lower than desired.

More data needs to be collected to determine specific SIs and particularly to identify trends to assist in projecting likely future situations should trends persist and examine how negative trends can be changed to achieve desirable situations.

The SPSA process indicates the various pressures on this area resulting from the different functions practised in the area. There seems to be little co-ordination between the various sectors, which is the reason for an overall impression of unsustainable levels of activity, which in some cases is a reality e.g. crowding of beaches, diving activity, marine vessels in the area, pollution of groundwater.

The NW requires setting up a management agency to implement measures to ensure the functions of the area operate within an integrated manner and that the impacts from the various activities are monitored to retain activity within the sustainable levels desired.

As a final exercise the list of key SIs presented in Table 2 above were projected to identify two future scenarios that might occur in 5 to 10 years time. The first scenario is a result of current trends progressing into the future assuming that current actions being taken are continued. The second scenario is a more rapid move to conform to sustainability levels, particularly as a result of EU obligations should Malta become a full member of the EU. The projected figures for each scenario for each SI are presented in Table 19 below. The AMOEBAE for both scenarios are presented in Figures 9 and 10.

N°	Indicator	Note	Maximum	Minimum	2000	Scenario 1 Current trends	Scenario 2 Improved environmental performance
1	Scheduled/protected areas in NW	% of the total coastal area of the NW	80	65	66	73	75
2	Abandoned agricultural land	% of total agricultural land	25	7	15	20	10
3	Fish farms in the NW	number of farms	5	2	5	5	5
4	Cars travelling through the NW	number of cars during peak	3000	1000	4500	5000	3500
5	Marine vessels in the NW	number of marine craft during peak weekend	700	400	1000	1500	650
6	Enforcement actions by PA	annual number of cases	60	25	68	70	30
7	Marine conservation/protected areas	% of coastal length	20	10	0	5	15
8	Diving in the NW	No. of dives	40000	15000	55000	60000	40000
9	Bathing water quality	% of samples meeting acceptable levels of faecal coliforms (<1000mg/l)	95	85	98.3	90	99
10	Number of breaches in rubble walls	No. of breaches	10	5	11	20	8
11	Pollution in ground water	Level of nitrate (mg/l)	50	25	65.27	70	30
12	Unemployed as a % of working population	% of working population in NW	3	1	1.8	2.5	2
13	Full time farmers	% of total farmers	50	40	44	30	50
14	Tourist accommodation occupancy - winter	occupancy % during winter	55	35	26	25	40
15	Employment in tourism	fulltime employees in NW % of total	25	15	14	13	20
16	No. of claims for storm damage	No. of annual claims	50	25	72	65	35
17	TSE recycled water	% of water consumed	80	50	4.6	10	30
18	leaked water	cubic metres per hour	600	300	1200	800	800
19	level of bunkering operations	% of total operations in Malta	20	5	19.3	18	10
20	Population growth in the NW	annual rate of growth	5	2	1.4	2	3
21	population density in NW	population per sq km	500	300	328	350	400
22	Beach closure	number of days during summer	15	2	25	20	10
23	Tourist resident ratio - summer	Local residents as % of foreign tourists	95	70	136	140	125
24	Gastroenteritis outbreaks in NW	No. of total outbreaks in a year	3	1	5	4	2
25	Quality of drinking water	Level of chloride (mg/l)	800	200	517	500	300
26	Quality of drinking water	Level of nitrate (mg/l)	50	15	56	55	40
27	Quality of bathing water	No. of points obtained on faecal coliform readings	50	35	40	45	50

Table 19. Projected SIs for two specific future scenarios

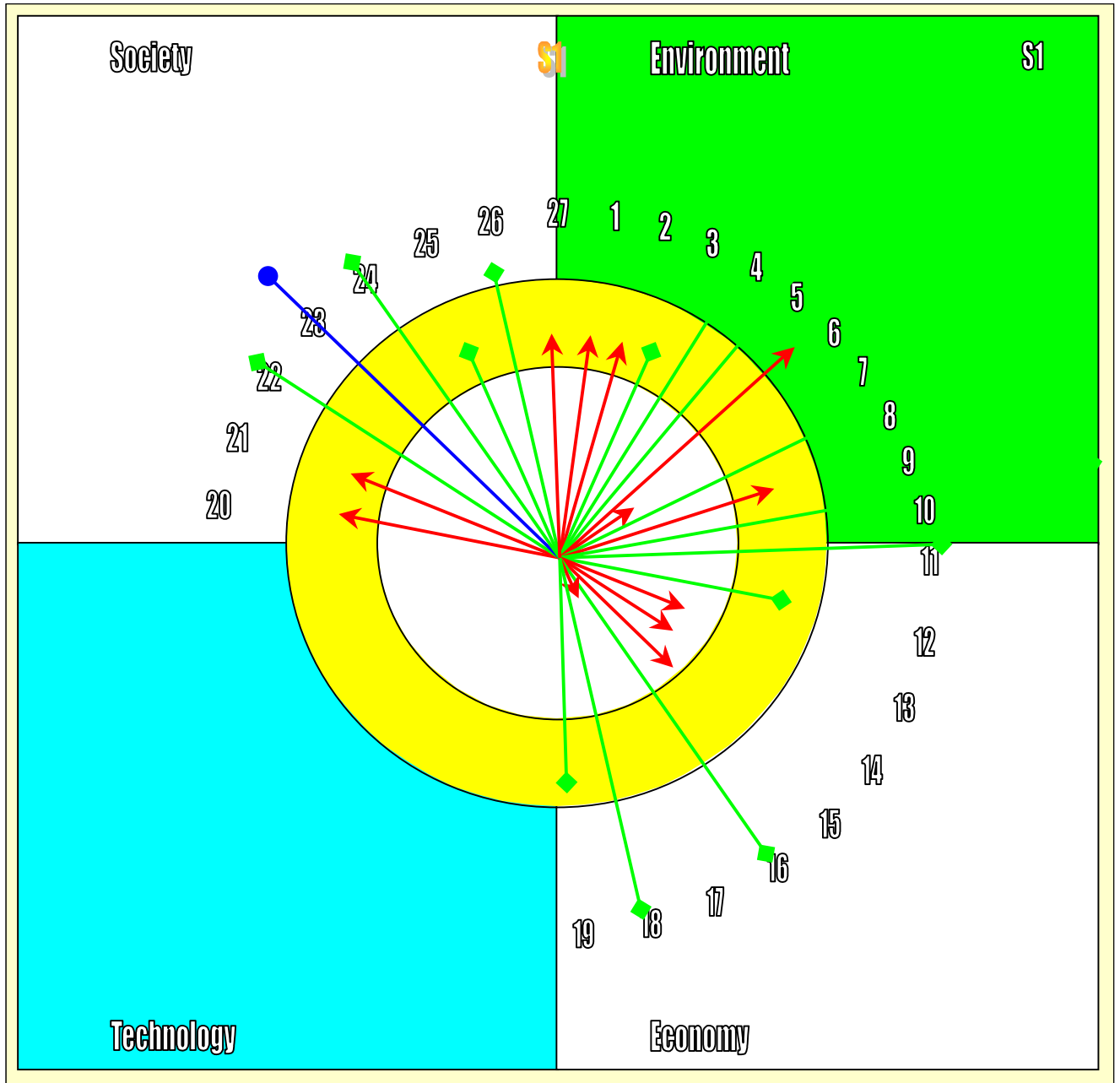


Figure 9. AMOEBA for Scenario 1

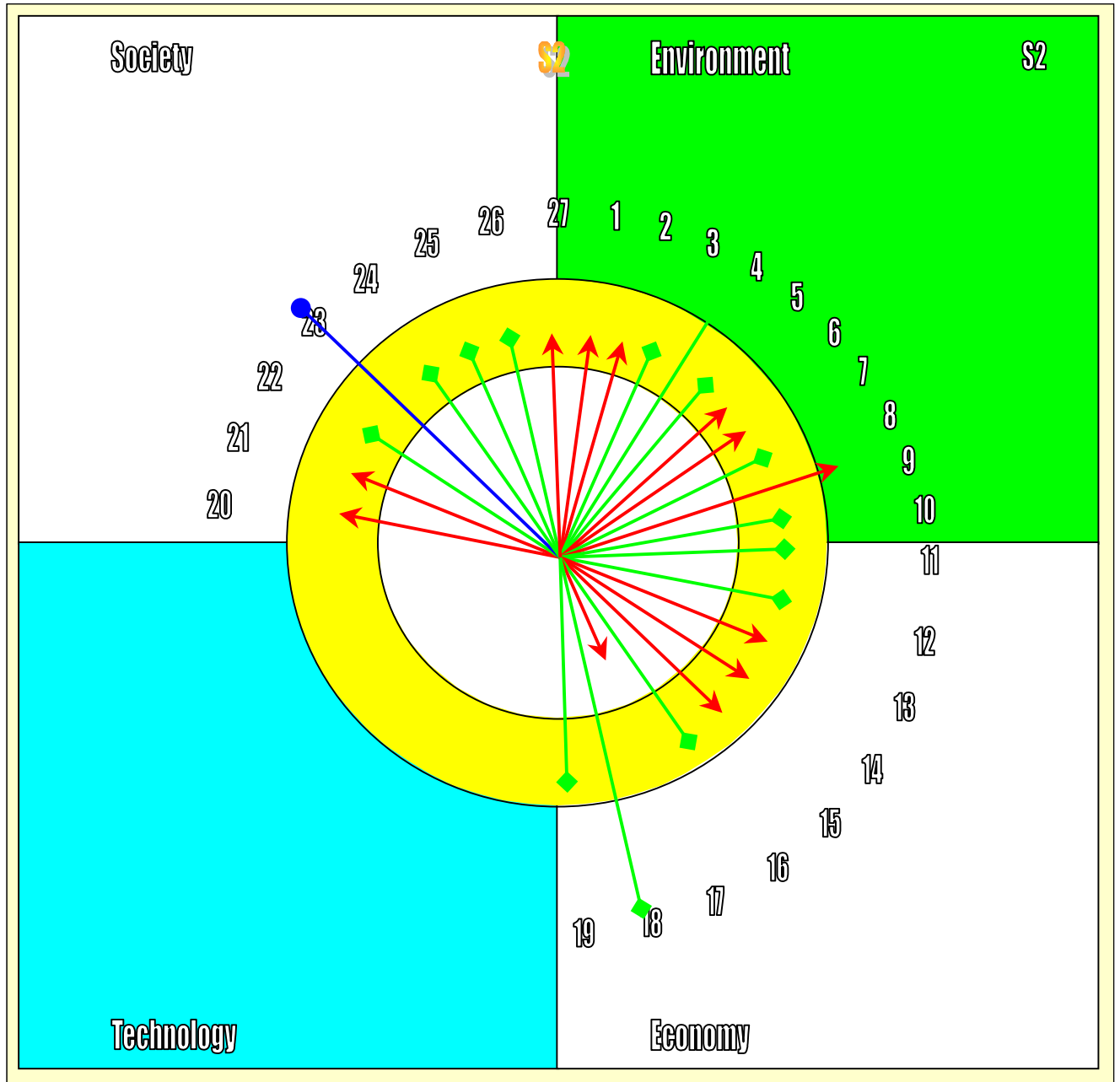


Figure 10. AMOEBA for Scenario 2

Implications of scenario 1

Should current trends progress into the future few SIs would fall within the band of equilibrium and therefore within the sustainability level agreed by stakeholders. This scenario will result as a consequence of retaining current operational and management measures. In areas where no specific management measures apply it is likely that activity will increase particularly at main diving sites and the recreational seacraft moving through the NW. The increasing importance of the NW for recreational activity will also increase the number of cars travelling to the NW.

Agricultural operations are likely to continue to decrease with more land being abandoned and the lack of interest in maintaining the fields' increases. The level of tourism development in the area is likely to increase as a result of new beds through new projects and extensions coming on the market.

The result of this scenario would be an aggravation of the current situation with a decrease in the quality of the physical and social environment and possibly even economic in the NW. Through management measures this trend can be reversed e.g. countryside management and beach management.

Implications of Scenario 2

The adherence to EU standards and directives should Malta become a full member of the EU would stimulate more efforts into environmental protection and the attainment of sustainable levels of activity. This may be somewhat long term since it would require a culture change in the way the country goes about its operations. The availability of Funds should also encourage specific actions with regard to heritage protection particularly investment in improving the cultural and environmental heritage.

Most of the SIs would be within the Band of Equilibrium. However, to achieve this commitment and investment, particularly increasing human capacity through training and technical workshops, would be necessary to create the necessary level of awareness and education in the specific sector to ensure more commitment to sustainable development of their specific activity.

Some of the choices available include more emphasis on alternative forms of transport (e.g. public transport, cycling), management of marine conservation areas and recreational sites, stabilisation of the tourist bed capacity.

The above scenarios are just a flavour of the implications and use of the SPSA tool. The scenarios would certainly need further discussion during the post CAMP phase, which would involve time and human resources. However, the tool of scenario building and seeking to achieve the desired scenario is very appropriate in identifying the future implications of current decisions, particularly with regard to plans, policies and activities.

Marketing the desired scenario and achieving results

The above two scenarios present likely future situations. However, the desired situation will not occur without any positive interventions. The overall transformation for the North West should be THE MANAGEMENT OF ACTIVITIES IN THE NORTH WEST TO ENSURE BOTH THE ECONOMIC

STABILITY OF COMMUNITIES, IMPROVE THE SOCIAL FABRIC AND PROTECT ENVIRONMENTAL RESOURCES.

This transformation, if well managed, should move towards a scenario, which is close to the sustainable levels envisaged. The following are some of the marketing actions, which might be taken up to achieve the desired future situation:

- A television series which would promote the North West and its resources outlining their sensitivity and how human action is threatening their protection;
- Awareness and information sessions to key stakeholder groups e.g. farmers' cooperatives, hotel and catering operators, indicating new methods of operation which are more in line with environmental resource management;
- A 'dos' and 'do nots' leaflet to beach users and boat owners as well as users of other recreational areas;
- Information boards at key recreational sites informing visitors to be more aware of their activities which may adversely effect the sites' environmental resources;
- Interpretation programmes and facilities to inform visitors more about the importance of the sites;
- Government should encourage and support NGOs in organising walks and visits to areas in the North West;
- Articles in local papers showing trends in the SIs to keep stakeholders and other interested public informed on the situation and whether positive initiatives are giving results or whether inaction is worsening the problem;
- Organise a series of information sessions for the general public with the collaboration of the Local Councils.

However, to get these actions in motion some agency has to be responsible for implementation. Various proposals have been made during the final meeting in January 2002 with one being that the National Commission for Sustainable Development to be set up would progress on this project. Another suggestion made was that the post CAMP activities of the individual thematic projects would take the approach further at least with regard to monitoring of the key SIs. 4 key SIs have been chosen from the selected list. The choice of these SIs has been based on the criteria that the North West is important for the agriculture and leisure sectors. These two main activities impact significantly on the quality of the environment and the sustainable development of the North West.

Indicator	Note	Maximum	Minimum	2000	Scenario 1 Current trends	Scenario 2 Improved environmental performance
Abandoned agricultural land	% of total agricultural land	25	7	15	20	10
Cars travelling through the NW	number of cars during peak	3000	1000	4500	5000	3500
Marine vessels in the NW	number of marine craft during peak weekend	700	400	1000	1500	650
Tourist accommodation occupancy - winter	occupancy % during winter	55	35	26	25	40

Table 20. Four key SIs for the North West

Scenario 1, based on current trends, indicates a North West without any form of management and integration of activities. Little consideration is given to revitalize and re-structure the agricultural sector and hence more land will be abandoned, as full-time farmers will decrease. There is very little regulation of leisure activity in the main recreational spots with traffic increasing to these areas as recreational activity increases. Similarly, the increase in sea craft will create further craft into the prime marine recreational locations of the North West. The resorts in the North West will still find it difficult to attract sufficient activity during the winter months and, should the resorts not rejuvenate their product offer, average occupancies are likely to decrease as new developments in the area enter the market.

Scenario 2 is a situation, which sees an improvement in the management of the North West, its resources and the activities undertaken. The abandonment of agricultural fields decreases with more fields being put to use. The car and marine traffic in the region during peak days decreases. There is also an improvement in the occupancy figures of tourist establishments during the winter months. This scenario may be achieved as a result of a restructuring of the agricultural sector and more maintenance of rubble walls and encouragement to diversify into other economic sectors e.g. rural tourism. Management of the main recreational areas would reduce pressure on these resources particularly that resulting from cars and seacraft. The improvement of the traditional resorts, particularly through a redefinition of the accommodation product and the provision of innovative facilities, would extend the tourist season in these localities offering better occupancies during the winter and off peak months.

Achieving Scenario 2 would require the following actions:

- ❖ Management measures in the North West recreational areas would reduce the use of car transport, but would require convenient public transport services to operate on a regular basis.
- ❖ More regulation over marine recreational areas would reduce the number of recreational vessels into the area.

- ❖ The agricultural sector can be encouraged to maintain their fields and through the development of rural tourism activities farmers may find a new market for their produce.
- ❖ The rejuvenation of the traditional resort areas through a restructuring of the current accommodation offer, the provision of new recreational facilities, the promotion of new products and an overall upgrading of the infrastructure and environment in the area through Environmental Management initiatives.

Some actions that can be undertaken to market the desired scenario:

- ❖ Publication of a brochure outlining the rural resources and attractions in the North West;
- ❖ The organization of seasonal agricultural fairs to promote local produce;
- ❖ Information boards to visitors in the main recreational areas;
- ❖ Free events for tourists staying in the resorts during the winter months e.g. concerts, theatre, traditional dinners;
- ❖ Seminars to local residents, with the collaboration of the local councils aimed at a better appreciation of their locality.

Sustainability in the Maltese Islands

The North West experience with regard to the SPSA project can be expanded to cover other regions of the Islands in an attempt to achieve a more sustainable development of the Maltese Islands. Some of the indicators identified for the North West will remain applicable whilst other SIs will be identified which will reflect more the requirements of the other regions. This process will bring into play new and different stakeholders. The approach might also need to be adapted.

In such an exercise stakeholders should be involved from the early stages to ensure ownership and continuity. The results should direct future policies and plans and the SIs should provide a monitor to evaluate whether the desired scenario is being achieved.

Extending the SPSA to other regions may be more manageable than having to extend it for the whole of the Maltese Islands. This is because the number of stakeholders involved might be counter productive to the overall exercise, even though this would be a challenge to achieve a more integrated approach to the social, economic and environmental development of the Maltese Islands. Thus SPSA would find its niche in the formulation of a National Sustainable Development Strategy for the Maltese Islands.

The experience of the SPSA on a regional level has shown that stakeholders can gather and address issues in a systemic manner seeking to achieve an acceptable compromise in a win-win situation and provide the basis for informed decisions.

Sustainable development at a national level is generally more difficult to achieve than at the local level or with regard to a specific issue. This is probably because the wider the level of concern the greater the number of interests involved and hence the greater the problem to address. Sustainable development initiatives at the local level or on specific issues have shown results and there exist a number of examples to confirm this e.g. The implementation of Local Agenda 21 in Calvia (Majorca), Coastal Zone management Programme in Barbados, Extensive Use of Solar Water Heaters in Cyprus, The Management of Avian Ecosystems in Seychelles, just to mention a few in other islands.

Lessons learned

The SPSA activity was a learning experience for the SPSA team as well as for those team members that have participated in the various workshops. The use of this approach has been transferred to the local side and the method can be generally re-applied to the same thematic projects as well as to other new projects which seek to achieve a level of sustainable development.

The SPSA project was perceived as a separate project by most teams, even though it was a cross-cutting project, which 'serviced' all thematic projects, but since this required some more inputs by teams above those stated in their contracts in some way the effectiveness of the SPSA has suffered in this respect. Thus should this approach be used in future it should be an integral part of any project design. In this way although there would be an SPSA team, however, this would be made up of members in each thematic team.

Since the effectiveness and success of the SPSA depends on the involvement of stakeholders in the process, it is important that these are brought into the project from an early stage, even when the project is being developed. This is important not only to ensure effective participation throughout the process but also to encourage ownership and continuity of the project after the end of CAMP (Malta).

The experience of SPSA has shown that diverse sectors can meet and discuss issues in a systemic manner where each sector seeks to understand the other and together express common concerns and seek to respond to solutions in an integrated and co-ordinated manner. Certainly SPSA is not a main tool for any conflict resolution exercise but should certainly reduce potential conflicts, particularly since the level of sustainability is stakeholder defined and accepted.

The SPSA exercise might have been better where it structured in such a way as to spend the first 10-12 months understanding the approach and the second 12 months working on the prospective elements of the SPSA .

Since the SPSA project requires the participation of key stakeholders it should also be developed in close collaboration with the Participatory Programme of the CAMP activity. This is important particularly in identifying future scenarios since stakeholders would be in a better position to indicate likely future outcomes in their respective sectors.

Participation should also provide the basis for stakeholders to implement specific actions that should lead to the achievement of the desirable scenario or future outcome.

The Blue Plan recognised the importance of the AMOEBA tool and would work on improving the effectiveness of this tool particularly in decision taking and in determining the integration and interrelationships of the various SIs. The SPSA training module will be elaborated further within Blue Plan through the periodic organisation of workshops.

Certainly more will be learned on the approach as it is implemented in other countries and on other projects. The SPSA approach is a flexible approach and is

stakeholder determined and therefore one expects the approach to reflect the circumstances and context of the specific system where it is being applied. The SPSA is therefore culturally and socially determined and it would be interesting to make comparisons between systems where it has been applied to identify commonalities as well as differences in implementation.

Conclusions and the way forward

At the final meeting on this project which was held between 7th – 8th January 2002, it was apparent that most team members considered the SPSA project as an important dimension of the CAMP (Malta) Project, even though some could not attend all workshops. Nonetheless, the SPSA activity kept teams in contact with each other through the various workshops held.

Although the SPSA project does not end with the conclusion of CAMP (Malta), and would proceed into the post CAMP phase it would still require some resources (e.g. time) to keep the project going. It would seem that most of the thematic projects will proceed to a second phase after CAMP. In fact some funds have been obtained through SMAP to continue the Marine Conservation Project. Thus here is an opportunity to proceed with the SPSA project with regard to this specific thematic project.

On the other hand there is an opportunity to make use of this approach to assess the implementation of the North West Local Plan and monitor the sustainable development of the North West. This would require the identification of an implementation programme.

With regard to the SPSA a number of key indicators have been identified and these SIs will be monitored over the next two years to evaluate whether actions being taken in the interim period with regard to the specific sectors are leading towards a more sustainable level of activity in the NW. Negative signals should spark action in the respective areas to reverse the trend. The SPSA team should be in a position to maintain this monitoring exercise and produce a short report at the end of each year with the involvement of the stakeholders. The extent and scale of this exercise will depend on the resources that can be allocated with the hope that some agency would continue with the project allocating the appropriate resources.

The Malta Commission for Sustainable Development also has a role to play in the formulation of SIs. Although the terms of Reference of this Commission are not yet clear the potential use of the SPSA in this exercise would be a proposal worth considering. Once this commission is set up it is suggested that the SPSA team should present to the Commission or sub committee the work done over these last two years on this project to gain support for the continued efforts with regard to this activity and in this way have an agency responsible to the formulation of and publication of SIs. The role of the National Statistics Office will also be important in this respect since some of the SIs would require data being collected by the NSO.

In terms of sustainable indicators, within NSO an Environment Unit has been established in the past three years and one of its tasks is to co-ordinate the collection of indicators related to social, economic and business aspects. Environment Unit is a relatively new addition to the organizational structure present at NSO and as a result most of the statistical sources for the setting up of an environmental information system are currently being developed. Part of NSO's obligation is the regular compilation of structural indicators, which are in turn forwarded to Eurostat. In addition, the Environment Unit has also been

compiling environmental data from a variety of sources that will be included in a national compendium that will be published by NSO. This compendium includes a number of environmental indicators related to waste generation, weather, water consumption, transport and energy.

To conclude, as stated above, the SPSA experience was certainly a fruitful project. Considering that Malta was the first to experiment this methodology it would certainly be interesting to see how this would develop in other countries, considering that it is to be implemented as part of the CAMP projects in Lebanon and Algeria. It is also hoped that this report has paid justice to the whole exercise, particularly the contributions of the various teams and the stakeholders, and would encourage further interest in the application of the approach in other sectors.