A generic framework for promoting the implementation of Environmental Management Systems at local government level in South Africa.

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This work is dedicated to my wife Linda and my children, Charlotte Rosali and Wernard, whose love and loyal support encouraged me to complete this work under the most difficult circumstances.

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"n Generiese raamwerk om die implementering van Omgewingsbestuurstelsels op plaaslike owerheidsvlak in Suid Afrika te bevorder.

OPSOMMING

Wêreldwye omgewingsprobleme het teen so 'n ongekende tempo toegeneem, dat die internasionale gemeenskap tydens die Rio Konferensie in 1992 besluit het dat hierdie wêreldwye probleme onder andere ook op plaaslike regeringsvlak aangespreek moet word. Munisipaliteite in Suid-Afrika word egter deur groot agterstande rakende die lewering van dienste in die gesig gestaar, en hierdie instellings het 'n motiveringskrag nodig om hulle te oorreed om meer aandag aandag aan omgewingsbestuurskwessies te skenk tydens die uitvoering van hul daaglikse funksies. Hierdie motiveringskrag word benodig ten spyte van die feit dat daar bestaande wetgewing in Suid-Afrika is wat 'n verskeidenheid van vereistes bevat vir die bestuur van die omgewing op munisipale vlak.

Hierdie skripsie beskryf hoe munisipaliteite die "Natural Step" Raamwerk kan gebruik as 'n hulpmiddel om munisipaliteite en hul Rade se bewustheid betreffende wêreldwye omgewingsprobleme te verhoog, asook om munisipaliteite te motiveer om iets hieraan te begin doen. Die Raamwerk kan gebruik word om munisipaliteite te help om stappe te neem en 'n stelsel te implementeer wat sal bydra om volhoubare instellings te word. In hierdie proses kan munisipaliteite hul primêre rol verbeter, naamlik om te demonstreer dat verantwoordelike bestuur toegepas word en dat die munisipaliteit 'n voorbeeld stel vir effektiewe bestuur van die gemeenskap. Verantwoordelike bestuur en die implementering van omgewingsbestuurstelsels sal bydra tot besparings vir munisipaliteite, en sodoende sal meer fondse beskikbaar wees om op kritieke behoeftes soos behuising en infrastruktuur te spandeer.

Die omgewingsbestuurstelsel wat voorgestel word vir gebruik deur munisipaliteite is die ISO 14001 standaard. Klem word verder veral geplaas op hoe die gebruik van die "Natural Step" Raamwerk die toepassing van 'n omgewingsbestuurstelsel kan verbeter en voordele vir munisipaliteite kan meebring. In hierdie proses kan 'n munisipaliteit ontwikkel in 'n instelling wat nuwe vaardighede kan toepas, en sodoende kan groei om 'n volhoubare instelling te word.

A generic framework for promoting the implementation of Environmental Management Systems at local government level in South Africa.

ABSTRACT

Global environmental problems have been manifesting themselves at such an alarming rate, that the international community decided at the Rio Conference in 1992 that these global problems must inter alia also be attended to at local government level. However, local governments in South Africa are faced with huge service delivery backlogs and limited financial resources, and these institutions need a motivational force to convince them to pay more attention to environmental issues in their daily operations. This motivational force is required despite the fact that existing legislation in South Africa already contain a host of requirements for environmental management at municipal level.

This dissertation describes how municipalities can use The Natural Step framework as a motivational tool to raise their councils' awareness of the global environmental problems, and how to take steps to implement a system that will help them become sustainable organizations that function in an environmentally correct manner. In the process municipalities will enhance their primary function, namely to demonstrate responsible governance to their residents and being able to lead their communities by example. The steps taken by the municipalities with regard to responsible governance and implementation of environmental management systems will save them money, thereby enabling them to have more financial resources available to spend on critical issues like housing and infrastructure.

The environmental management system that is advocated to be used by municipalities is the ISO 14001 standard, developed by the International Organisation for Standardisation. Emphasis is placed on how the use of The Natural Step Framework can enhance the implementation of this system, thereby creating benefits for the municipality, while at the same time transforming the organization into a learning organization that is working towards a vision of becoming sustainable.

CONTENTS

Chapter 1:

Introduction to sustainability in the local government context

1.1 GLOBAL CONTEXT

The term "sustainability" has become one of the new words in the global environmental language during the past two decades. The term was first used by the World Commission on Environment and Development (The Bruntland Commission, 1987) and subsequently also by the Rio Conference on Environment and Development in 1992. The importance of the Rio Conference and the fact that so many political leaders from all over the world participated, had the result that "sustainability" was incorporated in other spheres as well, especially the economic and social fields. The essence of the message was that the influence of human activities on the natural systems of the world is so extensive, that humankind is actually threatening its own existence. Therefore it is not merely a matter for each person and institution to engage in "environmentally friendly" activities, but to drastically change the way we live and do business if there is to be a viable world for future generations to inherit. For humankind to have a guaranteed existence, economic activities, social and environmental conditions all have to become sustainable. The global problems agreed on at the Rio Conference clearly illustrated the need for both First and Third world countries to start thinking globally and act locally with regard to all development activities undertaken.

Frankel (1998), explores the evolution of the concept, and finds that once the Bruntland Commission's definition is explored in more detail, sustainability is characterized in terms of harmonizing three elements, namely economics, environment and social equity. Frankel explains the concept as follows :
"*The whole structure of industrial society is based on a faulty design, as it is a 'take-make-waste" society that violates the conditions for sustainable human life on earth. To understand the problem, humankind must take a natural systems view of society and its relationship to the environment."*

Although the elements of the problem are complex in their many dimensions, it is illustrated in this dissertation that the core issues are easy to understand through the intellectual framework developed by The Natural Step.*

It is not too late for industrial society to take action, if action is taken now. There is no more time for business as usual, since it is necessary to change the present unsustainable course.

*The Natural Step is a science-based model to motivate organizations to change existing operations in order to become sustainable and contribute to the creation of a sustainable society. An overview of this model is provided in Chapter 3.

Humanity is now able to take its evolution into its own hands by conscious choice and design. This is a basis for hope. Some innovative people and companies are already taking conscious evolutionary action, and some of those are using The Natural Step framework in the process. Additional case studies worth reading that are not referred to in this dissertation are presented in Nattrass and Altomare (1999) and (2002).

One of the important results of the Rio Conference was the adoption of Agenda 21, the United Nations' plan for sustainable development. Agenda 21 focuses on partnerships involving the public and all relevant stakeholders. Chapter 28 of Agenda 21 highlights the role of Local Authorities. This chapter emphasises the participation and co-operation of local authorities to address the problems and solutions of sustainable development at local the level.

The global message is therefore clear: global issues need to be tackled and solved at local level. This can only be achieved by re-assessing the way every business and organization carries out their daily activities. The South African government responded to this challenge and made the focus of the new Municipal Systems Act (Act 32 of 2000) that of "*developmental local government*". Imbedded in this legislation are extensive requirements for environmental management. How will these international developments and local legislation influence the role of local authorities? Two quotes are particularly relevant in this regard:

"*In ten years the market will be about nothing else but sustainability*" Karl-Henrik Ròbert, in Nattrass & Altomare, (1999).

"*A journey of a thousand miles starts in front of your feet*" Lao Tsu, in Nattrass & Altomare, (1999).

The above description indicates that something radically is wrong on a global scale, and that urgent action is required to steer the global situation in a new direction. Agenda 21 was developed for this purpose, but according to Asmal (2002), this guideline is still overwhelmingly complex and municipal officials are often still unsure as to how to practically start doing their jobs differently, even after attending training sessions.

1.2 SOUTH AFRICAN CONTEXT

The global trends described above are contextualised below for the South African situation. Experience gained by the author while in the employ of the Development Bank of Southern Africa (DBSA), was used selectively in this dissertation, since municipalities are the main clients of the Bank. By being a development finance institution, the Bank is promoting socio-economic development through investments in infrastructure. The developmental approach followed by the Bank is therefore similar to the requirements for sustainable development as outlined in Local Agenda 21.

The first step that South African local authorities can take towards sustainability, is to make environmental management part of their core

business activities. However, South African local authorities find themselves overwhelmed by a variety of new legal responsibilities (refer to Chapter 2 for more detail), and in addition they are faced with the following unique challenges:

- Huge demands for service delivery to an increasing number of poor households;
- Poor payment for services by large numbers of residents;
- Responsibility for environmental management inter alia in terms of the Constitution, the National Environmental Management Act, (Act 107 of 1998) the White Paper on Local Government (1998), the new Municipal Systems Act (Act 32 of 2000) and Local Agenda 21.

It is therefore relevant to question the capacity and willingness of municipalities to embark on the new "road to sustainability", while they are faced with so many short term problems in terms of delivery of basic services to millions of disadvantaged residents. Some motivational factor is required to move "sustainability" higher up on the agenda. The international community has relied on events like the Rio and Johannesburg summits to create the necessary awareness, and has provided tools like Agenda 21 and the International Standards Organization's ISO 14001 standard for environmental management systems, to assist organizations to embark on the road to sustainability. These tools are however not legally binding on South African municipalities, and the question of how to motivate municipalities to take on this additional responsibility and to make use of available tools still remains.

1.3 PROBLEM STATEMENT

Municipalities have legal responsibilities for environmental management in terms of existing legislation in South Africa, as was pointed out in 1.2 above. These legal requirements are dealt with in more detail in Chapter 2. An expectation therefore exists that municipalities should act in accordance with these laws, as well in support of major international conventions' resolutions like the Rio and Johannesburg summits, in order to progress along the path towards sustainability.

Experience gained by the author however points to only limited action in this regard. The Development Bank of Southern Africa (DBSA) responded to this lack of capacity for effective local governance by establishing the DBSA Development Fund three years ago. The aim of the Fund is to build the capacity of local governments in all spheres relating to their new developmental local governance responsibilities, including that of environmental management. The limited attention that is given by municipalities to environmental management issues in general was also confirmed by Steyn (2005) in his report back on the hearings that were held on the Integrated Development Plans (IDP) in the Western and Northern Cape.

Municipalities often undertake environmental projects like clean-up campaigns in disadvantaged residential areas, or the "greening" of

neighborhoods through tree planting programs. These initiatives are important first steps, but do not necessarily indicate that a major paradigm shift has occurred that will indicate a commitment to environmental management which will assist them to progress along the new road towards sustainability.

The problem is therefore a governance problem, because there is insufficient action at the local government level, to drastically influence the global environmental problems which were presented and agreed upon at the Rio and Johannesburg summits. It is contended that more awareness of the global problems facing humanity is required before environmental management issues will be accorded a higher priority, and that appropriate tools are required for this purpose.

The research problem can therefore expressed as follows:

- How can municipalities be motivated to give environmental management a higher priority when formulating the municipalities' Integrated Development Plans?
- How can The Natural Step Framework be used effectively to create the required environmental awareness, and how can The Natural Step Framework be integrated with South African municipalities to assist them in becoming sustainable organisations?
- What are the mandate and benefits for South African municipalities to implement an environmental management system?

AIM AND OBJECTIVES

It is the aim of this dissertation to illustrate the benefits of The Natural Step Framework for municipalities. This framework is a tool that elegantly portrays the global problems that humanity is faced with, and it provides a simple science based solution for organisations to make fundamental and meaningful changes in this regard (by using the four System Conditions).

The objectives of this dissertation are

- To describe the position of local authorities in SA, with all its opportunities, challenges and problems with regard to environmental management.

- To discuss how the use of The Natural Step Framework can contribute to a commitment to implement an EMS, as well as enhance the results of an EMS, thereby helping the municipalities to become sustainable organisations.

- To provide practical steps for municipalities to use when starting with the implementation of an EMS.

1.4 RESEARCH METHOD

A literature survey was conducted and environmental management practitioners were consulted to determine the benefits of using The Natural Step framework to assist municipalities to become

sustainable organisations. In addition the relevance of an EMS for local authorities is illustrated, as well as reference made to case studies that illustrate the benefits which municipalities have derived from the implementation of an EMS.

1.5. LAYOUT OF THE DISSERTATION

Chapter 1 described the global context which has an impact on the manner that municipalities operate, as well as the South African situation that has an impact on municipalities. In Chapter 2 the legal responsibilities of local government with regard to environmental management are discussed, highlighting the need to internalise their new economic development role, as well as identifying their legal obligations for environmental management. The following chapter looks further at why municipalities must make a paradigm shift and describes the environmental management tools available for this purpose. In Chapter 4 the implementation of environmental management systems are discussed, describing lessons learnt in case studies. The study is concluded in Chapter 5 by making recommendations for a framework to be used by municipalities when planning the implementation of an environmental management system.

Chapter 2:

The legal responsibilities of local governments with regard to environmental management

2.1 INTRODUCTION

It is important to note at the start of this chapter that recent changes in South African legislation have substantially changed the roles and responsibilities of local authorities. This has already been referred to in Chapter 1, where the main considerations that may motivate local authorities to implement an EMS, have been discussed. It is thus appropriate to first examine the legal requirements that municipalities must comply with in respect of environmental management. This forms a driving force for the changes that must occur, and will be supplemented with case study lessons of experience to guide municipalities along the new road. The point to start with is clear : municipalities will no longer only be the providers of infrastructure services to its residents, but will have to learn to become developmental institutions, with a host of new responsibilities.

The following quote from the then minister of Provincial Affairs and Constitutional Development Mr. Mohammed Valli Moosa, (1998), is a fitting introduction to the new role for local government in SA: "*South Africa has been given a rare and historic opportunity to transform local government to meet the challenges of the next century... the new Constitution envisages a complete transformation of the local government system.... Local government has also been given a distinctive status and role in building democracy and promoting socio-economic development.....This White Paper spells out the framework and program in terms of which the existing local government system will be radically transformed. It establishes the basis for a system of local government which is centrally concerned with working with local citizens and communities to find sustainable ways to meet their needs and improve the quality of their lives... Local government is the sphere of government that interacts closest with communities, is responsible for the services and infrastructure so essential to our people's well being, and is tasked with ensuring growth and development of communities in a manner that enhances community participation and accountability.....Local government stands at the threshold of an exciting and creative era in which it can and will make a powerful impact on reconstruction and development in our new democracy.*" (White Paper on Local Government, 1998).

The White Paper on Local Government, 1998, further states that local government has a critical role to play in rebuilding local communities *and environments*, as a basis for a democratic, integrated, prosperous and truly non-racial society. In addition, the Constitution (1996) mandates local government to:

- Provide democratic and accountable government for local communities;
- Ensure the provision of services to communities in a *sustainable manner;*
- Promote social and economic development;
- Promote a *safe and healthy environment*;
- Encourage the involvement of communities and community organizations in the matters of local government.

It is therefore crucial that municipalities be motivated to *think differently* concerning their present role and responsibilities. This study enhances the process of thinking differently, by focusing on the tools to be used in creating a better understanding of the environmental responsibilities of municipalities, and in the process provide motivation to want to make a difference with regard to their role in becoming sustainable.

It is important to note that this White Paper provides three approaches to assist municipalities to become more developmentally orientated, namely:

- Integrated development planning and budgeting (which contains clear guidelines on the importance of bringing environmental considerations into the mainstream of municipal governance);
- Performance management (also an essential component in Environmental Management Systems as defined in the International Standards Organization's ISO 14001 standard); and
- Working together with local citizens and partners (also a corporate responsibility in terms of ISO 14001).

Following on the White Paper 1998, the Local Government: Municipal Systems Act was published in the Government Gazette No 20357 of 6 August 1999. This Act describes the core principles, mechanisms and processes that are necessary to enable municipalities to move progressively towards the social and economic upliftment of communities, and ensure universal access to quality services that are affordable to all. The Act establishes a simple and enabling framework for the core processes of *planning, performance management, resource mobilization and organizational change*, which underpin the notion of developmental local government. The Act also affirms the crucial role local government plays in the overall reconstruction and development of South Africa, while at the same time making sure that municipalities get the basics right by focusing on the *performance* of priority services.

For the purposes of this study it is important to note the explicit references to environmental management in the Act, and the following definitions contained in the Act are presented:

- **"development"**, includes integrated social, economical, *environmental,* spatial, infrastructural, organizational and human

resources upliftment of a community aimed at improving the quality of life of its residents with specific reference to the poor and other disadvantaged sections of the community;

- **"environmentally sustainable",** in relation to the performance of a municipal service, means the performance of a municipal service in a manner that is likely to ensure that –

  the risk of harm to the environment and to human health and safety is minimised to the extent reasonably possible under the circumstances;

  the potential benefits to the environment and to human health and safety are maximised to the extent reasonably possible under the circumstances; and

  legislation intended to protect the environment and human health and safety is complied with;

- **"organ of state"** means any department of state or administration in the national or provincial sphere of government, exercising a power or performing a function in terms of the Constitution. Local governments must comply with provincial legislation and in this process are implementing the requirements of the constitution.

This definition implies that the environmental management principles contained in the Constitution, as well as in the National Environmental Management Act (NEMA) Act 107 of 1998, must be adhered to by municipalities.

Lastly it is important to note that chapter two of the Municipal Systems Act, Act 32 of 2000, describes the Duties of Governing Structures as : "The Council of a municipality.....must, within the municipality's financial and administrative capacity,

- ensure the provision of municipal services to all residents and communities in a financially and environmentally sustainable manner;

- Promote a safe and healthy environment in a municipality; and

- Together with other organs of state.....assist in the progressive realisation of the fundamental rights contained in section 26 and 27 of the Constitution concerning housing, health care, food, water, social security and *the environment."*

2.2 THE CURRENT REALITY

The current reality for local government in South Africa will be described using the information contained in the White Paper, (1998), since the White Paper provides a sound overview of problems which municipalities are faced with today.

2.2.1 Local government finance

The amalgamation of previously divided jurisdictions has massively increased the population to be served by the municipalities, without a corresponding increase in the tax base. This means that more poor communities have been included in the municipal area, without the corresponding tax paying ability. Combined with service backlogs, deteriorating infrastructure, and deteriorating creditworthiness and borrowing capacity, municipalities are experiencing financial stress, and in some instances, crises.

2.2.2 Administration

The changed mandate of municipalities (with additional developmental functions) requires *new capacities, attitudes and approaches*, which are only beginning to emerge. Relations between municipal Councils and the administration, between management and the workforce, and between the municipality and service-users, need to be improved. Significant support and investment are required to build administrative capacity for the new local government system.

2.2.3 Global and international trends

No municipality can ignore the economic changes taking place in its locality, the region and globally. Globalisation has a major impact in particular on metropolitan areas. The Growth, Employment and Redistribution Strategy places greater emphasis on an export-oriented economy, and will lead to increased international openness and competition. Local government has an interest in *attracting investment* based on promoting the comparative advantages of the area for competitive industries, as well as supporting the growth of local enterprises.

Environmental management according to the ISO 14001 standard is not a legal requirement for municipalities, but the globalisation trends are increasingly forcing businesses to show compliance. Municipalities will be next in line and will need to get their house in order to attract internationally competitive businesses.

The transition process in SA has tended to direct municipalities' capacity inwards, rather than towards their constituencies and delivery. Overall there has been a lack of information and capacity (also with regard to trends in environmental management).

"Local government has been given a new constitutional mandate to create and sustain humane, equitable and viable human settlements. I am doubtful whether local government – as presently designed – is adequately equipped to fulfil this developmental mandate. Local government has been democratised, but the local government system is still structured to meet the demands of the previous era. A fundamental transformation is required", White Paper on Local Government, (1998.)

2.3 DEVELOPMENTAL LOCAL GOVERNMENT

Developmental local government as described in the White paper on Local Government, refers to the central responsibility of municipalities to work together with local communities to find sustainable ways to meet their needs and improve the quality of their lives. According to the White Paper (South Africa,1998), "where municipalities do not develop their own strategies to meet community needs and improve citizens' quality of life, national government may have to adopt a *more prescriptive approach* towards municipal transformation". This statement illustrates the seriousness of the need to change the daily activities of municipalities, in order to meet all new requirements, including that of environmental management.

2.3.1 Characteristics of developmental local government

In future, developmental local government must play a central role in representing communities, protecting human rights and meeting basic needs. The four characteristics of developmental local government are explained below:

- *Maximizing social development and economic growth*

  The powers and functions of local government should be exercised in a way that has a maximum impact on the social development of communities – in particular meeting the basic needs of the poor – and on the growth of the local economy. Municipalities set the agenda for local politics, and the way they operate gives strong signals to .....prospective investors. Municipalities therefore need to have a clear vision for the local economy, and work in partnership with local business to maximize job creation and investment.

- *Integrating and coordinating*

  A vision and leadership must be provided for all those who have a role to play in achieving local prosperity. One of the most important methods for achieving greater co-ordination and integration is through integrated development planning. Integrated development plans (IDPs) provide powerful tools for municipalities to facilitate integrated and coordinated delivery within their locality. It is clear that the establishment of sustainable and liveable settlements depend on the co-ordination of a range of services and regulations, including land-

use planning, household infrastructure, *environmental management,* transport, health and education, safety and security and housing.

- *Democratising development, empowering and redistribution.*

In the past, local government has tended to make its presence felt by controlling or regulating citizens' actions. While regulation remains an important function, it must be supplemented with leadership, encouragement, practical support and resources for community action. Municipalities need to be aware of the divisions within communities, and seek to promote the participation of marginalized groups in community processes. Participation must enhance, rather than impede the delivery process.

- *Leading and learning*

Extremely rapid changes at the global, regional, national and local levels are forcing local communities to rethink the way they are organized and governed. All over the world communities must find *new ways to sustain* their economies, build their societies, *protect their environments, improve personal safety and eliminate poverty.* Local government has a key role to play in building this kind of social capital – this sense of common purpose – to find solutions for increased sustainability. In practical terms, The White Paper (1998) suggests several ways of building these social conditions, including "building the awareness of environmental issues and how the behaviour of residents impact on the local environment, and encouraging citizens (and the municipality) to utilize scarce natural resources in a prudent manner".

2.3.2 Developmental outcomes of local government.

The three outcomes of developmental local government discussed below need to be seen within the context of national development and the principles and values of social justice, gender and racial equity, nation building and the protection and regeneration of the environment.

- *Provision of household infrastructure and services*

The starting point must be to prioritise the delivery of at least a basic level of services to those who currently enjoy little or no access to services.

- *Creation of livable, integrated cities, towns and rural areas.*

Urban areas face the challenges of integrating towns and townships. *Environmental sustainability* is a key challenge in both urban and rural settlements, and can be enhanced by including environmental issues in their planning processes.

- *Local economic development*

By investing in the basics – good quality and cost-effective services, and by making the local area a pleasant place to live and work – is the key starting point.

2.3.3 Tools and approaches for developmental local government

The three tools presented in the White Paper, (South Africa,1998), are:

- Integrated development planning
- Performance management
- Working together with local citizens and partners

These tools are described briefly.

- *Integrated development planning:*

To meet the new challenges faced by municipalities, they will need to understand the various dynamics within their area, develop a concrete vision for the area, and strategies for realizing and financing that vision in partnership with other stakeholders. Only some of the steps outlined in the White Paper (1998) that have reference to this study are mentioned:

- An assessment of the current social, economic and *environmental reality* in the municipal area.
- An audit of available resources, skills and capacities.
- The use of monitoring tools to measure the impact and performance.

These steps are also integral elements of an EMS. In effect IDP's are planning and strategic frameworks to help municipalities to fulfill their development mandate. They enable municipalities to weigh up their obligations and systematically prioritize programs and resource allocations. They also assist in focusing on the environmental sustainability of their delivery and development strategies. Sustainable development is development that delivers basic social and economic resources to all without threatening the viability of the ecological and community systems upon which these services depend. IDP's should also be viewed as incremental plans. In the annual process of review, new priorities can be incorporated, as described in the Municipal Systems Act, Act 32 of 2000.

The Development Facilitation Act (DFA), Act 67 of 1995, requires municipalities to develop objectives for service delivery, which include issues normally associated with town planning, as well as environmental planning.

- *Performance management:*

Performance management is critical to ensure that plans are being implemented, that they have the desired development impact, and

that resources are being used efficiently (all these steps form part of an EMS as well). Municipalities must set their own measures of performance, or Key performance Indicators (KPI's).

- *Working together with local citizens and partners:*

One of the strengths of integrated development planning is that it recognizes the linkages between development, delivery and democracy. Building local democracy is a central role of local government, and municipalities should develop strategies and mechanisms to continuously engage with citizens, business and community groups. This approach is similar to the requirements of EMS with regard to corporate reporting.

2.4 CO-OPERATIVE GOVERNANCE

This section outlines the roles and responsibilities of national and provincial government with respect to local government. National policies and programs are aligned with local government actions to indicate how it can enhance the effectiveness of all spheres of government.

Local government alone does not determine the sustainability of human settlements. Other spheres of government also affect the overall shape of settlements and the livelihoods of people who live there. A brief outline is given of policies and programs of national departments and how they relate to local government, with particular reference to environmental management.

- *Department of Trade and Industry:*

The Spatial Development Initiatives (SDI's) managed by the Department of Trade and Industry offer major opportunities for municipalities to become involved in regional development programs to attract investment and boost local job creation.

- *Department of Land Affairs:*

This department administers the Development Facilitation Act, Act 67 of 1995, which imposes a set of planning requirements on municipalities. In conjunction with the Department of Constitutional Planning, it ensures that the legal requirements are coordinated and streamlined into a single generic planning process – the integrated development planning process.

- *Department of Housing:*

In terms of the new Housing Act, Act 107 of 1997, municipalities are required to ensure that all inhabitants in their areas have access to adequate housing. The Act allows for municipalities to participate directly in the national housing program by either acting as developer or an administrator of a national program in which it contracts

developers. In this process considerable damage to the environment can occur, and environmental management need to play a critical role.

- *Department of Water Affairs and Forestry (DWAF):*

The DWAF has developed a White Paper on Water Supply and Sanitation, which will impact on municipalities with respect to the delivery of these services. The Water Services Act, Act 108 of 1997, requires that all municipalities draw up water services management and development plans, specifying how the municipality plans to use and preserve water as a national resource.

- *Department of Environmental Affairs and Tourism:*

In order to provide for thorough and uniform control of the environmental impact of development projects, regulations were promulgated for environmental impact assessments (Regulations 1182 and 1183 under Section 21, 22 and 26 of the Environmental Conservation Act,1989. These regulations are soon to be replaced by the draft regulations which were published for comment in 2005.

The White Paper on Tourism emphasizes the important role of municipalities in promoting tourism, and the substantial contribution this sector can make to socio-economic upliftment.

2.5 ADMINISTRATIVE SYSTEMS

According to the White Paper (1998), municipalities have a range of delivery options to enhance service provision. Their administrations need to be geared to implement the chosen delivery option in the most cost effective manner and to ensure maximum benefit to their communities.

2.5.1 Principles for service delivery

Three principles contained in the White Paper (1998) that relates to EMS are relevant : integrated development and services, sustainability of services and value for money. To use these principles, integration of EMS approaches and financial management need to occur.

2.5.2 Approaches to service delivery

Municipalities in South Africa have differing levels of administrative capacity. Two approaches of improving internal efficiency are managerial reform and worker empowerment. Both imply wide-reaching changes in the way the administration is organized and operates. When considering the required changes, change that can accommodate EMS should also be considered.

Management reform involves building a culture and commitment to results and value-for-money. Measures to achieve this change and that are in line

with those required in an EMS are the introduction of performance based contracts for senior staff, and developing codes of conduct.
Worker empowerment entails human resource development (training) and decentralization of operational responsibility. Training is an essential part of both management reform and worker empowerment. This will require building a common vocabulary, understanding of concepts (like EMS), issues and problems, and approaches to service transformation.

2.6 MUNICIPAL FINANCE

In order to meet the objectives of the Constitution, the system of municipal finance will need to be restructured in line with a number of basic principles:

- Revenue adequacy and certainty: Municipalities need to have access to adequate sources of revenue – either their own or intergovernmental transfers.
- Sustainability: Financial sustainability requires that municipalities ensure that their budgets are balanced.
- Effective and efficient resource use: Economic resources are scarce and should be used in the best possible way to reap the maximum benefit for their local communities.
- Accountability, transparency and good governance: Municipalities should be held accountable to local taxpayers for the use of public funds.

The last three of the above mentioned principles strongly correlate with the principles on which the ISO 14001 standard was based, therefore enabling the way in which an EMS can be integrated into the current financial management systems of municipalities. These points are further elaborated on in Chapters 3 and 4.

2.7 CONCLUSION

Municipalities can no longer function primarily as the providers of infrastructure services to their inhabitants. The quote by Mr Valli Moosa at the beginning of this chapter clearly refers to the need for municipalities to promote socio-economic development, as well as to find sustainable ways to meet the needs of their inhabitants, and to improve the quality of their lives.

From this chapter it is clear that despite the existence of a variety of legislation that require environmental management from municipalities, other priorities, institutional constraints and insufficient funding often prevent municipalities from giving the required attention to environmental management issues. A motivational tool is required to assist municipalities in this regard, and this aspect is discussed in Chapter 3.

Chapter 3

The need for a paradigm shift and tools that municipalities can use for this purpose

The previous chapter has clearly outlined the new role that municipalities must play with regard to developmental local government, and with regard to environmental management in particular. In the USA similar roles have developed for municipalities. According to the USA Pilot Program for Municipal EMS (2000:10) municipalities manage a number of separate infrastructure facilities, and are also expected to satisfy a broad spectrum of citizens' environmental, financial, legal and social needs. Municipalities, which should be role models for their communities, are often unprepared to address the complex environmental challenges that are confronting them. These realities make an EMS a decidedly applicable tool for use by municipalities, since an EMS will help them to demonstrate their commitments and achievements in environmental management. USA case studies described in Chapter 4 have demonstrated that an EMS is a powerful tool for addressing the large-scale problems of operating and maintaining infrastructure like water systems and roadways. An EMS can also provide municipalities with opportunities to serve as environmental mentors for their communities, since municipalities both regulate and are being regulated.

Similar thoughts have been emanating from Asia, as described by Srinivas and Yashiro (1999) in their case studies of cities in Japan. They state that urban governments in Japan strive to retain businesses and revitalize the economy, reverse population flight and generate developmental and financial resources to improve the quality of life for their citizens. Since the 1980's, Japanese cities were also faced with the additional challenge of contributing to conservation of the natural environment, both on a local and global scale.

Srinivas and Yashiro (1999), state that "cities in Japan have increasingly recognized that a stable, sustainable and efficient urban environment is an underlying '*common denominator*' for any developmental processes, and has considerable externalities for broad economic and social revitalization." In addition, Japanese society has also realized that urban governments cannot act singly with regard to the environment, but that broad cooperation with civil society is required to avoid 'end-of-pipe' solutions, and that a life cycle oriented approach is required to eliminate the root causes of problems and impacts. As a result many cities in Japan see the establishment of an EMS as a tool that has two distinct advantages, namely using an EMS as a tool for creating the structures to integrate *changed responsibilities,* as well as for urban government to plan and allocate the resources to deliver services to address community priorities. This approach is very similar to the Integrated Development Plans (IDP) compiled by South African municipalities, where emphasis is placed on integrating service delivery with economic development, and to do this within a context of sustainability.

It is important at this point to reiterate the link between environmental management and the ISO 14001 standard. Environmental management can be undertaken in a variety of ways, but the ISO standard was developed in order to assist organizations worldwide to apply the same management principles and approach. In this way management results can be compared and experience shared for the benefit of all.

Japanese cities see the main benefits of an EMS as:

- Providing leverage in emphasizing and replicating better city wide environmental action;
- Enabling and providing an integrated approach to sound environmental management;
- The ISO 14001 takes a comprehensive view of all the processes in an organisation : hence it is system - dependent, and not person - dependent.

Experience gained at the Development Bank of Southern Africa (DBSA) indicates that South African municipalities are at present still overwhelmed with all the new responsibilities they need to fulfill in terms of the various new legislative requirements. This realisation has prompted the DBSA to establish the DBSA Development Fund to build municipal capacity to deliver on their developmental local governance mandate. This situation was also confirmed by Nel (2005), while interacting with numerous municipalities in training sessions to build environmental management capacity. A strong motivational force is thus required to move municipalities in the direction of comprehensive environmental management, which can contribute to global sustainability. Personal experience has shown that most municipalities' awareness of environmental management is restricted to the legal requirement for environmental impact assessments, and a small input in the form of environmental issues as a contribution to the IDP's, as confirmed by Perring, (2003). This partial awareness of the comprehensive approach to environmental management clearly illustrates the need for an EMS at local government level. In order to respond to this need of municipalities, DBSA has initiated comprehensive assistance programs to cover the field of in house environmental management systems for municipalities e.g. a pilot project for Port Elizabeth (DBSA, 2002), and pilot projects in Knysna and Plettenberg Bay, where The Natural Step framework is used in conjunction with the ISO14001 standard for environmental management.

The motivational tool which DBSA has found to be effective in obtaining a commitment from municipal top management for embarking on the road towards comprehensive environmental management is The Natural Step framework. This framework is explained in more detail in paragraph 3.3. Once the commitment from top management has been obtained, the use of the ISO 14001 standard has proved to be an effective method of implementing the EMS (see paragraph 3.4). To move along this new path, a paradigm shift is required, starting with the challenge of a new design for our society.

According to Willis (2002), The Natural Step (TNS) framework is a new tool which was developed recently in Sweden, and consequently most publications about the use of this tool is available in Swedish only. Other publications which describe the benefits of the use of TNS for business do not include much data on municipalities per se. Therefore extensive use was made of the two books by Nattrass and Altomare (1999 and 2002), as well as the latest publication by James and Lathi (2004), which focuses entirely on the local government sphere. The basic concepts and benefits of The Natural Step Framework is further described in the draft publication by the organisation itself (2002), where guidance is provided for municipalities working with Agenda 21, and the relevance of TNS in this regard. In addition Park (2003), sited examples of how the municipality of Christchurch in Niew Zealand actively uses the TNS framework to measure all municipal projects against the four system conditions of TNS, as well as rating the projects in terms of their contribution to sustainability through the contribution to economic, social and environmental aspects.

Despite the emphasis in two books by Nattrass and Altomare on the relevance of TNS for businesses, the 1999 publication clearly states that all organizations (businesses and municipalities) need to become learning organizations in order to change into sustainable organizations, and therefore the use of TNS for municipalities is recommended by the authors. The primary driving force for a business is to make money and to use any tool that will enable it to make more money, while the primary purpose of a municipality is to deliver services and to govern responsibly. Despite this difference between a business and a municipality, local authorities in South Africa face such immense financial constraints that a tool that will enable them to improve their financial position should be given serious consideration.

3.1 The challenge of a new design for our society.

"*The journey to a different future must begin by defining the problem differently than we have done until now....The task is not to find substitutes for chemicals that disrupt hormones, attack the ozone layer, or cause still undiscovered problems, though it may be necessary to use replacements as a temporary measure. The task that confronts us over the next half century is one of redesign",* Colborn, et al in Nattrass and Altomare (1999:3).

According to Nattrass and Altomare (1999:3), more and more people throughout the world are becoming concerned that the basic design of our entire industrial society is both faulty and inadequate for the long term voyage that is the dream of humanity. Urgent warnings from leading scientists are signaling the approaching, yet still avoidable, collision with the limits imposed by the natural world. This sentiment is also confirmed by Goodland (1998) and the Gondwana Alive campaign in Anderson (1999), where world leaders have endorsed urgent support to stop the "Sixth Extinction", a situation of global change in the environment similar to the situation that caused the extinction of the dinosaurs.

Yet, according to Nattrass and Altomare (1999:4), there is a positive alternative to pursue. The emerging conflict of humanity with the rest of the world need not be inevitable. Key business people have discovered that if the business economy is aligned with the economy of nature, there are still great profits to be made – profits made in ways that enhance rather than endanger future life on earth. Research undertaken by Nattrass and Altomare (1999) has shown that for those organizations that make the commitment to sustainable development, the understanding and practice of the organizational learning disciplines will be the indispensable prerequisite of a successful transformation to sustainability.

3.2 A new framework for management

"*The world we have created today as a result of our thinking thus far, has problems that cannot be solved by thinking the way we thought when we created them." Albert Einstein,* in Nattrass and Altomare (1999:9). The same sentiment was expressed by Senge (1999), when he asked if anyone can predict what the next thirty years will be like. He states that continuing challenges will tax our collective abilities to deal with them, and "*that failure to rethink our enterprises will leave us little relief form our current predicaments*" Senge (1999:3).

According to Nattrass and Altomare (1999), the dominant framework that has guided most organizational and management thinking in the 20th century has been based on the "organization-as-machine" metaphor. According to this metaphor, an organization is a rational, technical entity. Like a machine, an organization is designed to operate as a network of parts, which are further specified as networks of precisely defined parts. Jobs are linked together in a chain of command, and the organization operates in a "command and control" fashion. It has important limitations that are becoming increasingly important in a rapidly changing business environment. For example, very little attention is given to the human aspects of an organization. People are treated as replaceable parts. Knowledge and decision-making power reside in those in authority, who sit at the top and operate through a chain of command to ensure that the parts operate efficiently and mechanistically to achieve the organizational goals. As a result, mechanistically structured organizations have great difficulty adapting to changing circumstances, because they are designed to achieve predetermined goals; they are not designed for *innovation.* In an age characterized by accelerating and dramatic change, corporations organized around a mechanistic metaphor are at a distinct disadvantage.

A further negative aspect of the way current organizations operate is described by Argyris (1992). He explains that the traditional pyramidal structure and managerial controls tend to place individuals and departments in constant warfare, where win-loose competition creates polarized stances where the superior takes decisions. A tendency amongst peers is that of mistrust, lack of risk taking and innovation. Argyris (1992:60) states that "*all these adaptive behaviours end to induce low interpersonal competence and*

can lead the organization, over the long run, to become rigid, sticky, less innovative, resulting in less than effective decisions."

Because the metaphor described above no longer fits the reality being experienced by many organizations and also by municipalities in South Africa, new metaphors are required. Prominent among these is the "Learning Organization" or "organization-as-brain" metaphor. This metaphor sees organizations as complex systems that are capable of learning. The ability to learn and innovate are spread throughout the organization. Knowledge and decision-making resides in individuals and teams are constituted to learn. According to Senge (1999), to many people the term 'learning' means 'training'. In practice this means listening to a lecture, with no relevance to the future that one is creating. This view may come from the passive style of learning people associate with school. In contrast, 'training' was originally used when referring to 'directing the course of a plant' – therefore to be trained is to be controlled. Senge (1999: 24) defines the word 'learning' as follows : "*To learn means to enhance capacity through experience gained by following a track or discipline. Learning always occurs over time and in real life contexts, not in classrooms or training sessions. This type of learning may be difficult to control, but it generates knowledge that lasts: enhanced capacity for effective action in settings that matter to the learner."*

Learning to be a learning organization is no easy task because conventional management thinking and management structures are still strongly influenced by the "organization-as-machine" image. Becoming a learning organization often requires a fundamental shift in corporate culture, in the way people interact and view their internal systems and in the way they work. The real power of the learning organization is the ability to create vision, purpose and direction as the motivating force for action. They operate in greater dynamic relationships with their business environments. But the question that remains is, will the ability to create a vision be enough to ensure that an organization can act intelligently, create the most viable vision and act with the appropriate speed in the most effective direction.

Much depends upon what is included in the focus area of the business environment and what is ignored. According to Hart (1996) this ability to create a vision will probably not be enough. Hart points out that there is a serious omission in management theory as it "*systematically ignores the constraints imposed by the biophysical environment. Historically, management theory has used a narrow and parochial concept of environment that emphasizes political, economic, social and technical aspects to the virtual exclusion of the natural environment*". This view was confirmed by Goodland (1998), that the world has moved from a situation of resource abundance, to a situation of resource scarcity within a matter of 70 to 100 years (the post-industrial revolution period).

It seems clear that organizations should use the tools and the disciplines being developed to help them become learning organizations, for it will certainly take such organizations to change the operating norms and assumptions that have guided business in the 20th century. Yet, according to

Nattrass and Altomare (1999:11) something more is required. Organizations need to integrate the natural environment into the frame of business reality in a realistic and operational way. It is no longer sufficient to be a smart organization, one that can scan the commercial environment, detect variations and react accordingly. If organizations restrict themselves to reacting to signals when it comes to human impact on the natural environment, they may well end up focusing their organizational resources just on minimizing the pain of irreversible damage. Organizations (including municipalities) need to become conscious of the evolutionary role which they play in the future of the planet and to take responsibility for that role. What is needed now is a new metaphor, called the *"evolutionary corporation"*, and learning organizations must learn the skills to grow into evolutionary organizations.

According to Nattrass and Altomare (1999:13) *the evolutionary corporation* understands that competitive advantage in tomorrow's markets will require building strong core competencies in the development of environmentally benign, even restorative, products, processes and systems. The evolutionary organization is conscious of and accepts responsibility for the ecological effects of its business decisions at every level of corporate activity. These range from what kind of paper to use, to how products are designed, used and disposed of, to where and how to build facilities (e.g. sewerage works), among other common operational decisions.

Based on the case studies that Nattrass and Altomare (1999:189), undertook, they identified several characteristics of a typical evolutionary organization:

- Strong core values embracing sustainability.
- A commitment to learning.
- A whole systems perspective.
- An expanded sense of responsibility and accountability.
- Robustness.
- Evolutionary consciousness and conscious evolution.

Nattrass and Altomare (1999:15), state that the manner in which a company is perceived in society is vital to its continued success. This lesson has been learned the hard way in South African society, where a culture of non-payment for municipal services was actively promoted before 1994 as part of the resistance to the previous government. Currently, over eleven years after democracy and liberation, local authorities are still battling to change this attitude. This was part of the reason for the recent (December 2000) local government restructuring and re-demarcation of local authority boundaries, in order to create financially stronger institutions. But the image problem will still have to be fought on a variety of fronts.

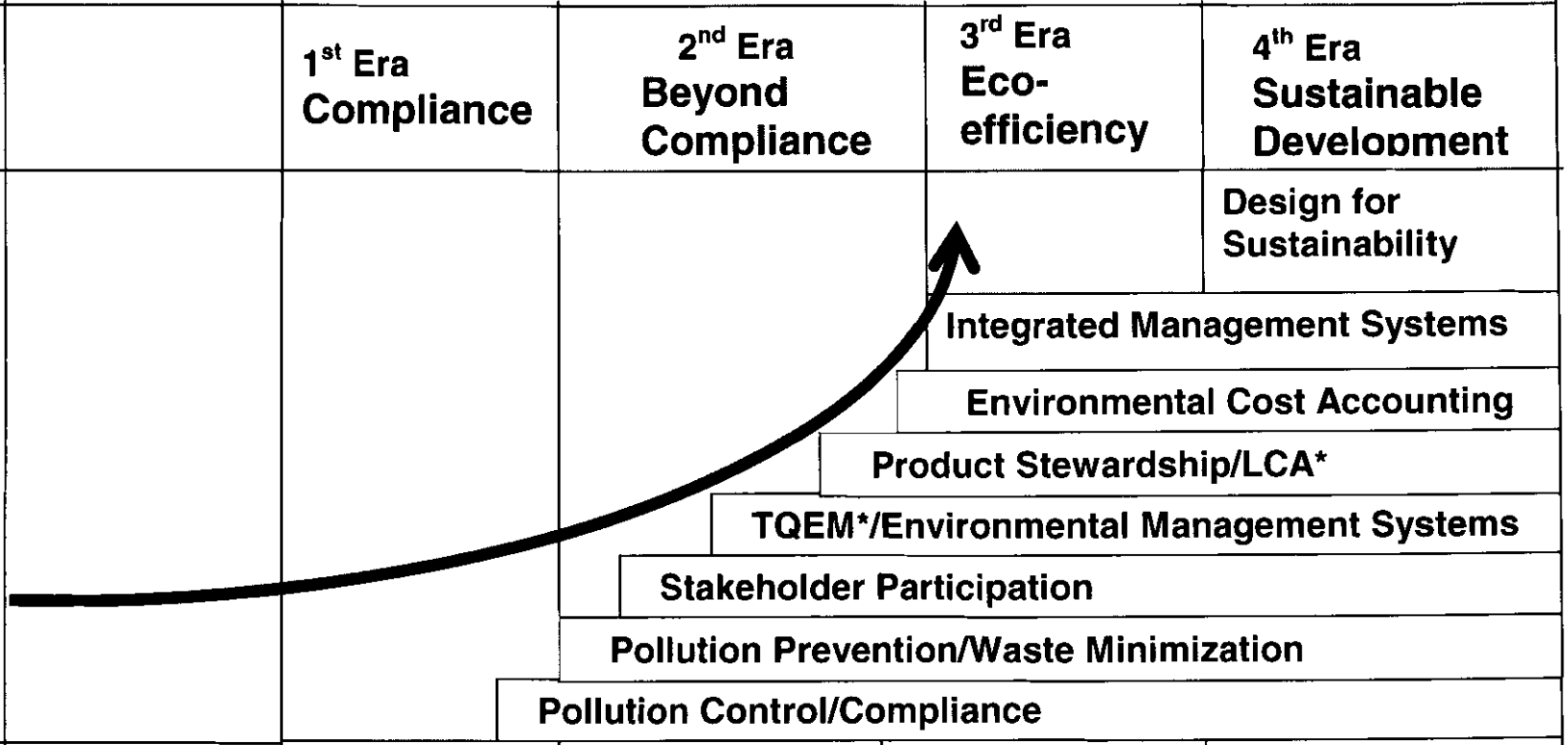
As society moves deeper into the funnel described by The Natural Step, the costs of not moving toward sustainability can only increase. Some organizations will be put out of business by these costs. Others will spend a lot of time playing "catch-up" – following as quickly as they can in the tracks of the industry leaders, or reacting to unexpected changes in public mood or legal requirements. Nattrass and Altomare (1999), refer to the experience of the companies Interface and Scandic Hotels, who professed that although a company must make investments in the process of moving towards sustainability, there has been no net cost associated with moving toward sustainability in their respective companies. In fact, the savings produced by increasing resource efficiency and reducing waste has provided the operating cash for launching other sustainable development initiatives. The result is a virtuous cycle, a positive feedback loop of benefits to their corporations.

The same positive impacts on municipalities and government departments were experienced in Canada, according to Bilodeau (2002). Bilodeau reported that Canadian authorities are for example earning money through entering into contracts with businesses that install energy saving devices at no cost to the institution, and then repay the institution a substantial portion of the amount it would have spent on electricity bills, should they not have installed the energy saving devices.

The phases of learning and development that organizations go through are illustrated by Nattrass and Altomare (1999), in the Figure 1:

INDUSTRY'S SUSTAINABILITY LEARNING CURVE

Figure 1



CORPORATE RESPONSE	Before 1970s Unprepared	1970s Reactive	1980s Anticipatory	1990s Proactive	2000s High Integration
INDUSTRY GOALS	None	Regulatory Standards	Cost Avoidance • Impact Reduction • Pre-emption of Regulation • Leadership • Legitimacy Protection • Partnerships • Competitive Edge	Profit Centre Approach • Eco-efficiency • Dematerialization • Strategic Environmental Management	Explicit Mainstreaming of Environmental Goals • LCA Systems • Environmental Cost Management • Resource Productivity • Products of Service • Culture Change

Source: Nattrass and Altomare (1999). TQEM = Total Quality Environmental Management LCM = Life Cycle Assessment

For organizations to progress along this curve, they must become learning organizations. Learning organizations will stand a better chance of moving further and quicker along the curve if they fully understand the imperatives of sustainable development. The Natural Step framework is one tool that will create the required awareness and motivation to move along the curve, as well as to lay the foundation for a commitment to measure progress. This measurement action can be facilitated by the implementation of an EMS, and the ISO 14001 standard is the internationally accepted tool for this purpose. These two tools are discussed in more detail below in paragraphs 3.3 and 3.4.

3.3 The first environmental management tool: The Natural Step Framework

3.3.1 *The origins of The Natural Step Framework*

The purpose of this section is to provide an overview of "The Natural Step", its relevance to the concept of environmental management systems and to link it to the principles for environmental management as described in the National Environmental Management Act, Act 107 of 1998. The book entitled "The Natural Step for Business", written by Brian Nattrass and Mary Altomare (1999:iii), provides not only an in-depth discussion of the topic, but the following three quotes from this book are used as an introduction to this section:

"The great challenge of this era is to bring human activities everywhere into alignment with the rest of the world. Business, with its resources and capacity for innovation, has both the opportunity and the responsibility to facilitate the transformation of industrial society. The Natural Step provides an elegant framework, a compass, to guide us on the road ahead. The Natural Step for Business is a powerful tool for seeking a new mental model, documented with the actual experience of successful corporations, to move their business into a sustainable future", Maurice F. Strong, Secretary General, United Nations Conference on Environment and Development;

"At Mitsubishi Electric, we have pursued sustainable development by utilizing The Natural Step as the compass to guide our way, together with the implementation of an environmental management system. This book provides easy-to-understand concepts of lasting value because it helps people see the relationship between their daily activities and larger environmental issues." Tachi Kiuchi, Managing Director, Mitsubishi Electric Corporation.

"This book is a compelling interweaving of the disciplines of organizational learning in action, to support corporate breakthroughs in sustainable development," Bryan Smith, Vice-President, Arthur D. Little Inc.

The concept of "The Natural Step" was developed by a medical doctor in Sweden, Dr Karl-Henrik Robèrt. He became concerned that cancer was increasing exponentially in children in Sweden, while the human community at large seemed relentlessly focused on achieving greater wealth, despite the negative impacts which their activities were having on the environment. As a cell scientist, he saw the cell as metaphor for the earth, as there must be a balance of all flows in both the cell and the earth. He therefore saw that humankind was running into a funnel of declining life-sustaining resources and increasing demands (Figure 2). The converging walls of the funnel represent the globally declining productivity of renewable resources per capita. At the same time, the declining vital life sustaining resource base of nature is exposed to climate change and increased concentrations of pollutants. On top of that, the world's population is increasing fast. It is thus easy to see that this scenario cannot be continued ad infinitum.

As people consider these global problems, it is easy to blame business for the large scale exploitation of natural resources. It is however also easy to recognize that the potential exists in business to slow the convergence of the walls of the funnel and to accelerate the opening up of the funnel through more efficient use of resources, coupled with less pollution. But will business expand its focus beyond short term profits to long term goals for the common good? Or will stronger legislation be needed? Most likely, a successful transition will require a combination of these factors.

3.3.2 *The Natural Step Framework*

According to The Natural Step (2000) the first prominent environmental problems received public attention approximately thirty years ago. These problems were related to air pollution from big industries, or large water pollution incidents where fish died on a massive scale. Remedies for these incidents were prescribed, and the problems appeared to be solved. But the rapid expansion in economic activity across world resulted in an escalation of these problems, and the complexity of issues rendered simple end-of-pipe solutions ineffective. To be able to tackle complicated problems, a comprehensive perspective is required that utilises a systems approach to the problems. The environmental problems all occur within nature, but the interaction between the various natural elements need to be understood if the system is to be protected from global pollution resulting from human activities.

Nattrass and Altomare (1999:18), indicate that The Natural Step framework provides a simple yet elegant framework to integrate environmental issues into the frame of business reality and to move an organization toward sustainable development. The purpose of the framework is to explain systems in the simplest way so an organization can deal with complexity without either getting lost in or denying that it exists. It includes four core processes:

- Perceiving the nature of the sustainable direction of business and society and the self-interest implicit in shifting to a sustainable direction;
- Understanding the first-order principles for sustainability, i.e. the four System Conditions;
- Strategic visioning through "back –casting" from a desired sustainable future; and
- Identifying strategic steps to move the company from its current reality toward its desired vision.

The Natural Step framework is used to develop a new shared mental model of business reality, one that integrates environmental considerations into strategic business decisions and day-to-day operations.

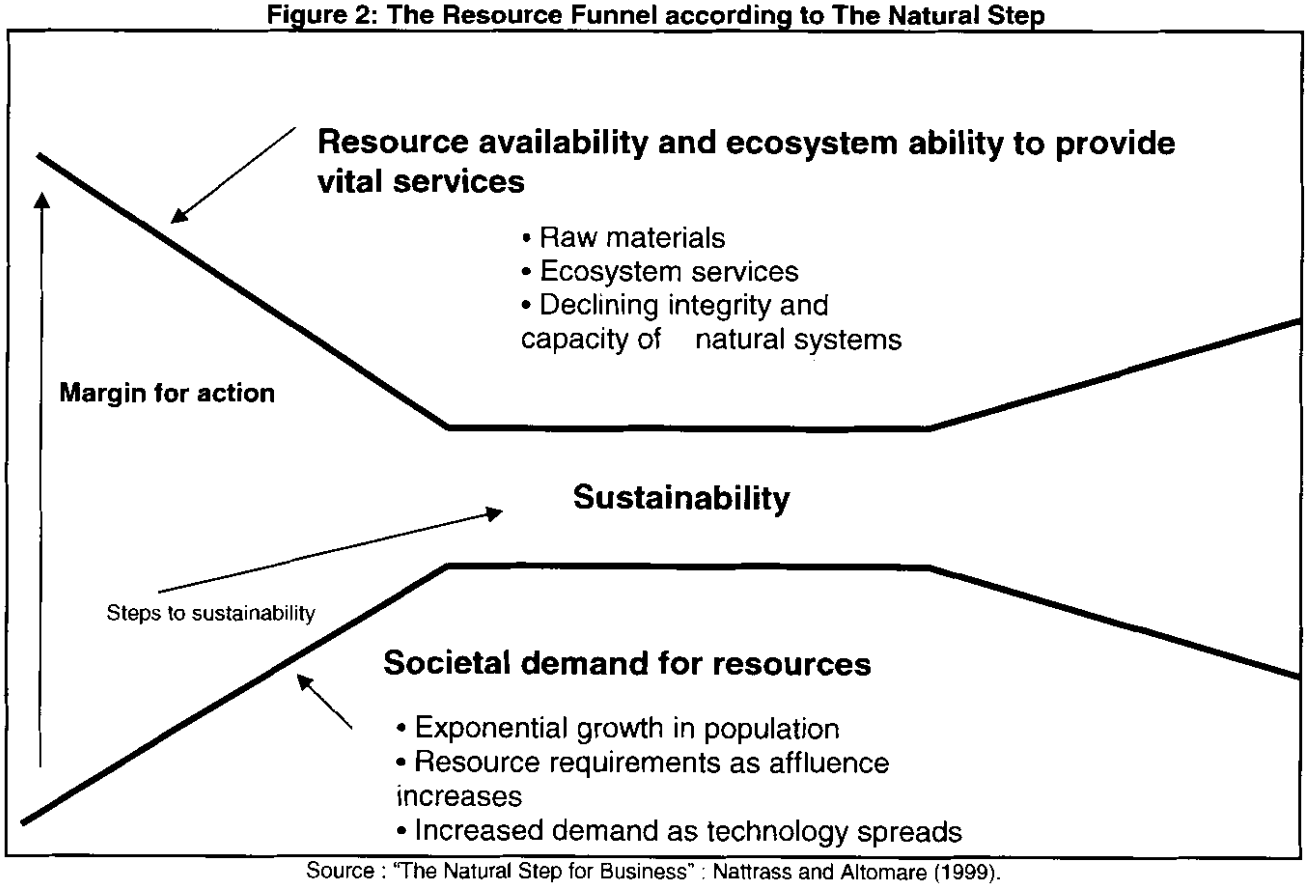
The goal of a sustainable organization or society is to direct its activities and investments to the center of the funnel rather than towards the wall (refer to Figure 2). The strategic, proactive company/municipality seeks first to understand the larger environment and societal realities that are creating the funnel effect and, based on this understanding, assess its current reality with respect to this broader systemic perspective. This means that the company must understand what is required for society in general and its operations in particular to be sustainable.
With this perspective firmly in mind, the organization can project itself into the future with investments which are strategically targeted toward the opening of the funnel and create an ideal vision of itself as a truly sustainable organization. Once this desired condition is

envisioned, the organization can back-cast to determine the steps required to reach the desired state. Each step is planned to become a platform for future steps. In contrast to forecasting, by which current methods are extrapolated into the future, back-casting allows for a departure from the present, unsustainable extrapolations in order to attain new goals and define truly new conditions. Nattrass and Altomare (1999:20), explain that back-casting provides one of the most powerful tools for the strategic implementation of an environmental management system. Back-casting is a method of strategic planning that aligns a company's long term vision with the principles of sustainability.

When using the back-casting technique, an organization must firstly examine where its operations are out of alignment with the principles of sustainability. Secondly, the organization must envision an ideal future in which it operates in accordance with the principles of a sustainable society. This includes imagining how the market place of the future will view its products and services, and how its core competencies can best be positioned to serve that market. Finally, the organization designs an action plan that will move it from its current reality to its long term vision.

When this type of long term strategic planning takes place due to increased environmental awareness, the result is that the most important issues are addressed and this will contribute to a stronger environmental system. Organizations that have an holistic picture and a strong vision of the future, will align resources and departments towards this unified vision. If they do not have an holistic approach, a company's efforts could potentially move them along a number of different paths, without adding up to a coherent direction which will result in significant improvements.

Figure 2: The Resource Funnel according to The Natural Step



Source : "The Natural Step for Business" : Nattrass and Altomare (1999).

To design for sustainability, the organization needs to understand what is required for society to be sustainable and what constitutes an ecologically sustainable and integrated human/nature system. Any system is defined by its *fundamental principles.* With this in

mind, Dr Robert sought to articulate the *first order principles for sustainability,* which are described later in this chapter as the System Conditions.

According to Nattrass and Altomare (1999:21), Robèrt understood that one of the first challenges we face is learning how to think in systems, that is, to think in wholes. He developed the following metaphor to help clarify both the concept of thinking in wholes and the problem of identifying first-order principles. He compares the way we think about environmental issues to a tree. Currently we are focused on the many leaves of the tree, while ignoring the trunk and the branches, which are the first-order principles of the system. He develops the metaphor this way, according to Nattrass and Altomare, (1999:21) : *"We are confronted with a series of seemingly unrelated questions: Is the greenhouse effect really a threat, or will it actually prevent another ice age? Is economic growth harmful, or does it provide resources for healing the environment? Will the costs of phasing out non-renewable energy sources outweigh the benefits? Can communities, regions or countries accomplish anything useful on their own, or must they wait for international agreements?*

In the midst of all this chatter about the "leaves," very few of us have been paying any attention to the environment's trunk and branches. They are deteriorating as a result of processes about which there is little or no controversy; and the thousands of individual problems that are the subject of so much debate are, in fact, manifestations of systemic errors that are undermining the foundations of society."

Nattrass and Altomare (1999:21), explain that the trunk is a stable entity that provides the framework for the system. The overall principles, found in the trunk and branches, are immutable and non-negotiable. They must hold if the tree is to continue to thrive, just as first-order principles must hold if the system is to continue to operate effectively. The leaves are all the consequences and activities of the system. They are the variety of designs, ideas and strategies that arise from the first-order principles. These are negotiable.

Using the metaphor of the tree, we could say that an organization needs to learn to identify when it is in the leaves, and how to constantly refer back to the trunk and the branches, the first-order principles, when designing its sustainable future.

The understanding that the earth can be viewed as a large and complex system which is made up of smaller systems can be helpful to understand the functioning of natural systems and people's impact thereon. The scientific principles which determine the functioning of the earth's natural systems were summarised for Robert by several leading scientists around the world and is summarised by The Natural Step, (2000) and are also outlined in Miller (1995):

- *Earth as a closed and open system*

  As a point of departure, one must note that the earth is a closed system for matter, because gravity does not allow matter to escape. The earth is however an open system for energy, as solar energy constantly enters the system and heat is radiated out into the universe

- *Matter and energy do not disappear*

  Matter and energy cannot disappear, it can only be transformed.

- *Matter and energy tend to disperse*

When energy disperses, it is replenished by the sun's radiation. Dispersing matter can become a pollution problem.

- *The concentration and structure of matter determine its quality or usefulness*

A gold ingot is more valuable than the identical amount of gold dispersed in underground rock, and a gold ring increases the value further since structure has been added to it.

- *Photosynthesis creates a net gain in material quality.*

Through photosynthesis plants are able to gather dispersed material and concentrate it to form new plants, thus creating a net gain, which is the basic building block for all living things on earth.

Taking the above mentioned scientific principles into consideration, it can be stated that all living organisms, including humans, are part of and completely dependent on nature for survival. According to The Natural Step, (2000) the founder of the movement Dr Robèrt consulted numerous natural scientists regarding the scientific principles which underlie the foundations of the earth, and concluded that cells are the smallest building blocks of life. They are capable to adapt to changing circumstances, provided changes do not occur too rapidly. Cells can however not withstand systematic alterations in living conditions, which human activities can cause through pollution of the environment.

To effectively address the impact of human actions on nature, The Natural Step, (2000) suggests that research must move away from solely assessing the human impact on nature, and to find the root causes for these effects. Humans can thus damage nature in only three ways:

- When concentrations of substances from the earth's crust are continuously increasing in nature (eg mine waste disperses into the soil).
- When concentrations of substances produced by society are continuously increasing in nature (eg manufactured chemicals)
- When nature is continuously degraded by physical means (eg over harvesting of wood and fish)

When the word "not" is placed in front of each of the above mentioned ways that people can damage nature, three of the four system conditions for a sustainable society are defined. By adding a fourth condition relating to equitable ways that people must interact with one another, the four basic conditions for a sustainable society are defined :

"The four System Conditions"

Nattrass and Altomare (1999), explain that the four System Conditions can be described as follows : "*In order for a society to be sustainable, nature's functions and diversity are not systematically:*

1 subject to increasing concentrations of substances extracted from the earth's crust;

2 subject to increasing concentrations of substances produced by society;

3 impoverished by over harvesting or other forms of ecosystem manipulation, and in addition to these three aspects,

4 resources are used fairly and efficiently in order to meet basic human needs.

The primary purpose behind the development and articulation of the four System Conditions was to find a framework for discussing sustainable human activities through a set of non-overlapping first-order principles. Ironically, the very concept of sustainability did not become meaningful until mankind began to imagine that human activities could create a condition of ecological unsustainability. For that reason, to derive the first-order principles, it can be asked in what ways human activities can possibly destroy the complex ecological system on which mankind depends. It can then be determined that these activities would not occur in a sustainable society. Although it can be imagined what an unsustainable society looks like, it cannot be defined in detail how the sustainable society will function, because there are infinite ways in which such a society could evolve. However, the framework within which that evolution must take place can be described.

In a sustainable society, society does not systematically draw upon renewable resources faster that they can be regenerated. A sustainable society does not systematically reduce the productive capacity of nature by over harvesting, eroding the soil, or otherwise detrimentally manipulating green surfaces. It does not leak compounds in such amounts and of such quality that their concentration systematically increases in nature. In a sustainable society, population is stabilized and resources are used efficiently and fairly to meet basic human needs. Driving forces of social and economic development are organized around, and operate in ways that conform to the rules of the system.

How does an organization know if it is moving in the direction of sustainability unless it has an idea of what will keep the funnel open? This is where first-order principles – the four System Conditions - are essential. From these principles the operating principles of a sustainable society can be described.

According to Nattrass and Altomare (1999:28), organizations that use The Natural Step framework indicated that they understand that important economic benefits can be gained by learning to operate in harmony with nature and by guarding against a collision with the limits imposed by natural laws or by society's reactions to negative environmental effects, in other words the walls of the funnel. By adapting products and processes within the System Conditions framework now, organizations avoid having to adapt later at greater cost and in less time, as the walls of the funnel close in on business and society.

The benefits of using The Natural Step framework

The intellectual framework of TNS provides several advantages and benefits to organizations. The System Conditions provide a comprehensive definition of an environmentally sustainable society that is based on scientific principles and that is easily understood. This makes it an effective tool for decision-making, planning and training. It is this ability of the TNS framework to simplify the myriad of information on sustainability into an easily understood summary that is the main reason that this tool is promoted amongst municipalities by the Development Bank of Southern Africa.

The second main reason for promoting the use of the TNS framework is its motivational force. It can inspire decision-makers, since it creates awareness of the global environmental problems facing us all, and then encourages users of the framework to take small steps towards becoming sustainable organisations.

The third main reason for promoting the use of the TNS framework is that it helps to focus activities of organizations to be aligned with the vision of sustainability, and prevents organizations from carrying out environmentally friendly activities which are not

contributing towards their becoming sustainable organizations. An example of this benefit is recorded in Nattrass & Altomare (2002:123), where the impact that TNS has had on the environmental activities of the Starbucks Coffee Company is related. Starbucks were already well aware of their business's environmental impact and had implemented a variety of environmental programs like recycling bags in which coffee was purchased etc. According to the Starbucks director *"to identify the highest leverage focus areas for Starbucks, we worked with a cross-functional project team and developed an eco-protocol. ...We created a sustainability systems map of the company to develop a better picture of potential sustainability impacts using The Natural Step Framework as an analytical tool, taking financial, social and environmental areas into consideration. We then jointly identified areas of potential sustainability impact. Together with the Starbucks team we identified the four priority focus areas that the company could move forward on : sourcing activities, transportation, energy and water consumption, as well as store design and operation."*

The framework is valid at any scale and activity. It can be used as an integrating framework to seamlessly tie together many different components of a system into one coherent whole, such as different and disparate environmental programs in an organization. It provides a shared mental framework that enables teams or groups of people to work toward a common goal despite diverse technical and professional languages or backgrounds. Using the framework to analyze important issues and to guide key business decisions helps an organization avoid costly mistakes of focusing on short-term solutions that are unsustainable in the long term.

The advantages of following the path promoted by The Natural Step organization, is that it bases its methods on science, does not assign blame, sees business as a vital force in moving society toward sustainability, and seeks to support best practice to encourage learning and sharing of ideas. The Natural Step organization is non-prescriptive, non-confrontational and non-judgmental. Its methodology is a consensus seeking process that aims to bring all sectors of society into dialogue. Practitioners of The Natural Step framework employ methodologies similar to those used within the quality movement, along with concepts from learning organization theory (Senge 1990 and Argyris 1992) both of which are familiar to and considered desirable by many business people. The Natural Step theory is intellectually open and involving, inviting creative development of its core principles and all aspects of its praxis (Nattrass & Altomare 1999).

Nattrass and Altomare (1999), state that even if an organisation accepts the need to move towards sustainability, it must still operate within the other realities of its business milieu in order to remain profitable. The Natural Step framework facilitates this journey to sustainability, by

- Describing the features by which the company/municipality can recognize its destination;
- Pointing out the direction to travel;
- Providing a compass to keep the company/municipality on track.

Although several important steps can be taken within current competencies, processes and technology, several steps require the development of new competencies. Rather than leading to changes overnight that ignore other current realities, the process encouraged by The Natural Step framework is to first make the evolutionary decision to become a sustainable corporation, then to move forward step by step, in the direction of sustainability, while maintaining and enhancing profitability and shareholder value in the process.

The framework is not used as an alternative to other decision-making tools, such as lifecycle assessment, or environmental management systems. Rather, the framework is used to guide people using these specific tools toward a science-based vision of sustainability. When training in the framework is undertaken by both a corporation's suppliers and its customers, it stimulates a new level of communication as well as a new level of product, service, and process innovation among the players. It can function as a catalyst for a closer commercial relationship between parties.

3.3.3 *The relevance of The Natural Step framework in South Africa*

The National Environmental Management Act (NEMA) guides the implementation of other legislation in South Africa, since other legislation must be carried out with due recognition of their conformance to the principles of environmental management as described in chapter one of NEMA. Table 1 provides an overview of how the TNS framework's System Conditions supports the principles of environmental management as contained in NEMA:

Table 1 : A comparison of The Natural Step framework (TNS) with the environmental management principles contained in the National Environmental Management Act (NEMA) Act 107, 1998

Development must be socially, environmentally and economically sustainable.	All four System Conditions, since TNS recognises that the economy must be integrated with social and environmental concerns, and be the driver of real change towards sustainability.
Sustainable development requires the consideration of all relevant factors including the following : (i) that the disturbance of ecosystems and loss of biological diversity are avoided,.... (ii)that pollution and degradation of the environment are avoided.... (iii) that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided..... (iv) that waste is avoided..... (v) that the use and exploitation of non-renewable resources is responsible and equitable.... (vi) that the development, use and exploitation of renewable resources and the ecosystems of which they are part, do not exceed the level beyond which their integrity is jeopardised; (vii) that a risk averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; (viii) that the negative impacts on the environment and on people's environmental rights be anticipated and prevented....	 System Condition 3 System Condition 2 System Conditions 3 & 4 System Condition 2 System Condition 1&4 System condition 3 The Funnel diagram clearly illustrates that earth's resources are finite and availability declining, thus supporting the risk averse approach. TNS framework is based on the integrated use of the four System Conditions
Environmental management must be integrated,.....pursuing the best practical environmental option (bpeo).	TNS promotes integrated solutions, and advocates taking small steps (bpeo) after completing the back-casting exercise.
Environmental justice must be pursued....	System Condition 4
Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued....	System Condition 4
Responsibility for the environmental health and safety consequences of a policy, program, project, product, process, service or activity exists throughout its life cycle.	TNS promotes "visualisation" of a sustainable society. and then back-casting can help to identify steps that will lead to becoming sustainable. TNS considers the whole life cycle.
The participation of all interested and effected parties in environmental governance must be promoted.....	System Condition 4
Decisions must take into account the interests, needs and values of all interested and affected parties....	System Condition 4
Community well being and empowerment must be promoted through environmental education, the raising of awareness.....	TNS framework is an easy to understand explanation of global environmental

	problems, thereby raising awareness and inspiring people to take action.
The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.	Appropriate decisions can refer to "the low hanging fruits", implying taking appropriate steps to change an organization to progress along the pathway to sustainability.
The rights of workers to refuse work that is harmful to human health or the environment, and to be informed of the dangers, must be respected and protected.	System Condition 4.
Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.	System Condition 4, plus emphasising that humans need to make the right decisions for the required change to take place.
There must be intergovernmental co-ordination and harmonisation of policies, legislation and actions relating to the environment.	Ditto
Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.	Ditto
Global and international responsibilities relating to the environment must be discharged in the national interest.	Ditto
The environment is held in public trust for the people, the beneficial use of the environmental resources must serve the public interest.....	Ditto
The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse heath effects must be paid for by those responsible for harming the environment.	No direct TNS reference, but System Condition 4 refers to the equitable use of resources, which implies that the "polluter must pay" principle is equitable.
The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.	No direct TNS reference, but System Condition 4 refers to the equitable use of resources.
Sensitive, vulnerable, highly dynamic or stressed ecosystems,.....require specific attention in management.....	System Condition 3.

This comparison illustrates that the four System Conditions of the TNS framework can be linked to and act as a summary for every principle of environmental management as described in NEMA. It also confirms the soundness of the Four System Conditions in terms of the comprehensive set of principles for environmental management as contained in NEMA.

It needs to be noted that issues relating to social justice and equity feature strongly in a number of principles of NEMA. The fourth System Condition relates to these issues, but according to Willis (2002), the explanation of how these social issues need to be implemented in practice has not been worked out in sufficient detail by The Natural Step. The promoters of TNS are currently conducting further in-depth research in this regard, since the issues relating to the first three System Conditions have to date been more fully investigated and implemented by a variety of organizations across the world. The reason for this is that issues relating to natural resource use have received more attention from researchers and these issues are also more easily understood than social issues. This situation was also confirmed by Nel (2002), who explained that in the field of environmental impact assessment, researchers found it easier to predict impacts of developments on natural resources than on humans, because different people react differently to the same impact, for instance noise generated by road traffic will be tolerated by some and objected to by others.

In conclusion it can be said that the Four System Conditions of TNS bear a strong correlation to the principles contained in NEMA. The System Conditions can also be used as a summary (or be viewed as key pillars for a summary) of the NEMA principles for environmental management. The principles in NEMA relating to social justice and equity can also be gainfully used by the TNS framework to shed more light on the explanation of the practical implementation of the fourth System Condition.

3.4 The second environmental management tool: The ISO 14001 standard for environmental management systems

An EMS is a set of problem identification and problem solving tools that can be implemented in an organization in many different ways, depending on the organization's activities and needs.

The USA Environmental Protection Agency (2000) defines an EMS as a "framework" that helps an organization achieve its environmental goals through consistent control of its operations. The assumption is that this increased control will improve the environmental performance of the organization. The EMS itself does not dictate a level of performance that must be achieved; each organization's EMS is tailored to its individual activities and goals.

Formal EMS systems are gaining popularity around the world. With the globalization of the economy, many companies are upgrading their EMS systems to conform to international standards, such as the Eco-Management and Audit Scheme (EMAS) in Europe, or the ISO 14001 Environmental Management System standard created by the International Standards Organization in 1996. While more than 5000 sites worldwide have been certified to the ISO 14001 standard, many others are creating "ISO-conforming" systems without seeking certification. This is also the approach currently being promoted by 'Forum for the Future', an organization working in Britain and dedicated to assisting municipalities with the implementation environmental management systems. According to Slater (2001), an ISO 14001 based EMS results in an overload of paper work and administration for a municipality. The preferred approach is that municipalities are encouraged to use existing legislation, and indicate how they will be meeting requirements such as accountability and good governance. By using legislation as the point of departure, they can still employ concepts like "*plan, do, check, act*" similar to the ISO 14001 steps, but without having to adhere to some of the stringent ISO requirements. In this way municipalities can practice environmental management, but skip some of the requirements necessary to achieve certification in terms of the ISO 14001 standard.

As the experience of governments and businesses in the field of environmental management has increased over the past two decades, it has been realised that environmental impact assessments alone cannot ensure that damage to the environment is minimised. Emphasis was then placed on environmental management plans, but this approach still largely addressed only the impacts of new projects on the environment. The emphasis then moved to also include existing businesses and production facilities, and the way that these organizations manage their ongoing impact on the environment. Several methods for managing environmental impacts were developed in different parts of the world and at the Rio Conference in 1992 it was decided to task the International Standards Organization (ISO) to develop an internationally accepted system for management of environmental issues in organizations. The result was the ISO 14000 series of standards, which was published in 1996. This new standard follows the well

known Quality Management approach of *'plan, do, check, act'*, which is a systems methodology, rather than the traditional command and control approach.

According to ISO 14001 (2004) "*many organizations have undertaken environmental reviews or audits to assess their environmental performance. On their own, however, these reviews and audits may not be sufficient to provide an organization with the assurance that its performance not only meets, but will continue to meet its legal and policy requirements. To be effective, they need to be conducted within a structured management system and integrated with overall management activity.....It has been written to be applicable to all types and sizes of organizations.....*" It is important to note the emphasis in this standard on compliance and continual improvement, while The Natural Step framework places its emphasis on providing motivation to change an organization into a sustainable entity, as well as providing practical steps to accomplish this transformation. It is also important to note that since this standard was written to be applicable to all types of organizations, it is therefore also applicable to local authorities. This sphere of application is however not well known, and this dissertation will attempt to shed some light on these aspects.

The steps included in the ISO 14001 standard (2004) for the preparation and implementation of an EMS are briefly described below :

- *Step 1 : Environmental policy*
  Top management shall prepare an organization's environmental policy and ensure that it is appropriate to the nature of the organization, includes a commitment to continual improvement and prevention of pollution, as well as complying with relevant environmental legislation.

- *Step 2 : Planning*
  Identify the actions of the organization that can impact negatively on the environment, as well as legal requirements which the organization must comply with. Thereafter objectives and targets must be set and plans prepared on how to meet those targets.

- *Step 3 : Implementation and operation*
  Roles and responsibilities for implementing the plans must be finalised, and then supplemented by training and awareness raising sessions. Work procedures must be developed to describe environmentally related work and results must be communicated amongst stakeholders.

- *Step 4 : Checking and corrective action*
  Procedures must be established to monitor the operation and to determine if targets will be met. Where required, corrective actions must be developed and records kept of incidents of non-compliance.

- *Step 5 : Management review*
  Top management must regularly review progress and make the required changes to ensure continual improvement.

In practice, personnel evaluate the processes and procedures they use to manage environmental issues and must incorporate strong operational controls and environmental roles and responsibilities into existing job descriptions and work instructions. They set objectives and targets for managing their environmental issues. They monitor, measure and evaluate their progress in environmental performance both in areas that are regulated

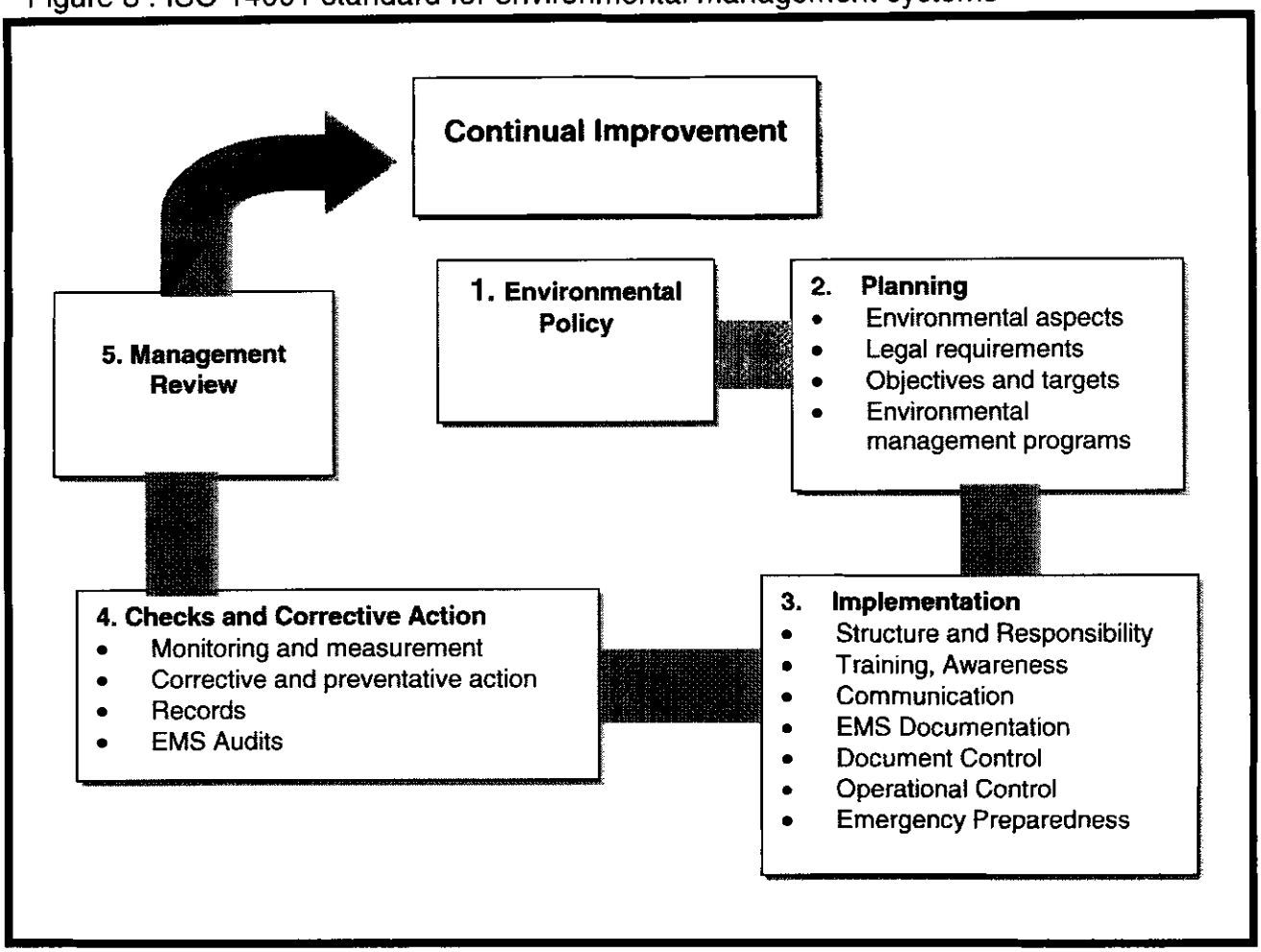
and areas that are not (e.g. demand-side issues such as water or electricity use). The EMS integrates the environment into everyday business operations, and environmental stewardship becomes part of the daily responsibility for employees across the entire organization, not just in the environmental department.

EMS's are part of organizations' overall management systems. They provide a number of benchmarked tools to manage environmental risk effectively and offer great potential for continuous improvement in compliance and other areas of environmental performance. An EMS engages an organization in:

- ⇒ Understanding how their operations and activities impact on the environment.
- ⇒ Evaluating the extent of risk posed by their environmental issues.
- ⇒ Defining an environmental policy that guides the organization's approach and commitments to environmental management.
- ⇒ Establishing measurable objectives and targets for environmental performance.
- ⇒ Allocating necessary resources to achieve the objectives.
- ⇒ Establishing and maintaining specific procedures to ensure that work activities minimize or eliminate a negative impact on the environment.
- ⇒ Communicating responsibilities and work instructions throughout the organization and training employees to effectively carry out their obligations.
- ⇒ Monitoring and measuring performance against established standards and indicators.
- ⇒ Revising and improving the system based on the monitoring results.
- ⇒ Communicating with people inside and outside the organization about the organization's progress.

An EMS is not intended to be a substitute for regulatory requirements, nor does it offer regulatory relief from the law. EMS's can improve an organization's compliance, pollution prevention and overall environmental performance, and hopefully build greater confidence with local stakeholders. EMS's are proactive programs that identify and address the root causes of potential compliance problems areas. They use pollution prevention approaches. Senior management plays an active role in the EMS, continually looking for ways to improve environmental management. The system follows a repeating cycle, and is illustrated in Figure 3:

Figure 3 : ISO 14001 standard for environmental management systems



Source: The ISO 14001 Environmental Management System Standard, International Standards Organisation (2004).

One of the negative aspects of implementing an EMS is that it can allow an organization to focus on a specific environmental issue like pollution prevention, but the EMS will not necessarily lead the organization to become sustainable, although being legally compliant. In order to become sustainable, the organization needs to aspire to fulfil all four System Conditions as required by The Natural Step framework. By using the TNS framework in conjunction with an EMS, sustainability considerations can be included in the organization's environmental policy and targets for performance.

A second negative aspect related to implementing an EMS, is that the ISO 14001 standard is not necessarily inspirational and motivational. The EMS can often be experienced by personnel as "just another task" to be completed. Therefore the EMS needs to be accompanied by extensive orientation and training sessions to explain the origin and benefits of the new system.

A third negative aspect associated with a formal EMS is that it is paper intensive. Responsibilities, targets, work procedures and monitoring guidelines all need to be documented and controlled, making the implementation of the system labour intensive. Due to this reason it is not recommended that municipalities implement an EMS with the purpose of being accredited according to the ISO 14001 standard, but that municipalities rather follow the principles contained in the ISO 14001 standard and implement the

system in an informal manner, thereby reducing many of the formal reporting requirements associated with a formal EMS.

3.5 Conclusion

Chapter 2 pointed out the various pieces of existing legislation which require municipalities to take responsibility for environmental management. This is however a mammoth task for municipalities which are overloaded with new responsibilities in terms of developmental local government. It was also pointed out that political leaders in local government are under pressure from their electorate to deliver basic services first, and subsequently environmental considerations are often neglected. In addition many municipalities lack sufficient capacity to undertake all their new responsibilities, and despite the legal requirements for environmental management, something is needed that will bring about a change of heart with regard to environmental management. The Natural Step framework is proposed as the instrument to facilitate this commitment, and the implementation of an EMS according to the ISO 14001 standard is proposed as the instrument to measure performance with regard to environmental management and the degree of success that municipalities achieve in becoming learning and sustainable organisations. Practical examples of how these two instruments have already made a difference at local government level will be presented in Chapter 4.

Chapter 4 :

The implementation of environmental management systems at local government level within The Natural Step framework: Case studies and lessons learnt

4.1 The benefits of combining the Natural Step Framework with the ISO 14001 standard for environmental management

The purpose of this chapter is to illustrate the benefits to be derived by municipalities when combining the use of the two tools for environmental management described in Chapter 3, namely The Natural Step framework and the ISO 14001 standard for environmental management systems. Case studies from the United States of America (USA), Canada and Japan will be used, and the case studies will reflect lessons learnt from the implementation of an EMS with the use of the ISO standard, as well as with the TNS framework.

Rowland and Sheldon (1999:3) state that most business managers do not have a problem in grasping the basis of the TNS System Conditions. Whatever their reaction, they invariably begin to think about how they will turn the concepts into reality for their own organizations, and within the confines of their existing managerial and operational systems.

It was to shed some light on this crucial transition from conceptual breakthrough to practical application, that inspired Rowland and Sheldon (1999) to write their guideline on the integration of the TNS framework into the ISO 14001 standard. The TNS framework offers a powerful means not only for obtaining a brief indication of what a sustainable future may consist of, but also for determining a plan that will take the organization there. Such 'visioning' is only half the picture, and ISO 14001 is already a proven tool for translating the vision into practical steps at the operational level. Conversely, although a vision of sustainability without good management is merely a pipe dream, sound management alone without strategic 'navigation' may merely leave an organization doing well those things that may have no place in the future. Long term success lies in the effective integration of these two foremost and proven tools at both strategic and practical levels. Rowland and Sheldon (1999) conclude that their guideline aims to express the basic concepts in such a way as to make managers more comfortable with implementing the latest thinking on the subject.

According to Rowland and Sheldon (1999:4), there is no prescribed way of implementing the TNS framework. This stems from one of the core values of TNS, namely that it encourages people and organizations to internalise the shared mental model which it provides at the level of general principle, and to think through *for themselves* the implications and applications as they relate to their own organizations. This 'autonomous learning approach' – which is designed to help create a shared vision of a sustainable future that fosters genuine commitment, as well as shared ownership of the solutions – means that education and consensus building are central feature of the process of applying the TNS framework. The consensus building approach will also contribute to better "buying in" by municipalities' top management.

When an organization decides to use the TNS framework through obtaining top management commitment, the first step is then to educate key representatives throughout the organization in the TNS System Conditions and their underlying scientific principles. A similar education process will be required for the ISO 14001 approach, although the timing of this training should be after the TNS training has been completed, since it is important for management to first understand the global environmental problems that the world is facing and to be inspired to change current operations for the long term benefit of both the organization and the global economy. In the introduction to ISO 14001 it is stated that as an International Standard it is intended to provide organizations with the 'elements' of an EMS, which can then be "integrated with other management requirements, to assist organizations to achieve environmental and economic goals". In other words, the standard is primarily concerned with achieving goals that are set by the organization itself; it has no direct prescriptive requirements concerning the performance level at which these goals are set.

According to Rowland and Sheldon (1999) the order in which the TNS framework and an ISO 14001 EMS are implemented relative to one another will depend on whether the organization concerned already has a formal EMS in place. Implementation experience to date suggests that the most effective approach is to focus on the TNS framework first. The analogy that can be used is that it makes sense to get an understanding of what the overall house will look like (through the TNS benchmarking process), and then to apply the EMS as a set of tools to build the house. Staff required to carry out EMS procedures are likely to do so with more enthusiasm and commitment if they are able to see *why* they are doing so, both form an organization's perspective, and for society generally, according to the experience of Rowland and Sheldon (1999). Nattrass and Altomare (1999), continue the discussion by explaining that because the TNS framework does not prescribe what specific steps to follow, an organisation will gain the most benefit by integrating it with an environmental management system (EMS). For many sustainability goals, a formal EMS is an effective vehicle for implementation.

On the other hand, there are a number of benefits in integrating the TNS strategic planning process into the Initial Environmental Review recommended by ISO 14001. Applying the TNS framework after the EMS has been built is potentially the most problematic option according to Rowland and Sheldon (1999), although this does not mean that the process is without its rewards. These benefits are described in the following quote by the former President and CEO, Oki Semiconductor Manufacturing : *"I wish I had known about The Natural Step earlier. We were introduced to The Natural Step after we had already built our environmental management system. The Natural Step helps the nuts and bolts of the environmental management system make more sense. I believe The Natural Step framework can help build a stronger and better overall system."* Nattrass and Altomare (1999).

An EMS is primarily a vehicle designed to help an organization *achieve and demonstrate* improved environmental performance. It provides a set of procedures for implementing and monitoring environmentally related business practices. Used in conjunction with the TNS framework, it provides a clear vision of where the business is headed and a practical methodology for getting there. Rowland and Sheldon (1999) mention that there would be significant shortfalls in attempting to realise the *entire* scope of sustainability within the restricted scope of an EMS. Non-environmental goals, e.g. those relating to social and ethical issues, that may occur as an output of TNS adoption, will require other non-EMS support in order to be fully realised within an organization. This statement is confirmed in the USA case studies, where emphasis was only placed on improving environmental performance, but the Japanese case studies claim to move towards sustainability without

other non-EMS support like the TNS framework. If the Japanese claim will become reality, can only be determined through future research.

According to Nattrass and Altomare (1999), the Vice-President for Corporate Communications of Mitsubishi Electric America, commented as follows: *"As we study how to combine TNS and ISO 14001, our approach is to use the TNS framework as a way to organize information about our environmental aspects. Before, the aspects were all just data, but using TNS has turned them into objectives. ISO 14001 is the 'what', and TNS provides the 'why' ".*

One of TNS's most powerful areas of influence is in employee training. Training provides employees with a broader perspective which helps them understand their own and their organization's role in creating a sustainable future, and often leads to a strong commitment to the environmental program. This can be contrasted to many employee training programs that focus on regulatory compliance as something they "have to do" because "it is the law". TNS training creates a framework for employees' ideas to help an organization reach its goals during their day-to-day work lives. TNS training also help employees apply ecological insights in their personal lives in satisfying ways. According to Rowland and Sheldon (1999), recent experience in implementing EMS's shows that ongoing action-learning programs based on TNS, provide a solid foundation for the implementation of an EMS. This can draw all the members of an organization into the process and emphasise individual creativity.

Moving onto some important principles of TNS, Karl-Henrik Robert in Nattrass and Altomare (1999), compares an EMS to a powerful sailboat. The boat comes with a detailed instruction manual describing where the stern and bow are, how to operate the sails etc. However, building an EMS without a strategic planning tool like the TNS framework, is like having no compass or map to guide the boat. The metaphor can be taken further : a typical EMS may certainly support an organization in sailing along the familiar coastline of regulatory compliance and incremental improvement based on present conditions extrapolated into a predictable future, but it may be of little use in the stormy waters of the global economy and increasing, changing and uncertain ecological pressures.

With the TNS framework providing a compass to steer an organization in the direction of ecological sustainability, an organization's EMS can move beyond goals like compliance and incremental improvement, to support goals such as market leadership and improved competitiveness. The EMS can provide the steps that lead to new opportunities and reduced costs that strengthen the bottom line, as well as create a sustainable, or even, restorative economy. According to Nattrass and Altomare (1999), the Environmental Manager at McDonald's of Sweden said that ISO does not tell an organization anything about goals. The business can be a polluting company and still get certified if the EMS meets the standard set by its own management. It is however expected that with the emphasis on continual improvement, a company will reduce pollutants effectively over time.

There are many ways in which the TNS framework can enhance an EMS. Nattrass and Altomare (1999), quote the Environmental Manager of Sanga-Saby Hotel :*"By using the System Conditions, our ISO program is something we can use on the offensive, rather than just guarding our back. The System Conditions tell us how far we can go, how far we can set the anchor. We are way beyond incremental improvements or defensive strategies. Defensive activities are not constructive use of our resources."*

Oki Semiconductor analyzed this ISO/TNS integration and identified areas where the framework has added value to the process. Nattrass and Altomare (1999), provide the following suggestions on how to integrate the two tools, based on Oki Semiconductor's experience:

1 Include sustainability and TNS conditions in the company's environmental policy.
2 Train all employees in the four system conditions, and include TNS in the induction process.
3 Include TNS principles in the rating and ranking of environmental aspects,
   - To help determine the significance of impacts on the environment;
   - To help ensure objectives are chosen in accordance with sustainability;
   - To help ensure resources are expended and will be balanced towards sustainability;
4 Use specific criteria from TNS for evaluation and ranking.
5 Include TNS analyses in new materials, products, processes and activities decisions.
6 Include confirmation of effective use of TNS analyses during internal audits.
7 Include a TNS activities review for effectiveness in management reviews.

While corporations are often looking for answers to specific issues or questions, The Natural Step framework generally does not provide these answers. Rather, it provides a *framework for thinking* that helps clarify and identify the right questions with respect to sustainability and a way to map out the steps for formulating and testing solutions. This is an advantage because the problems and issues faced by a corporation will vary over time; however the first-order principles of sustainability remain unaltered.

4.2 Lessons from USA, Japanese and Canadian case studies

In the case studies from the USA and Japan, The Natural Step framework was not used, while the Canadian case study illustrates the benefits of the use of the TNS framework. Both scenarios were chosen for this dissertation, in order to illustrate the benefits of the ISO 14001 standard, as well as the TNS framework for municipalities.

4.2.1 Japanese case studies

In their paper on EMS for Japanese cities, Srinivas and Yashiro (1999), mention three important points:

- The ISO Standard helps improve environmental performance and reduce negative impacts on the environment;
- The ISO Standard provides an objective basis for verifying claims about a local government's performance in its day-to-day operations;
- Key goals for local government are to be environmentally efficient, and serve as a model for resource saving and replication.

The following internal and external benefits of ISO 14001 based EMS for Japanese cities are cited by Srinivas and Yashiro, (1999):

Internal benefits:

- Saving of everyday resources;

- Costs are reduced by the review process which identifies wastage of resources;
- Staff commitment and morale are improved, highlighting their contribution to 'saving the earth';
- The review of existing activities lead to improved efficiency in operation, and better integration of day-to-day activities.
- Helps in developing a more effective information management system, to enable management to track performance.

External benefits:

- It demonstrates a city's 'green face' to its citizens, and helps to emphasize the need for greater environmental action on the part of urban stakeholders;
- A city's implementation of the ISO standard serves as a model for other urban governments to replicate;
- A city that has implemented the ISO standard can from a position of strength, require replication by businesses and industry;
- It emphasizes that 'environmental action starts at home', illustrating that actions at local level have long term global implications.

The lessons which South African municipalities should take note of from the above discussion are that the Japanese municipalities gained substantial financial benefits in the process of implementing the EMS. In addition the Japanese municipalities were able to benefit from the integration of activities in a complex municipal system, which is a goal that South African Municipalities are striving for through the Integrated Development Planning (IDP) process, but are still experiencing difficulties in achieving.

The Japanese case studies were able to report efficient implementation of the EMS tool, but no reference was made to the progress of the municipalities towards becoming sustainable organisations. If they had used the TNS framework, their EMS's could have been more effective. Nel (2005) mentioned that the Japanese examples were found to only have been applied to the administrative buildings of municipalities, and were thus not yet making the desired transition to sustainability.

4.2.2 USA case study

The USA Environmental Protection Agency (EPA, 2000) launched a pilot project in 2000, after obtaining commitment from nine municipalities to implement an EMS in their respective organizations. The USA program was planned to provide sufficient structure to guide the participating groups in each municipality through the EMS requirements, yet was flexible enough to satisfy individual participant needs. Key program elements included:

- An implementation strategy that divided EMS requirements into four sequenced phases, each with discrete, measurable milestones.
- Intensive "train-the-trainer" workshops were scheduled at the beginning of each phase.
- EMS training materials were tailored for each workshop. Leading experts in the field assisted with instruction and discussion, as did other municipalities which engaged in EMS activities.
- Frequent communication among participants and with external stakeholders was an important component of the project structure. EPA personnel also made periodic site visits to assist implementation teams with training, auditing, technical assistance and change management issues.

- Team building activities to develop synergy and a strong support network among the participants were built into every workshop.

Participants soon discovered that to build support for the EMS across the organization, and particularly with management, it was very important to publicize the benefits of the EMS. Regular documentation of this information provided material to present to top management in monthly briefings. Many participants started with a small fence line (a selected department or facility for implementing the EMS on a trial basis, e.g. a water purification plant) and planned to expand the EMS to other departments over time.

Areas of continuing interest to EPA are environmental performance, compliance, pollution prevention, stakeholder involvement, changes in the EMS design, as well as opportunities to mentor national and international local government agencies.

Whether participants chose to certify their EMS in terms of ISO 14001 or not, they all acknowledged that they will use EMS tools (e.g. competency training, documentation, monitoring, communication, operational control) to help them manage their compliance issues.

While most participants in the USA project were quite familiar with command and control approaches to environmental management, only one or two had experience with other process management or quality management systems like the ISO 9000 Quality Management standard. Fast learning therefore took place in understanding the EMS requirements and the process management approach.

The important lessons from the USA case studies for South African municipalities are that it is definitely practical and beneficial for municipalities to implement an EMS within their existing organizations. The second lesson concerns the substantial financial benefits which the municipalities were able to report. Not only were they able to save money, but finance for projects was also offered at reduced rates, the value of municipal bonds increased and insurance premiums were lower. These benefits should be a strong motivation for South African municipalities to implement an EMS, due the financial constraints municipalities are experiencing, as well as the backlog in the provision of infrastructure. South African municipalities are however not aware of these benefits, because the EMS concept is not well known to them, and where municipalities do want to implement environmental projects, they are often constrained by a lack of funds.

In terms of the influence that the TNS framework could have had on the USA case studies, it can be mentioned that Nattrass and Altomare (1999) reported that companies that have implemented EMS's without the use of the TNS framework, but learned about the Framework afterwards, all stated that the TNS framework could have enhanced their EMS's.

4.2.3 Canadian case study

The history and achievements in environmental management of the town of Whistler will be used for this case study. It is important to note that a variety of environmental management activities were undertaken in Whistler before the town and its residents were introduced to the TNS framework. It is therefore particularly relevant to note how the environmental management activities were enhanced and strengthened through the use of the TNS framework.

Whistler is a world famous mountain resort in British Columbia. A volunteer association was formed in 1988 to start a recycling program for the town, and this group subsequently evolved to perform an environmental watchdog role for the area. Their continuous involvement with the impact of property development on the environment resulted in reciprocal actions from the municipality, and a first step was the preparation of an environmental strategy. But the practical implementation of the strategy remained a problem. This situation was changed when the founder of The Natural Step, Dr Robèrt, visited the resort in 2000 and presented the TNS framework to the municipality, business organizations and community groups. As a result an Early Adopters group was formed, which used the TNS framework as a common language and several programs were launched in the community, business and the municipality.

According to Nattrass and Altomare (2002:140) the mayor of Whistler said the following about the TNS framework : "*The Natural Step framework is a key component of trying to communicate a very complex question to the community in a very simple, easy to understand format that reaches families, business and even our guests.*"

Other examples of how TNS has enhanced environmental management in the town are listed below :

1. Fairmont Chateau Whistler
The General Manager of this hotel became one of the leaders in organizing the Early Adopters group, which illustrate the synergies which can be achieved if business joins the municipality in an EMS initiative that is driven by people motivated by TNS. A team from this hotel also participated in the Whistler Sustainability Symposium, and subsequently developed TNS-based awareness programs for each department in the hotel. This illustrates the way that TNS can function complimentarily to the EMS, since training and awareness are key components for the successful implementation of an EMS.

Focus areas for the hotel were influenced as follows by the TNS framework :

- Instead of energy, the hotel is focusing on sustainable energy.
- Instead of waste, the hotel is focusing on sustainable material flows.
- Communication is focused on building knowledge of the TNS framework, and this communication is extended to their suppliers and customers.
- Meeting society's needs is done through involvement in the Whistler Foundation, a community development fund.

2. Tourism Whistler
According to Nattrass and Altomare (2002) this organization's vision is to create a Whistler experience associated with stewarding and restoring the natural environment, as well as nurturing the human spirit. The inclusion of "the human spirit" in their vision is a direct benefit and result of using the TNS framework's fourth System Condition for sustainability, and this benefit would not have resulted if the ISO 14001 standard was used as the only tool for environmental management.

Tourism Whistler also states that ski resorts are already being rated based on their environmental record, and that lawsuits have been filed against tourism marketing organizations that spend government funds on marketing to attract visitors who then in turn have a negative impact on the environment. The TNS framework thus gave Tourism Whistler the advantage of visioning the future, to take note of legal developments and therefore prepare themselves to be ahead of any possible legal action. This is a benefit which with the use of the ISO 14001 standard alone would not have materialised, since this standard requires an organisation to focus on legal compliance only.

A quote from the president of Whistler Tourism as recorded in Nattrass and Altomare (2002) is relevant to this discussion : *"The Natural Step framework has provided Whistler Tourism with a simple yet robust compass for decision-making. It's based in irrefutable science. It works with root causes and it is non-prescriptive in nature – there are no lists of do's and don'ts. Rather each business is respected for its own knowledge of its processes and is taught to use the four System Conditions when making decisions. The combination of rigorous science and flexible application to unique business circumstances ensures that The Natural Step framework can be applied successfully in any business circumstance."*

3. Association of Whistler Area Residents for the environment
When the current president of this association joined the organisation, he found that the organisation was overwhelmed with issues requiring attention and insufficient resources for the task. The strategic plan developed for the association was based on the principles of the TNS framework, and thus simplified the task of setting priorities.

4. Resort Municipality of Whistler
The coordinator of the Early Adopter program reported in Nattrass and Altomare (2002) that the most important benefit of the TNS framework was the emotional inspiration it provided for participants. Emotions are not part of the ISO 14001 standard's frame of reference, but it nevertheless makes a substantial difference in the results of such a large scale initiative.

Whistler/Blackcomb ski resorts
The following quote from the project manager is relevant : *"The Natural Step provides a framework, but the people in the organization are the experts, they have to figure out what to do. The value of this framework is that you have to figure what the do's and don'ts are in your own organization."*

The lesson for South African municipalities from this case study is clearly the motivation which the TNS framework provided to the municipal officers, residents and business people. In the technical world of the present people are often reluctant to involve emotional issues in discussions, but Whistler experienced tremendous benefits from this aspect. In addition it is noteworthy that more benefits accrued due to the joint action by the municipality and the residents. This lesson is probably mostly applicable to smaller towns where there is more commonality of purpose present amongst residents.

4.3 Environmental management in South Africa and its relation to Integrated Development Planning (IDP)

This section briefly examines the suitability of one of the key instruments for environmental management available to municipalities in South Africa, namely the Integrated Development Planning process. Retief and Sandham (2001) provide an enlightening discussion of the relationship between the IDP and the South African government's guideline for environmental management, namely the Integrated Environmental Management (IEM) process. According to Retief and Sandham (2001), the South African Council for the Environment developed the IEM procedure in 1984 to facilitate the incorporation of environmental concerns into development actions. The aim was thus to enhance development actions through better control of the associated environmental impacts. In addition the Agenda 21 guidelines for municipal action with regard to environmental management were developed during the 1992 Rio Conference on Environment and Development. This guideline was followed by the IDP requirements that were developed by the new South African government in 1994. The question which is then posed by the writers is "How can environmental concerns be integrated with local

government developmental processes?" The question that is however critical to this dissertation and takes the previous question even further by asking "Even if environmental concerns can be integrated with local government processes, how can local governments be convinced to allocate scarce resources to environmental priorities, amidst all the other competing community development requirements?" It is contested that a motivational force is required to facilitate the required change of mind amongst municipal councilors, and that use of the Natural Step Framework can effectively facilitate this change in paradigm.

Retief and Sandham (2001) then suggest that IDP's be compiled in line with the principles for environmental management that are contained in the National Environmental Management Act (NEMA) (1998), and remind the reader that the IDP Manual requires that projects with negative impacts on the environment must be subjected to Environmental Impact Assessments (EIA). The IDP is thus seen as a bottom up approach to the incorporation of environmental concerns into development projects, while NEMA is seen as a top down approach to achieve the same result. The writers however concede that these different approaches may be confusing to municipal officials, stating that "*the hiatus in legislative guidance for environmental management at local government level is evident*" (Retief and Sandham, 2001:83). This dissertation therefore again concludes that a reliance on legislation to ensure that environmental management is implemented is, not effective. In addition, the focus in the IDP guidelines are largely related to the planning activities of municipalities, and not so strongly on the management of municipalities' own operations. This dissertation is more concerned with how municipalities manage the impacts of their own operations, and it can be stated that the raising of environmental awareness amongst municipal councilors is more important to ensure that environmental concerns are addressed in IDP's, than relying to any substantial degree on available legislation.

An additional legal requirement that can also be utilized for the improvement of municipal environmental management, is the requirement in the Municipal Systems Act with regard to performance management. According to Oelofse (2004), the City of Cape Town is considering the inclusion of environmental management responsibilities in the job descriptions of municipal staff. This will enable the city to regularly measure the performance of staff against environmental objectives that may be included in their performance plans.

A similar reliance on legislation to enhance the quality of environmental management at municipal level is promoted by Kotze (2004). He mentions that municipalities are required by the Municipal Systems Act to develop performance management systems as part of their IDP's. The performance management system requires a municipality to set "*appropriate key performance indicators as a yardstick for measuring performance, including outcomes and impact with regard to the municipality's' development priorities and objectives set out in its IDP.*" In addition, Kotze mentions that the Act requires the monitoring of performance at least once per year, as well as that steps be taken to improve performance...where performance targets are not met. He states that the Act requires "review of performance" so as to bring about continual improvement, which is one of the key pillars of the ISO 14001 standard for environmental management. Kotze concludes that due to the fact that municipalities are compelled to formally adopt their IDP's, "*these plans are a valuable point of entry for the introduction of environmental considerations into the future long term decision making processes of local authorities.*" The recommendation made by Kotze (2004) to address the situation can be summarized as a call on national government to develop national guidelines for the implementation of EMS at local government level.

The conclusion reached by Kotze (2004) in his analysis of the requirements of the Municipal Systems Act is an extremely important conclusion, since the foundation for environmental management within a framework of continual improvement is already contained in the existing legislation (a similar requirement by ISO 14001 as well). Therefore it should not be necessary that this dissertation be undertaken, because countrywide environmental management by municipalities should happen automatically. However, it is not happening on a sufficient scale, as was reported by Steyn (2005) after the recent IDP hearings held in the Western and Northern Cape. The fact that most municipalities are not aware of this legal requirement for environmental management, or if they are, are not complying with the legislation, can be contributed to the syndrome described aptly by Nel (2005) as the "Wimbledon Syndrome". This refers to the impact that all the new legislative requirements have on municipalities, where municipalities are looking from left to right, and from right to left as the new legislative requirements are explained to them by national and provincial government staff, as well as by consultants. Although municipalities understand the new legal requirements, they generally do not have the capacity or manpower to comply with all the new legislative requirements.

Nel (2005) proposes that the enhancement of environmental management at local government level should rather be achieved through focusing on *influencing the behavior* of municipalities. This is in line with the premise of this dissertation, namely that organizations, especially municipalities, must be motivated to *think differently* about environmental concerns, and must become *learning organizations* to enable them to make this important paradigm shift. Nel elaborates further by referring to the findings of a report prepared by the International Council for Local Environmental Initiatives (ICLEI) which reports on the slow implementation of EMS at municipal level. What is even more astonishing of this fact is that European municipalities are generally considered to have more capacity and environmental awareness than South African municipalities and it is thus expected that European municipalities should have implemented EMS to a larger extent.

The approach which Nel (2005) promotes for achieving this changed behavior at municipal level, is the Canadian approach of "getting the house in order". This refers to the approach of assisting municipalities to review their compliance with existing legislation. Once municipalities realize that they are not in compliance with a substantial number of legal requirements, it motivates municipalities to take urgent steps to rectify the situation. Additional motivation for attending to legal compliance was related by Nel (2002). According to Nel, (2002), personnel from the Auditor-General's Office attended a training course in environmental auditing at Potchefstroom Univerisity's Center for Environmental Management during 2002. The aim of this training was to equip financial auditors for organs of state, to also start auditing compliance with existing legislation and environmental best practice. It is therefore clear that the South African Government is taking the task of environmental management seriously and more pressure will be placed on municipalities to demonstrate compliance. The TNS framework and the ISO 14001 standard will be practical tools for this purpose.

Although the realization of non-compliance may motivate municipalities according to Nel to take decisive corrective action, this dissertation however goes even further by stating that an awareness of the need to become sustainable municipalities for the sake of our children, is an even stronger motivational force. This view is held because South African municipalities are presently not addressing environmental concerns on a large enough scale to move towards sustainability, despite the requirements of existing legislation.

According to McCulloch (2002), the City of Cape Town implemented a pilot EMS project at the Vissershok landfill site from 2000 to 2001. The project was implemented without the use of The Natural Step, and progressed successfully under his guidance. However, when McCulloch resigned from the City at the end of the project, the project slowly came to a halt, due to a lack of commitment from staff that were not sufficiently motivated to carry on with the additional tasks that the EMS required of them, as well as due to the lack of encouragement that McCulloch were able to provide them with during his employ.

Asmal (2000) described the impact of the Local Agenda 21 training program which was implemented for South African municipalities. This environmental awareness raising program was implemented country wide for municipalities and was funded by the national Department of Environmental Affairs and Tourism in conjunction with USAID. Although the training raised the environmental awareness of councilors and officials to a general level, Asmal reported that municipal staff still did not know how to implement the newly acquired awareness when they were back at the office, and what to do differently, in order to contribute to becoming sustainable organizations.

The problems and opportunities described in this chapter are used in Chapter 5 to make recommendations for the implementation of a generic framework to assist municipalities to raise their environmental awareness, to start implementing systems to track their progress in this regard, and in the process improve their compliance with existing South African legislation for environmental management, especially the enhancement of the IDP process.

Chapter 5 :

Recommendations and conclusion

5.1 Introduction

"We are forced to choose, for the processes that we have initiated in our lifetime cannot continue in the lifetime of our children. Whatever we do either creates the framework for continuing the supreme adventure of life and consciousness on this planet or sets the stage for its termination: The choice before us is urgent and important: It can neither be postponed or ignored." Ervin Laszlo in Nattrass and Altomare (1999).

The above mentioned quote is particularly relevant after the Earth Summit was held in Johannesburg in July 2002. At this conference emphasis was placed on the importance of showing progress towards sustainability. Organizations all over the world must learn to change and evolve into organizations that are focused on sustainability. The TNS framework and the ISO14001 standard are proposed as the practical tools to facilitate these changes, and to help organizations to make the choice as outlined above.

It is also relevant to mention a last number of thoughts on the evolutionary organization as described by Nattrass and Altomare (1999), as evolution needs to take place to enable municipalities in particular to show results as required by the agreements reached at the Earth Summit. The metaphor of the evolutionary organization is grounded on the belief that real transformation at both the individual and the organizational level is possible. However, as our individual lives usually demonstrate, and world literature illustrates in many examples, while change may be possible, it is rarely easy. If there is to be a benign future for our grandchildren and their grandchildren, as well as for the myriad other life forms on this planet, the future of the industrial enterprise must include ecological sustainability as surely as it now includes financial sustainability and growing social sustainability. Ecological factors will be integral to the business worldview of the 21st century.

Therefore an evolutionary organization consciously operates with a growing understanding of the dynamics of the natural systems within which it is embedded, and aligns its actions within those systems. It consciously chooses strategies consistent with vital evolutionary choices for all the systems with which it is connected and upon which it depends. Nattrass and Altomare (2002) proposes a particularly relevant strategy for this purpose. It is suggested that the financial power of the business world be harnessed to address the degradation of the natural environment, since it is the power of the business world that created the environmental problems in an effort to respond to human needs and preferences. The role for local government is thus to harness their governance power in support of the financial power of the business world, to contribute to the global progress towards sustainability. In the process municipalities must become role models for their business and residential communities, and contribute to real and lasting change. Paragraph 5.2 explains the practical steps to be taken to implement the required changes.

5.2 Suggested implementation strategy for South African municipalities to become sustainable organizations.

The Integrated Development Planning process is the logical starting point to initiate the strategy for municipalities to become sustainable organisations. There are four key reasons for this recommendation :

- The first reason is that the IDP process is familiar to municipalities, although it was generally recognized at the IDP hearings according to Steyn (2005), that the IDP process is not yet implemented to its full potential. Municipalities are therefore looking for answers on how to improve the IDP process, and this need for more information and guidance must be capitalised on.
- The second reason is that the legal requirements for the compilation of IDP's require that municipalities undertake assessments of the economic, social and environmental realities in their respective areas of jurisdiction. These three realities are considered the building blocks for a sustainable society.
- The third major reason for starting the path to sustainability is that the legislation also require municipalities to undertake performance management, to be able to report on their achievements with regard to objectives and targets that they have set for themselves. Once municipalities start reporting on their achievements and failures, they are becoming more transparent and accountable to their ratepayers, which in turn lead to improved co-operative governance.
- Fourthly, Retief and Sandham (2001) have demonstrated the important links between the IDP process, the National Environmental Management Act and the national government's guidelines for Integrated Environmental Management. It is thus critical to facilitate this integration process further through compliance with the host of legislation aimed at improving environmental management.

But one can then understand that municipalities ask the question "*How can this be achieved?*" This dissertation promotes the following answer: "It can only be achieved through a better understanding and awareness of the sustainability imperative, which will lead to a change in behaviour." It is further recommended that The Natural Step framework is a suitable tool to use for raising municipalities' awareness. The reason for this recommendation is based on the experience of towns like Whistler in Canada, and the experience of a large number of Swedish municipalities as documented by James and Lathi (2004). In addition, several businesses that have used this tool and are able to testify to its ability to inspire people to change, and to become learning organizations, as was reported in Nattrass and Altomare (1999 and 2002), and by Park (2003) with regard to progress made in Christchurch, New Zealand. A similar view was expressed by Morris (2005), when she described the required change in behaviour as "*primarily a hearts and mind issue*".

The "*change in behaviour*" described above is also promoted by Nel (2005) as the most important starting point to encourage municipalities to move along the road to sustainability. Nel however suggests that the question of legal compliance be used to achieve this change in behaviour. As was pointed out in Chapter 4, this dissertation views Nel's approach to be relevant, but that the motivational approach of The Natural Step framework is even more effective.

Once the ground has been prepared for organizational change through the use of The Natural Step and people understand **why** they must take on new responsibilities and think differently about how they do their daily work, the best practical step is to "*Get the house in order*". This practical approach is promoted by Bilodeau (2002) and involves a compliance check with existing legislation. This recommendation is further illustrated by Figure 1 in Chapter 3, where industry's sustainability learning curve is portrayed. According to Figure 1, the first era involves organisations' efforts to comply with existing legislation. The most direct benefits of compliance is the control of pollution, which will be a major step forward for South African municipalities, especially when seen against the background of the 2005 typhoid outbreak in Delmas and the general lack of maintenance of municipal infrastructure throughout the country. Forum for the Future also promotes the

compliance approach for municipalities as a first step to implement environmental management systems, according to Slater (2001). Their experience in Britain indicated that a formal EMS involves too much additional paper work for personnel involved in monitoring the EMS, and that by concentrating only on certain key components of the EMS as described in the ISO 14001 standard, better results for municipalities are obtained in terms of environmental management.

Roopa (2002) also testified to the benefits of doing a legal compliance test. According to Roopa (2002), the Potchefstroom Municipality completed its IDP in 2001, and subsequently commissioned a review of all relevant legislation applicable to the municipality and the extent of the council's compliance with these acts (a requirement of the ISO 14001 standard) . The environmental component of the IDP was subsequently expanded considerably, since the IDP was found not to be comprehensive enough in terms of applicable legislation.

When "the house is in order" by complying with existing legislation, it will be easier for municipalities to give attention to the IDP requirement of performance management. Municipalities will be able to measure if they are staying in compliance, and once they start to measure performance, they will be entering the cycle of continual improvement that is so critical for the success of an EMS. The "*transition into EMS mode*" will be enhanced, and the key steps of an EMS, namely setting of targets, implementing actions, measuring performance and reviewing the system will follow naturally. The Natural Step framework should be used during the whole transition phase as a strategic guide to ensure that municipalities remain on course towards becoming sustainable organisations, and prevent them from undertaking environmental activities which do not necessarily lead to sustainability, eg instead of undertaking a waste reduction program, undertake a life cycle assessment of material flows.

The practical steps which are recommended for the implementation of an EMS in South African municipalities within the framework of The Natural Step are listed below :

1. Present an overview of the TNS framework to top management (both councilors and senior municipal managers) in order to raise awareness and to obtain commitment to the implementation of an EMS within the TNS framework. Their understanding of the seriousness of the global environmental problems and the ease of tackling the problems within the framework of the four System Conditions is essential.
2. Appoint a suitably qualified consultant with experience in both TNS and ISO 14001, as well as with an understanding of the current realities of the South African municipal situation to assist the municipality in implementing the EMS.
3. The municipality's top management to appoint a multi-disciplinary EMS committee to drive the implementation of the EMS process.
4. In-depth training of the municipality's Implementation Team in The Natural Step framework and the ISO 14001 standard, as well as how this long term vision should be integrated into the municipality's IDP through the development of short term steps and projects.
5. Implementation of the EMS, starting with the first step as required by the ISO 14001 standard, namely formulation of an environmental policy. In addition to the requirements of ISO 14001, a visioning exercise in terms of the TNS framework is required, whereby the team will create a vision of their sustainable community. Strategic guidelines based on the TNS principles to be included in the policy.
6. Planning of the EMS will follow, based on the ISO 14001 requirements, and supplemented by information derived from a back-casting exercise, which will

provide the first steps to be taken to reach the targets. Existing operations must be evaluated against the System Conditions, and the results used to determine targets for environmental improvement.

7. Implementation of the EMS will then follow, supplemented with operationalising the new environmental responsibilities, as well as further training of personnel in implementing the EMS within the TNS framework.
8. During the implementation phase, the results of the new system need to be monitored. The standard guidelines of the ISO 14001 need to be used, as the TNS framework does not provide additional support for this phase, except for conducting a sustainability audit. This audit will compare how well the municipality is performing in implementing the criteria for sustainability (derived from the TNS framework) which were included in the environmental policy.
9. The annual management review, as required by the municipal performance management system, will first concentrate on the ISO requirements for this phase, and then carry out a strategic review using the performance in terms of the sustainability criteria, that were measured during the past year. Adjustments to the EMS will then be required to assist line management in improving the performance of the municipality in terms of short term targets for the new year, as well as in taking the next steps that will help the municipality to become sustainable in accordance with the vision that was created as part of the policy formulation process.

These nine steps provide a summary of the practical steps to use when implementing an EMS within the framework of The Natural Step framework. Additional reference must be made to the original documents describing the ISO 14001 standard (SABS, 2004), as well to the description of The Natural Step framework by Nattrass and Altomare (1999).

Lastly it must be mentioned that should municipalities implement the above mentioned strategy, there can considerable financial benefits involved as well. Two obvious methods are "green procurement" and energy saving programs. According to Bilodeau (2002), the Canadian Government spends millions of dollars on purchasing a variety of items each year, and by including a requirement that items purchased must be environmentally friendly, the government is able to spread the environmental message widely through the economy, as well as stimulating research into the development of alternative products. Energy saving programs are new approaches where private sector companies install new energy saving equipment into municipal buildings and installations. The municipality then undertakes to pay the service provider a portion of the savings achieved on the electricity bill. In addition the World Bank is promoting the implementation of the "Clean Development Mechanism" in South Africa, which creates opportunities for northern hemisphere countries to reward developing countries financially to implement environmentally friendly technologies.

The globalisation trends are therefore offering substantial benefits for South African municipalities. Not only are new ideas put forward to guide organizations on the road ahead, but financial rewards are offered to municipalities and the private sector to facilitate the required changes to move towards sustainability.

5.3 Conclusion

Although the future cannot be foreseen, its principles can, as outlined in the four Systems Conditions explained in the Natural Step framework. Nattrass and Altomare, (1999), conclude that the role of The Natural Step framework is to focus on understanding those

principles. The role of the evolutionary organization is to apply that understanding and to become a force that moves society in a direction of sustainability.

The following poem is quoted as an illustration of the motivational force that the message of The Natural Step can have when it is fully understood. Glen Thomas of the company Interface wrote the poem 'Tomorrow's Child' after The Natural Step framework was explained to their company and listening to their Chief Executive Officer speaking about the company's new environmental mission :

Tomorrow's Child

Without a name; an unseen face
And knowing not the time and place
Tomorrow's Child, though yet unborn
I saw you first last Tuesday morn.
A wise friend introduced us two,
And through his shining point of view
I saw a day which you would see;
A day for you, and not for me.
Knowing you has changed my thinking
Never having had an inkling
That perhaps the things I do
Might someday, somewhere, threaten you
Tomorrow's Child, my daughter-son
I'm afraid I've just begun
To think of you and your good
Though always having known I should.
Begin I will to weigh the cost
Of what I squander; what is lost
If ever I forget that you
Will someday come to live here too.

The closing words of Nattrass and Altomare (1999:198), need to be repeated here, because this dissertation should inspire municipalities to achieve greater heights as role models for their communities :

"*There is a better way. We can take responsibility, individually and collectively, for the conscious evolution of human systems. We can hold others – individuals, corporations and governments – accountable as well. It no longer matters 'who is to blame'. What matters is that we all take responsibility for the direction and impact of our society. In this generation, in our era, humans have become integral agents of evolution. More than that, we are evolution becoming conscious of it self. Will we treat these insights as just more interesting data to be filed? Or will we, in the spirit of Archimedes, use them as a lever with which to move the world? The choice is ours.*"

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