



**THE COUNCILLOR
AS GUARDIAN
OF THE
ENVIRONMENT**

Handbook A

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**AN ESSAY AND WORKSHOP FOR LOCAL ELECTED LEADERS
ON ENVIRONMENTAL GOVERNANCE WITH EMPHASIS
ON ADOPTING ENVIRONMENTALLY SOUND TECHNOLOGIES (ESTS)**

About the Hat

The Alpine hat illustration that graces the cover and title pages of this handbook carries on the conceptual hat rack theme introduced in the original twelve handbooks that comprise the UNCHS (Habitat) handbook series on Training for Elected Leadership. This hat, like the others in the series, is meant to symbolize and celebrate the many-faceted roles formed by local elected leaders world-wide.



FOREWORD

As shown by results of training needs assessments conducted by the UNCHS (Habitat) and the UNEP-International Environmental Technology Centre (IETC), the training needs of local government officials (councillors), or of local politicians, appear among the most urgent world-wide and, at the same time, the least attended areas of capacity building for sustainable local development and municipal management.

In the last few years, a number of countries ranging from Nepal to Poland and Uganda to Paraguay embarked for the first time in several decades, and in some cases for the first time ever, on the elections of councillors and mayors. The training needs of local government elected officials are also at the top of the agenda in established municipal democracies such as India, Ecuador, and the United States of America.

Habitat and UNEP IETC have initiated programmes in response to these needs. The UNCHS (Habitat) has developed and tested a series of handbooks under the collective title *Training for Elected Leadership*. The intent of the handbook series is to assist councillors to represent the citizens, provide civic leadership, and effectively work with the central government and with the management, technical, and professional staff in local authorities and other local institutions. The handbooks cover policy and decision making, communication, negotiation and leadership, attending, managing and conducting meetings, councillors' enabling and facilitating activities, financial management, and other related needs.

To promote adoption and transfer of Environmentally Sound Technologies (EST's) the IETC has developed a capacity-building strategy by designing and implementing pilot training programmes in EST assessment and management. These programmes focus on the training needs of local government decision makers in IETC target countries. These programmes are now being implemented through regional workshops in Asia, Africa and Eastern/Central Europe.

This handbook, *The Councillor as Guardian of the Environment*, is intended as both an extension of the *Training for Elected Leadership* series and as a separate handbook within the IETC *Technical Publication Series*. The handbook generally reflects a continuation of style and design ideas exhibited in the UNCHS series. Its main purpose is to enable training institutions or government training units to de-sign, organise and implement follow-up training to regional activities facilitated by IETC, UNCHS (Habitat) and their partner organisations. This handbook has been field-tested in October 1996 during a workshop for councillors in Nakuru, Kenya.

I thank Dr. Fred Fisher and Mr. David W. Tees for preparing this handbook in collaboration with Dr. Christian Holger Strohmann of the UNEP/IETC and with Tomasz Sudra and Raf Tuts of the UNCHS (Habitat) Training and Capacity-Building Section. My thanks also go to the Government of Belgium which provided partial funding for preparation of this manual within the framework of the capacity-building programme "Localizing Agenda 21, Action Planning for Sustainable Local Development."

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HOW TO USE THIS HANDBOOK

This training handbook on THE COUNCILLOR AS GUARDIAN OF THE ENVIRONMENT can be used in several ways.

Self-study

The essay that opens this handbook is intended for self-instruction. All you need is a quiet place to think, some time, and something to write with. For best results, we encourage you to write down your answers to the questions raised from time to time in the essay. The learning value of the information is multiplied many times for the reader who takes the time to do this.

Workshop training

The trainer's notes and exercise materials in this handbook are intended for use by experienced trainers in a training workshop for councillors from different local governments. We have included various types of learning activities and formats to provide trainers with considerable flexibility in adapting a workshop to the specific needs of participating councillors. It has been our intention in developing this handbook to encourage you to incorporate your own experiences as a trainer to heighten the learning value of these training materials for participating councillors.

As a trainer, you may decide to use the materials in the handbook in the exact order and manner presented. If you prefer, however, you may rearrange or modify the materials as needed to meet the objectives of a particular training situation. You may choose to offer three days of training by using key exercises and activities included in the handbook. Or you may take advantage of the many materials in the handbook supplemented by content of your own to extend the length of the programme to a full week or more.

Team training

These materials also can be used, preferably with the assistance of an experienced trainer/facilitator, to improve the performance of councillors who serve together on the same governing body. When training councillors who serve together, we believe the facilitator must be prepared to organize the training activities in this handbook in different ways. There may be occasions where you, as facilitator, will choose to add new activities depending on the situation and the characteristics of the group. We hope in situations like these you will view this handbook as a "tool kit" containing many optional training ideas to be mixed and matched, modified or abandoned, as suggested by the situation.

You have many options to choose from with these training handbooks. We hope you take full advantage of them.

PART I ESSAY

Man did not weave the web of life,
he is merely a strand in it.
Whatever he does to the web he does to himself.

Chief Seattle, Native American Leader, 1857

Definition

The councillor, in the role of Guardian of the Environment, supports development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Summary

This essay will address one of the most challenging roles confronting local councillors, providing principled leadership in the inevitable confrontation between economic and physical development and protection of the natural environment. The challenge is as old as civilization, but the consequences of competition between these two dynamic, defining forces have never been greater. While the state of planet earth dictates that we all assume the role of environmental guardian, the responsibilities and opportunities to make a difference in this age long struggle is unique to those who hold local elected offices. Degradation of the environment, whether we like it or not, begins in our own back yard.

The same is true of efforts to protect the environment and to remediate past mistakes. Many of the decisions in major investments that local governments make in their pursuit of improved public services and quality of life involve various kinds of technology that have a direct impact on the environment (e.g. waste management, waste water treatment, noise abatement and cleaner air standards.) But, the interrelationship between the use of new technologies and environmental protection is complex. Sometimes efforts to improve local conditions through the application of new technologies involve new environmental risks.

Given this personalized state of responsibility, there are many opportunities for creative leadership by local governments to heal the wounds and support development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Your responsibilities as **Guardian of the Environment** transcend both physical and time boundaries. Council decisions involving economic and physical development can influence the quality of life of neighboring communities and the health and safety of their citizens. Equally important, development decisions can jeopardize the quality of life of your grandchildren, and theirs. Being **Guardian(s) of the Environment** is a responsibility that goes beyond your own political constituents and your term of office. Your development policies and goals must be: (1) sustainable over time; and, (2) responsive to the needs of your neighbors who also worry about their quality of life by the actions you take.

Future generations will ultimately inherit the results of your actions as local leaders. Will your legacy as **Guardian of the Environment** be worthy of lasting praise? Or, a burden to be borne by those who had no equity in the decision? Like-wise, many decisions with environmental consequences have a tendency to affect the lives of those who live in other communities. When we borrow the air and water from “mother nature” for use in our daily lives, we often give it back in much worse condition than we received it. The gift to others becomes tainted by our selfish actions. Unfortunately, neither of these extended constituents can vote for you in the next election. Being a **Guardian of the Environment** requires *leadership based on principles*, what respected author and public servant John Bryson refers to as “leader-ship for the common good.”

We will be exploring ways your council can guard and enhance the natural resources of your community without jeopardizing its economic and physical development. We will:

- draw heavily on the experience of local governments that have achieved success in managing these dynamic interfaces in various parts of the world;
- suggest ways to bring together divergent, and often conflicting, community interests so a common vision and strategy can be forged to guide and direct sustainable development; and
- concentrate on environmentally sound technology as a valuable ally in your role as *Guardian of the Environment*.

We will also discuss mistakes (acts of unsustainable development) made, by local officials and others, that have come to eventually plague their communities. In fairness, many acts of unsustainable development, in which we all have participated, are driven by good intentions and a lack of understanding of the possible long term consequences. For the sake of future generations and preservation of our global common, the role of **Guardian of the Environment** is your most important public responsibility. It will greatly contribute in defining the heritage of your leadership.

From time to time in the essay we encourage you to stop and reflect on what you have been reading. These pauses are labeled **reflections**. They are opportunities to engage in thoughtful deliberation or what some might think of as exercises in self directed learning. At times we will ask you to probe more deeply the ideas expressed in the essay and, at others, simply suggest you stop and catch your intellectual breath. By the way, **reflections**, from a scientific perspective, are defined as “the return of light or sound waves from a surface.”

Reflection

When I think of myself as a **GUARDIAN OF THE ENVIRONMENT**, the following things come to mind:

1. _____

2. _____

PART I-A

AN INTRODUCTION TO DEVELOPMENT, THE ENVIRONMENT AND TECHNOLOGY

The symbiotic relationship between development and environment was defined in the report submitted by the World Commission on Environment and Development to the United Nations Secretary General in 1987. The Commission, convened by Gro Harlem Brundtland four years earlier, defined for the first time the concept of *sustainable development*, linking together the state of the environment and economic achievement. The Commission was clear in its assertion that one can not be sustained or guaranteed without the other. But, there is another important factor in this critical relationship between the environment and development, the impact of technology.

Technology is at the leading edge of each of these dynamic forces. It is the link between human action and nature. However, Dieter Koenig reminds us in his article on *Sustainable Development: Linking Global Environmental Change to Technology Cooperation*, “*technology cannot compensate for shortcomings in the process of political decision making or in mismanagement.*” Nevertheless, what has come to be known as “environmentally sound technology” can be a worthy ally in your role as **Guardian of the Environment**.

Before we go further, it is essential to define what is meant by *environmentally sound technologies*, or EST. The term, *technology*, has acquired new meaning in recent years. For example, the United Nations Environment Programme (UNEP) defines technology as encompassing both *hardware* and *software*. Under this umbrella we find not only such things as tertiary waste water treatment principles and practices (which, for the authors, is “very technical”) but also many social measures and analytical processes you employ as councillors in your everyday work to represent your constituents and the community. These “people oriented technologies” include an infinite number of possibilities you can employ as **Guardian of the Environment**. For example, new management systems, policy activities, consensus building efforts, scenario planning sessions with a cross section of community representatives, and the design of new types of organizations that cut across jurisdictional boundaries.

Your local elected leadership role as **Guardian of the Environment** will be judged, in the long run, by two interwoven criteria:

- your council’s ability to carry out sustainable development policies and programmes; and
- your creative and effective use of environmentally sound technologies.

The Agenda 21 Mandate

Many of you will remember the June 1992 United Nations Conference on Environment and Development in Rio de Janeiro. Maybe some of you were there, representing your country and its environmental interests and concerns. The conference was a defining moment in the age-old dialogue about environment and development. It produced a series of directives, action steps and mandates that focus and drive the collective efforts of the UN family of organizations well into the 21st century. From the perspective of this discussion, the conference established the terms of Local Agenda 21 Programmes the world over.

Since **Agenda 21** is the foundation stone upon which we will build a case for your role as **Guardian of the Environment**, we will return to Rio for a moment and the importance conference delegates gave to local government initiatives in support of Agenda 21.

Because so many of the problems and solutions being addressed by Agenda 21 have their roots in local activities, the participation and cooperation of local authorities will be a determining factor in fulfilling its objectives. Local authorities construct, operate and maintain economic, social and environmental infrastructure, oversee planning processes and establish local environmental policies and regulations. As the level of governance closest to the people, they play a vital role in educating, mobilizing and responding to the public to promote sustainable development.

Agenda 21: From concept to reality

One of the authors had an experience as a local government chief executive that may shed some light on the set of complex, intertwined, convoluted events that sometimes determine the road to sustainable development. The experience brought citizens, councillors, state officials, a private contractor, neighboring community leaders, public service engineers and city hall staff face to face in an unfriendly confrontation. The conflict was sparked by a joint city

council and state (provincial) highway department decision to remove several trees to widen an important road intersection.

Cutting down a few trees in the heart of the community would not have created so much controversy if it had not been part of an effort with larger and more lasting consequences. City council and the state highway department had decided to reconstruct two major streets running the length of the central business district of the city and convert them into a one-way traffic flow system. At that time, the state highway design standards required a certain minimum width for construction, which would mean removing a large number of trees, seriously narrowing the sidewalks for the entire length of the proposed one-way system and, generally changing the character of the city centre. There is a public university in the center of the community which generates a large number of pedestrians and creates a unique ambiance and physical environment enjoyed by all citizens. The “improvements” planned by local elected councillors and highway design engineers, who lived and worked over 100 kilometers away, quickly became a magnet for citizen concern.

A few citizens, who understood the consequences of the impending action, had testified at a council meeting early in the discussions of the proposed improvement programme. They requested the councillors to consider a redesign of the one way street system that would save many of the trees. The council expressed “sympathy” for the citizen perspective but said there was nothing they could do. After all, the state highway department had its standards. If the community wanted the state government’s involvement (which, of course, translated into a valuable monetary contribution from the higher level of government) the council would have to accept the wider roadway.

The private contractor and his crew arrived early one Monday morning with chain saws to remove the trees and were surprised to find the trees were filled with citizens! And, those tree sitting citizens refused to get down from their lofty perches until the council agreed to re-open the issue for more discussion. Council held firm, quoting engineering regulations and elected leadership prerogatives.

When the council refused to establish an earnest dialogue with the citizens, their constituents began to turn up the heat on the elected leaders. What began as disagreement over the fate of a few trees one early spring morning turned into a very hot summer of conflict and negotiation between the warring parties. It unearthed a wide range of environmental concerns the council had been ignoring over the years.

Expanding the dialogue

Once the council finally realized how serious the citizens were, a task force was formed to find alternative solutions to the conflict. The task force represented all sides of the complex dilemma. It included representatives of the council, the city planning commission, technical experts, state and local officials drawn into the fray, the business community, the university administration and, of course, the “not so ordinary” citizens who precipitated the action. For seven long months, the chain saws remained idle while the experts, officials, business representatives, citizens and others explored alternative solutions. The citizens had tapped a much larger and more pervasive community concern about *how to sustain development* in that rapidly growing city *without destroying the natural environment*. The natural amenities of the community and surrounding environment were, in large measure, responsible for attracting new businesses and people to the area; they were not inconsequential as an economic resource.

The final task force recommendations covered a wide range of issues and concerns, including:

- a waiver of state highway standards (as many of you will recognize this is rarely an easy accomplishment);
- a plan to remove fewer trees and plant new ones where preservation was not possible;
- elimination of on-street parking; construction of a new parking garage to assure the business community that retail activities would not suffer;
- provisions for managing solid waste and other public services within the affected area; and,
- a written commitment by the state highway commissioner and officials from the surrounding townships that they would rethink the design and location of a major by-pass highway that was planned for future construction.

Nearly all task force recommendations were adopted by the local council, the state highway department and surrounding local government elected leaders. The community remains economically vibrant with a continuing concern that economic growth be balanced by environmental concerns. This integrated strategy, which has assured sustainable development throughout the region, was greatly assisted when two of the protesters came down from their lofty perches in the doomed trees that early spring morning to campaign for seats on the local council in the next election. They won easily with support from a more enlightened and grateful electorate.

Environmental Guardians and much more

The council's ultimate decision to expand the dialogue to include tree sitters and a wider community of concerned stakeholders offers several lessons for Councillors in the role of **Guardians of the Environment**.

- simple incremental decisions can have longer term consequences;
- policies that seem mired in technical requirements can be challenged and changed to reflect emergent concerns and new approaches;
- time spent in anticipating public responses to, and consequences of, council actions can prevent future conflicts;
- involving a cross section of opinion and expertise is essential to building consensus and assuring commitment to new mandates; and,
- the role of environmental guardian, if it to be performed successfully, will ultimately require the councillor to draw upon other roles and skills that are covered in the UNCHS (Habitat) series of training materials for councillors.

In this tree-sitting incident, the councilors were called upon to be more effective *policy makers, communicators, decision makers, facilitators*, and certainly better, (albeit reluctant) negotiators. Before the final vote was taken to save the trees and find alternative solutions to engineering design standards and a host of other constraints, the council was called upon to be *power brokers* in their relation to a higher level of governing processes and more proficient *financiers* and *overseers* (because the ultimate decisions required some long term improvements they had not originally planned).

Finally, they were called upon to don their enabler hats to assist other parties with constructing a parking garage so it wouldn't effect the city's long-term debt limitation.

Each of the councillor roles just mentioned are covered in more depth as individual topics in the UNCHS (Habitat) Training for Elected Leadership series.

Agenda 21 of the Rio document iterates the role of governance closest to the people: "They play a vital role in educating, mobilizing and responding to the public to promote sustainable development."

But, there are times when the public turns the tables and educates and mobilizes its elected officials to promote sustainable development. If your constituents start to climb trees, don't say we didn't warn you!

Reflection

Take a few minutes and reflect on the role of local governments, as defined by the Rio delegates. Jot down a few ideas that define the roles your council perform in *educating, mobilizing and responding to the public that could promote sustainable development?*

Review your notes on your council's role in educating, mobilizing and responding to the public. Have you taken into consideration the involvement of women, boys, and girls in your reflections about the council's role? Too often our plans and endeavors do not differentiate the unique contributions they can make as guardians of the environment.

PART I-B

PUTTING THE ENVIRONMENTAL CHALLENGE INTO PERSPECTIVE

While the case involving the tree sitters is instructive (and for those involved somewhat humorous in retrospect), the consequences were minuscule compared with the struggle many communities around the world now face in forging a productive two-way relationship between development and the environment. As UNCHS (Habitat) / UNEP state in the opening paragraphs of their *Sustainable Cities Programme*:

Environmental problems can and do undermine the process of development, both in the UNCHS (Habitat) training for short-run and long-term, through bad health and lower productivity, shortage of resource inputs, and extra operating costs. Badly managed economic growth can, and does, damage the environment, both locally and globally, through air and water pollution, soil contamination, and destruction of resources.

Nevertheless, the relationship can be a positive one. Sound environmental management can improve the well-being of our citizens and directly support economic growth. Conversely, economic development based on sound policies can promote (and help finance) environmental improvements. More importantly, mutually reinforcing environmental and development policies can provide significant improvements in the lives of the poor. It is the poor in our societies, particularly the urban poor and especially women and children, who suffer most from the consequences of pollution and environmental degradation.

As elected leaders of *all* the people in your community, the reality of this self-evident truth cannot be ignored nor diminished. Communities are only as strong as their weakest link. The weakest link becomes more fragile each day in those cities and towns experiencing the enormous demands of explosive population growth without corresponding economic and social opportunities.

Let's stop for a moment and ponder the reality of our rapidly changing world.

- In the last three decades, the urban population in developing countries grew by more than 1.6 billion people.
- Three-quarters of the earth's population increase currently takes place in cities and towns in developing countries.
- By the year 2000, more than one-half of the world's population will be living in urban areas.

While urbanization is crucial for the creation of diversified and dynamic economies, it is a two-edged sword. Urban areas are more vulnerable to the myriad of environmental risks and problems associated with our so-called "modern world." For example:

- one quarter of a billion households have no access to piped water;
- 400 million lack adequate sanitation;
- infant mortality rates are often four or more times higher in poorer areas; and,
- the chances of dying from an environmentally related disease is disproportionately high among the poor.

Taken together, these trends and truisms are sobering. Their consequences on citizens and communities in the transition countries of Eastern and Central Europe and developing countries are even more staggering. Nor are the so-called "north" communities, and the wealthy, immune from the scourges of creeping environmental degradation. Epidemics and diseases resulting from poor sanitation will affect the whole world community. Let's look at some examples of the legacy with which these major regions of the world are coping.

The Central and Eastern European challenge

Urban communities in the transition countries of Eastern and Central Europe are dubious beneficiaries of nearly forty years of poorly managed economic development; extensive pollution; soil and water contamination; toxic chemicals; resource depletion; high-waste consumption patterns and "dirty" production techniques. While many of these countries are working their way out of this inter-related and reinforcing set of debilitating factors, it is at a significant cost.

For example, the Upper Silesia (Katowice) Region in Poland is one of the most polluted areas in Europe. The region is dominated by a massive complex of coal mines, heavy industries and chemical production facilities that were exploited with total disregard to the environment. They accrued a heavy burden of personal and community costs over several decades. In a weighted index of environmental factors (including such indicators as emissions of gases and dust, industrial waste, water quality, forests and soil quality), the Katowice Voivodeship (province) ranks last among Poland's 49 sub-national units of government, significantly worse than neighboring industrial regions.

That region epitomizes the excesses of unsustainable development and the disastrous results that can occur from years of blatant neglect by public officials who maintained unaccountable rein over their country's destiny. Statistics from a UNEP/UNCHS (Habitat) Sustainable Cities case study illustrate the region's demise:

- carbon dioxide levels, on frequent occasion, reached levels 8 times acceptable standards;
- two-thirds of the waterways are so polluted they fall below the lowest quality classification;
- the region faces a chronic water shortage, resulting from a combination of contributory factors, not the least being the vast quantities of pollutants dumped into surface waters;
- 70 million tons of solid waste are produced annually, most of which is dumped on the surface;
- mining and industrial activities have damaged some 20,000 hectares of land in the province.

Despite one of the highest levels of income in Poland, the Katowice Voivodeship ranks at the bottom when judged against many health indicators, particularly those associated with environmental factors. For example,

- urban life expectancy in Katowice is the lowest in the country;
- it has the highest incidence of premature births, genetic birth defects and spontaneous abortions in Poland; and,
- an average of 150 hours of productive work per worker per year is lost due to illness.

We present the Katowice situation as a reminder of what can happen when our collective backs are turned to the consequences of unfettered economic development and environmental degradation. But, we also want to share with you the progress local leaders have made to regain local control over their future destiny. They have set up a local Sustainable Cities Programme effort, in collaboration with UNCHS (Habitat) and UNEP's IETC. It is designed to: (1) strengthen the region's environmental planning and management capacity; (2) help mobilize technical and financial resources; (3) and, facilitate the exchange of experience and know-how with other cities and regions around the world.

Several significant actions have been taken to bring order out of the environmental chaos that has been wrought over the past four decades. Local consultants were hired to develop an overall framework for addressing the multi-jurisdictional challenge and to conduct a draft environmental profile. An association of 13 of the 16 municipalities (which comprise the urban-industrial core of the Upper Silesia Region) was formed to provide a basis for cooperative dialogue and action. This action resulted in a process called the *Consultation*, a gathering of political leaders and professionals who agreed to: (1) discuss and clarify key environmental and development issues facing the region; (2) agree on priorities; and, (3) establish procedures for working together. As a part of their deliberation, the UNEP International Environmental Technology Centre contributed the introduction of soft technologies, e.g., environmental risk assessment, to the SCP process in Katowice.

It was a unique and historic event, involving open discussions among representatives of local governments, university and research institutions, NGOs, newly formed private business interests, and important central government ministries. The *Consultation* was unique and historic because previous governments had simply not allowed this kind of open, cross-sectoral and inter-governmental dialogue to take place. Out of the *Consultation* came a formal declaration, stating the consensus that had been achieved and establishing the framework for follow-up actions. One would hope that this *Consultation* will become an ongoing, institutionalized process of dialogue and decision making among various interests of their civic society.

The experience in the Katowice - Upper Silesia Region of Poland to reclaim some of its natural heritage, and turn back the degradation that consumed so much of their vitality as individuals, families and communities, confirms several important principles that form the basis for sustainable development. For sustainable development to happen, there must be:

- a voluntary coming together of the major players, many of whom have been partially responsible for causing the environmental problems and who most certainly need to be party to future remedies and actions;
- open and free dialogue about the extent of the problems encountered and possible future actions (not finger pointing and blame placing); and,
- recognition that political boundaries, differences in size and status, and diversity of interests must be minimized when addressing issues as complex and pervasive as those that defined the economic and environmental state of the Katowice region.

The case of Katowice and the Upper Silesia Valley in Poland epitomizes the excesses of unsustainable development in a dense urban and industrial setting that has its roots firmly in the past.

Looking south to developing countries

The next case study we want to share with you unfolds on the edge of the world's largest urban community, Mexico City. With a population that already exceeds 20 million inhabitants, it continues to grow at 3.8 percent, the equivalent of more than 2,000 new citizens every day. There are no weekend breaks or holidays for city and regional officials who must cope with this constant flood of humanity into their midst. Nor is the natural ecosystem that tolerates this relentless migration from the hinterlands well suited for its dubious role as host to those who seek their fortune, however modest, in this sprawling megalopolis.

Mexico City is located on a high plateau in the Central Mexican Basin, nearly 6,800 feet above sea level, and the mountains that surround the city are frequented by thermal inversions that foul the air and increase the health risks for those who live in its midst. Those mountains are also a magnet for both rich and poor who see the chance to live above the smog in a relatively pollution free environment.

As squatter settlements grew in the mountains surrounding Mexico City, so did the concern of government officials who had responsibility for maintaining the area as an ecological reserve. It is a difficult place to provide any semblance of basic urban services and the spontaneous communities continued to expand in the midst of controversy and concern. The region was a battleground where economic opportunities and environmental reality clashed.

The following paragraphs describe efforts by one of those "irregular" communities to: (1) survive the threat of squatters being involuntarily moved from one location to another) and, (2) launch a bold community venture in sustainable development. That venture took place several years before the term, sustainable development, was coined by the specialists. While the citizens of Bosques del Pedregal Barrio, within the larger urban area known as Los Belvederes, achieved the first objective, they ultimately abandoned the second. It's a story of grassroots democracy and the difficult challenge local officials face in sustaining the role of **Guardian of the Environment**.⁽¹⁾

Hot rhetoric and cool reality

Residents of Los Belvederes were spurred into action when the state announced that "expert judgment" called for measures that would eliminate their community. The reasons given included the impossibility of servicing the area because of terrain, the lack of legal titles to the land by those occupying it, and environmental problems. Confronted with the possibility of eviction from the land they had claimed through "squatter's rights," the settlers of Los Belvederes organized a barrio-wide movement called the Popular Front for the Defense of the Settlements in Ajusco.

The Front presented its case before a public hearing sponsored by the Coordinating Commission for Development Planning in the Federal District and the Special Commission for the Sierra of Ajusco. Its proposal was "to promote an integral, barrio-based model of urban development to generate jobs and resources and to foster the production of goods in a way that was socially necessary, ecologically valid, and economically viable." What they planned to do would be called, in contemporary terms, sustainable development. The ecology of the area was hardly pristine. It had been subjected to widespread deforestation and pollution for more than three decades. Contiguous to Los Belvederes was an open dump that grew by hundreds of tons of untreated waste each day.

One of the settlements within the larger Los Belvederes urban area was the Bosques del Pedregal community. In August, 1984 their citizens made a presentation at a hearing called "An Open Forum on the Ecology of the Southern Zone of Mexico City" proposing to transform their community into a productive ecological settlement, or *colonia ecologica productiva* (CEP). The Bosques community, from the beginning, operated within a highly organized and politically astute strategy. They created a legal framework for governance (the General Council of Representatives) with full citizen representation at the block level. These Block Assemblies were authorized to resolve problems internal to the block (about 15-20 families), subject to the rules of the association. From all indications, the Council operated effectively as a self appointed government within the Federal District Government. It conducted open and democratic forums, organized essential services, and made plans to engage in a wide range of environmental programmes.

Their environmental proposals included: a programme to combat the plague that had infested the trees in their community; reforestation of the zone; establishing compost piles; and defining an approach to development that would transform Bosques into an ecologically productive settlement. Their highly successful efforts in grassroots ecopolitics did not go unnoticed. Five years after the CEP concept was borne as a strategy for preserving their irregular community, the Federal District Government announced it would: back off from efforts to relocate the residents; legally incorporate the area; and, make it eligible for public services.

Unfortunately, the vision and enthusiasm for transforming their settlement into a *colonia ecologica productiva* plummeted as soon as the battle to secure tenure was won. According to Pezzoli's case study, "only a waste-recycling

pilot project is actually functioning, and the hope of converting Los Belvederes into an exemplar of sustainable development has all but died. What the squatter communities wanted primarily was a permanent foothold in the city. They were only marginally interested, it seems, in sustainable development.”⁽²⁾

Coping with pollution in Michigan

Every community around the world must cope with something called *nonpoint-source pollution*. In the United States, for example, this type of pollution accounts for 80% of the degradation of water, prompting one author to call it “widespread as rain and deadly as poison.” Nonpoint-source pollution is the type of unregulated and insidious pollution we are all familiar with but don’t take seriously enough. It pours off the land, not from municipal and industrial pipes, and, consequently, seems benign. It is not! It is, therefore, instructive to look briefly at the various ways this type of pollution is generated and how public officials in one rural community are coping.

SOURCES OF POLLUTION	COPING STRATEGIES
1. Acid rain from far off industries and incinerators. (Among the consequences: fish from the local lakes are unsafe to eat because they are laden with mercury)	1. Unable to regulate the source, the local government requires: 25 foot setbacks from wetlands; 50 foot setbacks from rivers and creeks; planting of waterside shrubs to slow the flow and filter harmful sediments from far off places; and, encourages private donations of wetland areas.
2. On-site septic tanks: (overloaded sludge-holding tanks and pit latrines leak harmful bacteria, nitrates and liquid poisons into groundwater)	2. Homeowners are urged to pump tanks at least every two years and avoid pouring paints and solvents into sinks
3. Agricultural pollutants: chemicals and animal waste	3. Farmers are using lighter doses of fertilizers and pesticides; fencing live-stock away from streams and recruiting benign bugs to eat crop-killing pests.
4. Construction runoff:	4. Contractors are required, depending on the job, to control soil erosion with filter fences and sediment basins, to steer rainwater away from exposed dirt and plant protective buffers
5. Cutting down trees for commercial and personal use:	5. Selective cutting of trees and protection of greenways along streams are mandated to curb serious sediment problems

It is easy to dismiss these problems (if you are an urban elected official) as being of little consequence to your community because they are largely rural sources of environmental degradation. You may also be inclined to dismiss them because they describe a situation in the United States and are therefore not relevant to the experience in your country. A quick review of the sources identified above will reveal a set of polluting factors that apply to all environments, regardless of economic or social conditions. The coping mechanisms may be different but the sources are essentially the same and need to be considered in any long-term strategy to engage in sustain-able development. Nonpoint-source pollution often has a negative impact on urban environments, although the origins are in many cases rural. In the United States, 44 states report groundwater contamination caused by runoff from farms and ranches. Livestock wastes pollute municipal water supplies. Fertilizers, pesticides and herbicides ultimately make their way into urban households through drinking water supplied from rural communities upstream. Increasingly, each of us has become our neighbor’s keeper — or spoiler if we remain callous to the global consequences of our selfish behaviour.

Summary

The cases from Poland, Mexico and the United States describe in graphic terms the complexity, diversity and difficulties of the ecological challenges that exist in all regions of planet earth, whether they are north-south, or east-west. Nor is the challenge of fusing economic vitality and environmental preservation (what is often called sustainable development) confined to our own backyards. All nations are responsible for the ecological mess we have created and all must take responsibility for resolving it. The case studies reveal the magnitude and the difficulty you face as councillors in having a significant impact on environmental degradation. On the other hand, they demonstrate the kinds of strategies and ideas you can use in your role of environmental guardian.

Reflection

It’s reflection time again. You have just read three case studies that convey the complexity and pervasive nature of the struggle between development and the environment. Have you learned anything new in reading about these situations that you might use in your community? Were you surprised by any of the situations? Is there one idea in particular that you want to share with others who are interested in the challenges of sustainable development? We urge you to jot down your responses to these questions.

1. New Learnings

2. Surprises

3. Ideas to share

The need to be introspective

It is difficult to over emphasize the environmental crisis that exists around the world. As David Korten reminds us in his new book, *When Corporations Rule the World*:

Nearly a million people go to bed hungry every night...yet the soils on which we depend for food are being depleted faster than nature can regenerate them, and one by one the world's once most productive fisheries are collapsing from over use. Water shortages have become pervasive, not simply from temporary droughts but also from depleted water tables and rivers taxed beyond their ability to regenerate. We hear of communities devastated by the exhaustion of their forests and fisheries and of people much like ourselves discovering that they and their children are being poisoned by chemical and radioactive contamination in the food they eat, the water they drink, and the earth on which we they live and play...As we wait for a technological miracle to resolve these apparent limits on continued economic expansion, some 88 million people are added to the world's population every year.⁽³⁾

**“We have meet the enemy and they are us”
POGO**

While uttered by a cartoon character many years ago, this statement pinpoints the responsibility for the dilemma we face in managing our environmental resources. As responsible community leaders, you can either:

1. sink into a state of prolonged despair, allowing the magnitude of the challenge (Korten has so dramatically portrayed) to consume you; or,
2. pick up the gauntlet and move aggressively to redefine economic and social relationships that help your community live within sustainable environmental means. If all local elected leaders around the world worked to achieve this localized goal, we could sustain mother earth to serve those who follow us in generations to come.

Local governments, working in collaboration with local businesses and non-governmental organizations, are the keystones, the points of greatest leverage, for achieving environmentally sound development. While central governments can establish national standards and distribute scarce resources to address many of the problems inherent in the development-environment schism, *the real strength for bringing about sustainable development and protection of our natural heritage abides at the community level.*

This is why your role as Guardian of the Environment is so important.

PART I-C

LOCAL SELF GOVERNANCE: KEYSTONE FOR ENVIRONMENTALLY SOUND DEVELOPMENT

Urban and rural environmental problems result as much from faulty policies and bad management practices as uncontrolled growth. Since local self-governments can determine policies and improve management practices, there is hope that realistic and effective solutions can be found in time to resolve the ecological crises that grip metropolitan

regions like Mexico City and the Silesia Valley, and rural areas such as Upper Michigan. There are also examples of successes we can draw upon to increase our understanding of how to move toward the goal of sustainable development. The Sustainable Cities Programme (SCP) is one important initiative, among others, aimed at bringing about positive changes in the dynamic interaction among economic, social, and physical development and the natural environment.

Guiding principles and assumptions

Let's look at some of the principles and assumptions that guide SCP and form the basis for the role of environmental guardian by local elected officials.

1. The environment is a resource to be managed on a sustainable basis – not something to be “protected” from development. (The difference is important: it means a pro-active stance toward the environment, not a reactive response.)
2. There is a dynamic relationship between development and environment. This relationship can be either beneficial or detrimental, depending on how it is managed within the existing policy framework. If elected leaders are pro-active in setting the policy framework, and provide the necessary organization and human resources to manage their enlightened policies, they will be on their way to sustainable development.
3. The natural environment offers resources, which support economic growth and urban development, and at the same time present potential hazards. The resources are water, land, air, forests, minerals and natural fisheries. The hazards are a combination of “worldly” events, human foibles, floods, earth-quakes and erosion. We may not be able to control them, but we can anticipate their potential and manage their consequences.
4. While development has an impact on the environment in both positive and negative ways, the choice can be more deliberate on our part by managing the development-environment interface more assertively.

Environmental problems are messy, complex, multidimensional, interactive, dynamic and, more often than not, poorly understood. Given this mix of unconventional characteristics, your local government organization (which is probably compartmentalized, service oriented and somewhat bureaucratic) may find it difficult to adapt to the kinds of challenges inherent in urban environmental situations. This may require you and your colleagues on council to give more thought to your role as institution builder.

Needed: A special kind of toolbox

Given the complexity of the challenge you and your colleagues face in becoming more effective **Guardians of the Environment**, it is essential to have some “how-to-do-it” tools at your discretion. The tools we will be describing are being used by many local governments around the world in their efforts to be more effective and efficient in addressing a wide range of community problems and opportunities. Some are specific to the environment-development dilemma, others are more multipurpose in their application.

Before we begin to describe these tools, we want to suggest a special kind of toolbox you can use. If you've had your automobile to a garage for maintenance you have probably seen the mechanic, with his head under the bonnet, reach behind him without looking back and select just the right tool to fix the problem. He knows what kind of tool he needs at the time, but he also has a toolbox that organizes those tools in a logical way. Sockets here, vise grips there, and end wrenches just where they are supposed to be. To be an effective and efficient environmental guardian, you need special tools and a special kind of toolbox, a *managing change* toolbox.

Guarding the environment is managing change

One of the constant themes in management and organization development research and practice over the past three decades is something called *managing change*. It is one of the few popular phrases, and phases, of general management theory and practice that has survived the test of time. More importantly *managing change*, as a conceptual framework, has become a common strategy for use in many other professions. We think it makes sense for councillors to become *change managers*, particularly as you increase your commitment and actions to guard the environment. Let's look at some of the assumptions and strategies that have become accepted by managers and others in their efforts to “manage change.”

1. **Managing change** assumes that change is a constant factor in our everyday life. Furthermore, there is the underlying assumption that these ever present *changes can and should be managed*.
2. **Managing change** requires widespread consultation with others: councillors with other points of view, community leaders, entrepreneurs, employees, and others.
3. **Managing change** puts a premium on learning new ideas, concepts, skills and behaviours.
4. **Managing change** cannot happen without two-way communication and dialogue that puts a premium on *giving and receiving feedback*.

5. **Managing change** requires creative thinking and experimentation. Finding new pathways to sustaining development and restoring and maintaining environmental resources must include the freedom to fail.
6. **Managing change** involves a series of purposeful actions, carried out within a framework of analytical and creative thinking.

Toolbox compartments

If *Managing Change* is the toolbox, the *series of purposeful actions* and *framework of analytical and creative actions* are the drawers of the toolbox (where we find the special tools that are available to the **Guardian of the Environment**). To make it easier to find the right tool, when needed, we have labeled the drawers and put them into the sequence in which they are most often used. They are:

- A. Gaining Awareness and Creating Visions (seeing “what is” and “what can be” more clearly, in terms of environmental risks and sustainable development);
- B. Seeking Partners and Building Coalitions (establishing productive relationships and forging working alliances to further sustainable development);
- C. Assessing Environmental Risks (determining and analyzing the present and future environmental risks within your locality);
- D. Exploring Options and Consequences (identifying alternative courses of action and their potential consequences with special emphasis on the use of environmentally sound technologies);
- E. Mobilizing Resources (garnering the wide range of assets and means needed for implementing sustainable development programmes and strategies);
- F. Achieving and Sustaining Results (implementing optimal environmental and development programmes and strategies that help ensure the quality of life for future generations).

If local self-governance is to be the successful keystone for environmentally sound development, we are suggesting you may want to acquire some new tools, or maybe remove the rust from those you haven’t used for a while. Finally, we think it makes sense to organize these tools in such a way that you can have easy access to them. The remainder of this Handbook will discuss these tools, the way others have used them in their role as **Guardian of the Environment**, and how you can employ them to plan, manage and implement sustainable development in your community.

A (graphic) model

Shown below is a model of the framework described above. Think of each of the circles in the model as one of the drawers in a toolbox of analytical and creative actions you can use to fulfill your role as **Guardian of the Environment**. There is no one starting point. For example, you might decide to begin by building a coalition of stakeholders. And you don’t have to move in any particular direction. You might move to the left to construct a vision or perhaps to the right to assess risks. You might even jump around to analyse some options (environmentally sound technologies) for coping with a known risk.



Special Features

There are two special features we want to point out about this toolbox before you begin to use it. First, it is designed to serve the needs of elected officials. While it might look like a *management toolbox* there are subtle and significant differences. For example, we don't spend much time on how to manage the implementation of sustainable development programmes and strategies although we do insist on results, and so should you! Effective councillors:

- develop overall policies and guidelines that provide direction and structure to staff and other involved parties;
- mobilize the resources required to carry out council plans; and
- insist that resources be used effectively and efficiently by those who are responsible for implementation of council programmes and services.

Second, this toolbox is more flexible than most. You will quickly realize that the various drawers (where you keep your sustainable development tools) can and should be moved around. When we were designing this toolbox we had a difficult time deciding, for example, where to put the drawer for *partners and coalitions*. While we decided these tools are needed very early in the process of managing complex changes in the community, we also realized that new partners must be found and coalitions built as you move from one step to another in designing and implementing environmental interventions. Some of the tools you will need to pick up and use again and again (just like a good set of pliers). Your effectiveness as a **Guardian of the Environment** will depend on your ability to reuse some of these tools frequently and to not hesitate to shunt back and forth from one drawer in the toolbox to another.

Reflection

We have used the *metaphor* of a toolbox to describe a process for planning and managing complex changes that will need to take place in most communities if sustainable development is to become a reality. Some of you may have thought (as you were reading about it) that this was an unusual way to characterize the various steps on the process. Others may have been saying to themselves, "these *mental pictures* have been useful in helping me visualize how the process works." Think, for a moment, about the importance of metaphors, similes, proverbs, parables, and stories in your efforts to communicate on a daily basis with others. And, the way you use them to make complex ideas and concepts more understandable. These language and thinking tools enrich our ability to move from the abstract to the concrete. And, from what we can tell, are used in most, if not all societies, to enrich communication and understanding. They help us create new approaches and solve problems by *turning them on their head*. (Another metaphor!)

We think *sustainable development and environmentally sound policies and programmes* are concepts that become clearer through mental visualization (for example, thinking in metaphors). Before moving on to the next chapter, we suggest you reflect for a moment about your community and what it will look like in ten to fifteen years if you and other leaders do little to address some of the environmental risks that already exist in your community. We suggest you use metaphors, similes, even parables to paint mental pictures of your community's future if environmental problems that already exist are ignored. And, draw them in the box below, rather than using words! We want to help you get into condition before you and others take on the challenge of visualizing the future of your community through the use of sound environmental practices and sustainable development.



Your drawing

PART I-D

TACTICS, STRATEGIES AND APPROACHES FOR SUSTAINABLE DEVELOPMENT

As we have stated many times, there are numerous tools, tactics, strategies, resources and success stories you can use in your council's efforts to build a sustainable capacity to engage in sustainable development. Some will seem fairly routine while you may think others are beyond the reach of your council and local government organization. But all, we hope, will spark your imagination and start you thinking creatively about how to become a better **Guardian of the Environment**. So, it's time to open the Managing Change toolbox and examine some of these tools in more depth. Let's begin with those in the drawer marked Awareness and Vision.

1. GAINING AWARENESS – CREATING VISIONS

Awareness and vision are the most essential tools for developing sustainable responses to environmental challenges. If you don't know a problem exists, you are not likely to solve it. If there is no vision of a better tomorrow, it is very difficult to plan and work towards its realization. Being a **Guardian of the Environment** requires both these tools, for different reasons. Let's take a brief look at what makes these tools distinctive and explore some ways to sharpen them.

Awareness is a personal trait, characteristic, and skill that helps us determine when the state of our environment, for example, is not what it should be. Vision, on the other hand, helps us to see a future environmental state that is vastly improved. Both kinds of personal detecting equipment are important in the role of environmental guardian. But, they are different in the following ways:

AWARENESS	VISION
1. Is more tactical; short term in perspective.	1. Is strategic, involving long range thinking.
2. Pays more attention to the details.	2. Sees the situation from a broader perspective.
3. Often requires determining what has gone wrong and how to fix it.	3. Imagining how things could be in the future.
4. Involves more convergent thinking (focusing in).	4. Is best achieved through divergent thinking (straying from the rational path).
5. Is more reactive behaviour.	5. Is more anticipatory.

When the World Commission on Environment and Development issued its report nearly ten years ago, it provided a new level of *awareness* about the state of environment and development that hadn't existed before. The Commission also describe the standards required to achieve a vision of sustainable development for the future.

These included:

- a political system that secures effective citizen participation in decision making;
- an economic system that is able to generate surpluses and technical knowledge on a self-reliant and sustained basis;
- a social system that provides for solutions for the tensions arising from disharmonious development;

- a production system that respects the obligation to preserve the ecological base for development;
- a technological system that can search continuously for new solutions; and
- an administrative system that is flexible and has the capacity for self-correction.

Question

How do the every day reality of your local government's development and environmental efforts measure up to the Commission's standards?

Before going further, we want to describe a situation that has developed in a medium sized city in one of the world's most beautiful settings, the Rift Valley in Eastern Africa. It involves honorable intentions, technical assistance, international cooperation, different perspectives about problem sources and possible solutions, angry confrontations among scientists and government officials, and (in the opinion of many who are studying the situation) ecological devastation. The dilemma facing the City of Nakuru, Kenya, dramatizes the clash that often emerges when nature and technology meet head on.

[To construct this story, we have relied on a series of articles from Kenya's leading newspaper, the *Daily and Sunday Nation*. Dr. Warui Karanja, Senior Lecturer in Ecology at the University of Nairobi, created a firestorm of controversy when he told the story of Nakuru's misfortunes in a special report to the Sunday edition of the Nation on 21 January 1996. This article was followed by an official rejoinder by the Government of Kenya which was aired in the Nation just ten days later. We have borrowed generously from these news article and hope we have not infringed on the integrity of any of the information sources in what is obviously a complex and vexing dilemma for all who have been and continue to be involved.]

Flamingos' paradise: temporarily lost

From outer space, Lake Nakuru must look like a tear drop on the face of Africa. From downtown Nakuru, the tears are real. In the opinion of many observers, the burgeoning city has lost its mark of distinction and a huge chunk of its local economy through the generosity and good intentions of a donor country half a world away.

The two million plus flamingos that graced the shores of Lake Nakuru have departed, taking with them the tourists who came from around the world to experience the pink clouds the birds created when in flight. As Dr. Karanja points out, Lake Nakuru is not a lake in the true sense of the word. It is "a giant raw sewage treatment pond or lagoon"; 42 square kilometers in size; that, for decades, has been receiving raw human waste and industrial effluent from the neighboring town by the same name. Because of a rare combination of events, a symbiotic relationship between human waste and some of nature's most beautiful creatures evolved.

The most likely culprit in this sad scenario, according to Karanja and others, is a new Sh800 million (in excess of \$20 million dollars) complex of water treatment lagoons, funded by a well intentioned international donor. The new lagoons have effectively stopped the dumping of raw sewage and related water into Lake Nakuru at the same time ground water going into the lake has slowed to a trickle due to more intensive farming in the catchment area. Consequently, the lake's complex ecosystem seems to have collapsed.

Dr. Karanja in his article called for the dismantling of the newly constructed "ultra-modern" sewage treatment lagoons which would allow the raw sewage to return to the lake. But, he goes on to say, "this would be a very painful under-taking, both diplomatically and economically (we are talking of government-to-government 'cooperation' involving no less than Shs. 800 million being flushed down the drain.")

Representatives of the Government of Kenya issued a statement to the media, shortly after the Karanja article appeared, to defend the actions that were taken to assist the Nakuru community with its waste water problems. Among other comments, the Government representative stated it was "found prudent to construct a sufficient sewerage scheme at Nakuru for the treatment of domestic and industrial waste water in order to abate water pollution to the lake." As foundation for its position, the government pointed to the results of environmental impact assessment studies conducted to determine the impact of the Greater Nakuru Water Supply Project on the Lake Nakuru basin.

Three reasons were given by the government for its decision to begin phased implementation of the project with the assistance of external funding agencies. First was increased water demand, projected at nearly two times the current supply. Second was the overloaded sewage treatment plant which had for a long time been discharging partially treated sewage into the lake. Third was the continuous drainage of storm water from the Town of Nakuru into the lake, carrying with it various non-biodegradable pollutants and waste oils.

A team of experts dispatched by the Kenya Wildlife Service to investigate the controversial dwindling flamingo population at Lake Nakuru reached some surprising conclusions. “Whereas, in the past conventional ecology and environmental conservation have pursued a no-effluent policy, the Nakuru findings point to the fact that effluent may not be bad after all. Species subjected to pollution,” according to the team’s investigations, “might be adapting and improving in their ability to survive in polluted environments.” If so, it is a finding that runs contrary to the government’s claims. ⁽⁴⁾

While the environmentalists and the government seemed to be working from polar positions, supported in large measure by the conventional wisdom defining their respective disciplines and concerns, the Wildlife Service was suggesting the emergence of a new paradigm. Given the diversity of opinion about the plight of the flamingos, could the controversy surrounding the Nakuru dilemma have been avoided through:

1. Greater awareness of the ecological balance that nature had created over the years; and
2. A vision of the consequences that would result from technological changes designed to cope with the pervasive problem of human waste?

Perhaps.

A wake-up call

Sometimes adversity is the mother of invention. When two million pink flamingos left Nakuru, it was a wake-up call to many community leaders that all was not well. Just prior to the controversy, the Municipal Council of Nakuru, in collaboration with UNCHS (Habitat) and the Belgium Administration for Development Cooperation, signed an Urban Pact outlining an agenda of actions designed to achieve a broad range of community objectives. They are an integral part of Nakuru’s commitment to, and involvement in, Localizing Agenda 21: Action Planning for Sustainable Urban Development. The stakes involved in implementing the action plan have been raised by the flight of the flamingos. So has the community’s awareness about the fragile nature of its natural environment as it confronts the reality of urban growth and technological change that comes with economic activity.

Fortunately, many of the flamingos have returned to Nakuru. But, the challenge remains. As the water level in Lake Nakuru receded, for whatever reason, the air became more polluted by dust that contained an exotic mix of chemical residue. The complexity of the dilemma continues to unfold. Nevertheless, positive results have evolved from the saga of the fleeing flamingos:

- community awareness and understanding have increased about the challenges associated with technology and its impact on the environment, both good and bad;
- the number of stakeholders (*partners and coalitions*), and the dialogue within and beyond the community boundaries, have expanded because of the open controversy; and,
- the Council’s commitment and resolve to carry out the actions defined within the Localizing Agenda 21 Project has been strengthened.

Lessons to be learned

The City Councillors of Nakuru have joined the long list of communities that have experienced controversy from ventures supported by external donors and been caught in the crossfire of technical debate and alternatives solutions. We are not suggesting the two are necessarily linked, but surely there are lessons to be learned from the double barreled assault experienced by the councillors in Nakuru. We want to suggest the following for openers. Perhaps you can think of more.

1. The old admonition among farmers that “you should never look a gift horse in the mouth” is no longer valid. Gifts can, at times, be very expensive to those who receive them.
2. Developing countries, and their local governments, are frequently at a disadvantage when confronted with external technical assistance. While communities involved in projects with potentially adverse environmental consequences should consult credible environmental ecologists, there is a problem. As Dr. Karanja points out in his article, developing countries have only seven percent of the world’s qualified ecologists. Efforts must be made to share these scarce resources in a more equitable and effective way.
3. Ecological wisdom is often found among local people who innately understand the symbiotic relationship between planet earth and those who dwell on it for short periods of time. Unfortunately, their advise and

experience are rarely sought when “high level” discussions take place between outside “experts” and local leaders who are anxious to get assistance in solving a problem. (We will relate such an incident from Asia in the discussion of *Partners and Coalitions*.)

4. It helps to recognize that everything in one way or another is connected to everything else. The causal relationships that emerge from the ever evolving accommodation between urbanization and nature are often coping mechanisms, designed to make the best of a bad situation. Being aware of this and following the possible cause-effect chain of events before it happens can create visions of future realities you may or may not want to create by acting too quickly.
5. Which is another way of saying *consider the consequences before they happen*. “What if...?” is one of the most important questions to be asked by the councillor who takes seriously the role of **Guardian of the Environment**. It should be in the top drawer of your tool kit.

The Trap of “unawareness”

Before leaving the discussion of *awareness*, we want to stress the importance of this tool in helping us be sensitive to acts of degradation to our environment. We often become “unaware” of problems like the accumulation of trash and litter on our streets and in our parks. Or, to gradual fouling of our rivers and streams with various kinds of pollutants. After “living with” these problems over time, there is a tendency to *not see them*, to *not be aware* that they even exist. Our senses of awareness are often dulled by familiarity, constancy, and acceptance. Sometimes we have to *learn*, or *relearn* how to be more *aware* of the world around us.

There are plenty of information sources to avoid stepping into the trap of “unawareness.” UNEP IETC, for example, can offer its Searchable Directory on Environmentally Sound Technologies (ESTs) containing data on technology related information systems worldwide, institutions dealing with ESTs, and selected technologies for city and water management.

And what to do about it

Our ability to be more aware of what is happening to the environment can be enhanced by a variety of activities and events. For example:

- monitoring of changes in the level of certain pollutants in the air and water of your community;
- staff reports on the consequences in disposing of hazardous materials in the local sanitary landfill;
- greater attention, at budget time, to the percentage of resources being allocated to environmental programs;
- attending conferences and workshops that focus on the use of new environmental technologies;
- exchanging ideas and information with officials from other communities who are experiencing the same problems - or trying new approaches to solving their problems.

Awareness is the act of using all our senses to monitor the current state of our environs: hearing, touching, seeing, smelling and, sometimes, even tasting the consequences of our collective and individual actions as they relate to our natural environment.

**We need to close our eyes for a while and listen.
There is always something unheard of in the air.**

Karlheinz Stockhausen, 20th century composer

Awareness helps us discover and understand *what is*. Vision, on the other hand, is a tool to help us define our perceptions of future reality, *what can be*. *Envisioning* the future is largely a creative process. Creating a picture of what you would like the future to be for you and your children. Robert Fritz, author of *The Path of Least Resistance*, reminds us that the best place to begin the creative process is at the end. In other words, “*What is the final result you want?*” He says,

“This way of thinking helps you conceive the result you want to create independently from how you will create it. This is probably the opposite of what you learned in school.”⁽⁵⁾

Vision and creativity is the ability to stay with the what before you start worrying about the *how*. It is having a concept of where you want your community to go, in terms of sustainable development, before you start building the vehicle to get you there.

Transforming corporate and community visions into short, coherent and uplifting written statements of future intent is useful, but not always easy. The following vision statement for metropolitan Durban’s Local Agenda 21 initiative is among the best we have seen.

“In 20 years metropolitan Durban will be a thriving industrial and commercial centre, an attractive tourist destination and the gateway to Kwa Zulu-Natal and Southern Africa. It will be a clean and safe environment with less than 10% unemployment, more than 90% of residents living in acceptable serviced housing: and with a generally high quality of life that can be sustained. Democracy and tolerance will be an established way of life.”

In the context of this discussion, the vision is what you want your community to be in terms of sustainable development and a “healthy” environment at some future point in time.

Curitiba, Brazil: A Visionary Case in Point

Curitiba, Brazil has captured the attention and imagination of planners, urbanists and public leaders from around the world for its bold and effective approaches to guiding and managing rapid urban growth. The vision of what Curitiba should represent as a viable and vibrant city was forged long before the onslaught of emigrants from the country side in the 1970s when the city nearly doubled in population. While we will highlight some of the achievements of this model urban environment at the end of the essay, we want to emphasize here what many believe to be the keystone of their success over the past three decades and more.

The elected leaders of Curitiba adopted a comprehensive plan in the sixties that has proven over the years to be both bold and visionary. While the plan called for the integration of traffic management, transportation and land use planning to support long term strategic objectives, it went beyond these planning and operational technologies to incorporate social and cultural values and concerns. At the heart of the overall transportation and land use recommendations was a rather drastic plan to create several structural transportation axes that would crisscross the city and support the full range of urban needs. These axes, analogous to the main arteries found in the human body, have continued to serve the dramatic expansion of the city and remain healthy and fully functioning as the city matures.

Moreover, the vision as defined several decades ago was holistic, going far beyond the physical needs of the citizens. Too often, magnet cities, such as Curitiba, become mere repositories for the rural poor and the migrating hopefuls. The sense of community and the social and cultural needs of the new citizens becomes lost in the milieu. The genius of the Curitiba vision was its attention to sustaining these “softer” elements of development: decentralizing work opportunities; encouraging social interaction by the creation of leisure areas; supporting the preservation of cultural heritage for those who had become uprooted out of economic necessity.

Visions require visionaries in conceptualizing the future. Visions also require visionaries to stay the course, to make real what others deem possible. We will return to Curitiba as we conclude this discussion to highlight the exemplary service of the elected officials and staff of the city in their roles as leaders and **Guardians of the Environment**.

Reflection

Earlier in this discussion we deliberately used the term healthy because we want you to sit back, close your eyes and think about what “healthy” means. Now, jot down in the space below some words, phrases and images that came to mind as you thought about the concept of healthy.

You may have been thinking about your own body, or perhaps someone who is close to you that may not be as healthy as you would like them to be. In this little exercise you probably started with your concept of what healthy means. Good! We need to think in concepts before we begin to envision what we want the future to be.

There is a difference between a concept and a vision. Fritz says: Concepts are general, visions are specific. In the conceptual phase of creativity we experiment with ideas. We are mentally “trying on new ideas” to see if they fit. One

concept of healthy may be a beautiful body, maybe someone you know who has taken care of him or herself, epitomizing your notion of what healthy means. Someone else might see healthy as being free of disease, and disease. Healthy not only in body, but in mind and spirit as well. For us, Mahatma Gandhi comes to mind. Remember the physical vigor and mental agility he displayed in his later years of valiant efforts to bring freedom to the sub-continent of Asia? Metaphors (mental images and pictures) are ideal for exploring the future we haven't yet experienced but would like to influence.

Healthy environment

Now, apply the same terms you jotted down in the last reflective exercise to think about what a *healthy environment* is. Do the same terms, images and ideas fit? How different is your concept of a *healthy environment* from your concept of healthy?

Describe on the next few lines your concept of a healthy environment. You might want to use a metaphor or two to make your concepts more clear. Perhaps a beautiful pristine mountain stream is your metaphor for a healthy environment. Or, a market full of fresh fruits and vegetables free of diseases, not loaded with pesticides, and displayed in a clean and attractive setting. Or, children who are happy and well nourished. Or, maybe a smokestack on the edge of your community that no longer belches harmful chemicals and has become the highest flower pot in the region as a symbol of your council's commitment to sustainable development.

My *concept* of a healthy environment is:

Writing future scenarios: One approach to visionary

One of the more frequently used tools in visualizing what the future might become is the development of various scenarios, or descriptions, about the way our communities might turn out in the future. Peter Schwartz calls *scenarios* "a tool for helping us take a long view in a world of great uncertainty ... stories that can help us recognize and adapt to changing aspects of our present environment." ⁽⁶⁾

Writing different scenarios about the future of sustainable development, as a tool for developing local policies and programmes, is best done by those who represent a cross section of your community. In fact, the greater the diversity of thinking and values about development and the environment, the better the opportunities for forging a consensus and commitment that can be sustained over time. We will discuss in the next section about who you might involve in writing scenarios (as a means of planning for a more sustainable future through development). But for now, let's look at some of the steps decision makers take in writing alternative descriptions about their future.

(It is helpful to know that major corporations and other institutions that worry about their own ability to be sustained (to survive in an intensely competitive world), routinely use these methods as strategic planning and management tools.)

Marvin Weisbord and Sandra Janoff, community and organization consultants, have been working for years to refine a process for people seeking common ground for action in organizations and communities. This process, something they call Future Search, is a large group planning meeting that brings key interested parties (stakeholders) together to work on a task-focused agenda. The meeting is based on a simple idea: if you want the community (or organization) to transform itself to move in a different direction on an issue like *sustainable development*, you need a process that gives "people a chance to take ownership of their past, present and future, confirm their mutual values, and commit to action plans grounded in reality." ⁽⁷⁾

The Future Search Conference format is one approach to writing future scenarios. Over a two-day time frame, they:

- Focus on the past: the community's *highlights and accomplishments* (appreciate our history; identify trends we have experienced; explore what the past means to us);
- Focus on the present: *current trends* (understanding the forces currently having an impact on the community);
- Focus on the future: *imagining an ideal future for the community*;
- Discover common ground: *reaching consensus on a common future and direction*; and,

- Make future plans: *through shared understanding and greater commitment to act.* ⁽⁸⁾

This is just one way to go about the process of scenario writing or what these two authors call *future search*. We will offer our own version in the learning tools that accompany this discussion. Without a conceptual framework that defines where your community should be going (a future vision), it won't help to develop action plans on how to get there.

2. PARTNERS AND COALITIONS

The next drawer in your toolbox is something we are calling *Partners and Coalitions*. We will be using the terms partners and coalitions to describe different kinds of "guardian" relationships. Perhaps a word or two about what we mean by these terms would be useful.

Partners most commonly describe our effort to team up with one other person or organization to accomplish a goal, or perform a task. *Partner* is also a nautical term meaning "one of the heavy timbers that strengthen a ship's deck to support a mast" (Webster's Dictionary). The term, in this context, is also appropriate as a metaphor for strengthening communities in their voyage through time.

Coalitions we perceive as collections of like-minded people, organizations or institutions that come together to perform tasks, accomplish goals. Or, as *Webster's Dictionary* informs us, "a temporary alliance of distinct parties, persons or states for joint action." More specifically, these tools, partners and coalitions, are helpful in:

- building problem solving relationships;
- expanding the understanding of, and commitment to, your community's vision of sustainable development; and
- sharing the responsibility to assure that the vision becomes reality.

Potential partners in sustainable development are everywhere. The following examples point out the potential for involving new partners and forming new coalitions. The first is about private contributions to community awareness and the second, failure to include critical partners in community problem-solving ventures.

First, the good news

Many private sector organizations have seen the need to increase awareness of environmental problems and opportunities among their employees and their customers. If you remember, we talked about the importance of awareness as a tool in the first drawer of the toolbox. Now, we are suggesting a direct relationship between the Awareness tool and the Partners and Coalitions tool. Have you ever tried to tighten a nut on a bolt and the bolt kept turning? When you applied the second wrench, the task became much easier. So it is with managing the kinds of sustainable development you want for your community. Some examples of environmental awareness efforts carried out by large private corporations (some of which might even have operations located in your community) are:

- Private Sector Contributions to *Awareness* and
- Potential *Coalition Building*

General Electric, the old line multinational corporation with over 200,000 employees worldwide, has said it wants to move from being reactive to environmental problems their manufacturing processes create to prevention -keeping them from happening in the first place. To make this shift in emphasis, GE required every plant manager to attend two-day **environmental awareness** workshops that highlight their environmental responsibilities.

Five electronic companies, Grundig, Loewe, Nokia, Phillips and Thompson, in cooperation with an eco-institute, initiated an awareness campaign on how many out of more than 2000 elements of a TV-set are recyclable. This was to improve the re-use rate of such elements.

Ford Motor Company has a programme called, *Wildlife at Work*, that demonstrated sustainable development and the potential for compatibility between industry and the environment.

Daimler-Benz, after testing "industry plants," raises awareness of car-makers on utilizing reproduceable and biodegradable raw materials such as natural fibres, sisal, and rape-oil instead of plastics or fossil fuels. ⁽⁹⁾

Reflection

Are you surprised that some of the major multinational corporations are so committed to helping keep the environment healthy? And, that they fund environmental awareness programmes from their own budgets? Here is a test of your own

awareness. Take a few minutes and record in the following box those efforts you are aware of that increase awareness about environmental concerns and the need for sustainable development in your community. Are there large corporations or small private businesses in your city that have environmental awareness programmes for their employees, or perhaps implement endeavors to create greater environmental awareness among their customers? You might also want to jot down a note or two to remind yourself to personally thank them and to determine if their programmes can be expanded to reach more citizens.

Here are some environmental awareness programmes currently being implemented in my community (either by our local government or others):

Here are some actions I plan to take to acknowledge these contributions and to explore ways in which they might be expanded:

Now, the bad news

Some organizations never take the tools out of their toolbox when it comes to promoting and managing the processes of sustainable development. The following is a description of how *the lack of awareness and vision and the unwillingness to reach out to build problem solving relationships*, by the world's largest *Integrated Food for Work (IFFW)* Programme in the 1980's, had adverse ecological, environmental and economic consequences to numerous rural communities in Bangladesh.

Good intentions gone awry

Between 1980 and 1987, the production of food from the aquaculture of Bangladesh's vast flood plain dropped by more than 20%. In a report on the environmental impact of donor assisted infrastructure projects in Bangladesh during that time, some of the blame was placed at the feet of the world's largest food for work programme. "The IFFW programme has affected the Bangladeshi environment negatively and by doing so threatens to reverse its gains in economic development. Increased flooding, agricultural land loss and diminishing numbers and species of fish are some of the significant adverse environmental impacts" of the programme.

The IFFW programme, in its efforts to provide work and food for the villagers, ignored the environmental consequences of the manner in which the contributions were carried out. Projects that were designed to rehabilitate roads and excavate canals ended up blocking waterways and removing top soil and vegetation. The report admonished the project supervisors to "talk to the fisher-men in the villages...if there are no professional fishermen, talk to those villagers who often fish for sustaining their household...they will know which route fish generally take during the flood."⁽¹⁰⁾

There is a positive lesson to be learned from the Bangladesh experience. It is the importance of establishing an open dialogue with those who are or will be affected by programmes and activities you may be implementing on their behalf. In this situation there were early signs of impending environmental consequences, but they were ignored for years. The villagers, unfortunately, were caught in the middle of a difficult situation, one of exchanging future sustainable aquaculture opportunities for an immediate source of food. When your children are hungry, the motivation to secure the future of your trade (i.e., support efforts in sustainable development) is greatly diminished. The results in the Bengal Delta could have been altered substantially by greater involvement of local governments and their constituents in the on-going decision making process. There were viable alternatives that would have achieved the food for work program objectives while concurrently supporting the implementation of environmentally sound technologies. Program officials

could have “talked to the fishermen” and others, involving them in honest and collaborative decision making and problem solving discussions. Not after the damage is done, but before actions are taken.

Who are stakeholders?

The concept of *stakeholders* can be a useful addition to our toolbox and one you should be thinking about using as you perform your role as **Guardian of the Environment**. It is also valuable when you assume the roles of *Enabler*, *Facilitator* and *Negotiator*. The concept of stakeholder is one of those multi-purpose tools, like the screwdriver.

While there are many ways to describe who the *stakeholders* might be in any given situation, we like John Bryson’s definition. He says a stakeholder is “*any person, group or organization that can place a claim on an organization’s attention, resources, or output, or is affected by that output.*” ⁽¹¹⁾

At the request of delegations of some countries at the Habitat II Conference in Istanbul, the word “stakeholders” has been replaced by “interested parties.” While we are sensitive to this change in terminology, we have decided to stay with the term stakeholders for the following reasons: Having a stake in a public decision is qualitatively different than being an interested party in the decision.

While the difference may be challenged as merely semantic, we believe tough decisions about sustainable economic development and environmental preservation will require individuals, groups of individuals, organizations and institutions to uphold and sustain their commitment to these principles overtime. On the other side will be those with a “stake” in different perspectives and ideas about what is beneficial for the community. The role of **Guardian of the Environment** is clearly an advocacy position concerned with long-term consequences of the kind we have been discussing. When difficult public decisions are required, you can be assured that those with economic, political and environmental stakes in the outcome will be at the front of the line. Interested parties certainly - but also vested interests who are prepared to “stake their claim.”

One role of the **Guardian of the Environment** is to convert “interested parties” who meet the Bryson criteria into stakeholders.

Joseph Coates and Ashok Jain identify a wide range of benefits to be derived from bringing stakeholders together. We’ve included some in the following list to illustrate what public participation can accomplish. ⁽¹²⁾

- Inform
- Bring interested parties together
- Evoke opinion and judgment
- Encourage dialogue and exploration
- Seek advice
- Establish channels of communication
- Promote better understanding of problems, causes, impacts and options
- Provide a vent for hostile, vocal, or strongly concerned publics
- Add credibility to a plan
- Improve quality of a plan
- Supplement staff capabilities, e.g., through training and use of experts
- Build a constituency for new or alternative technology
- Identify interested parties
- Reduce alienation
- Promote more effective decision making
- Provide models of participation for others to follow
- Legitimate public participation for agencies
- Illustrate new or alternative techniques for participation
- Promote cooperation
- Promote community power
- Make decisions
- Share authority
- Control projects and policies
- Bring about changes in behaviour

Essaouira, Morocco reaps the bounty of stakeholder involvement

Essaouira, Morocco is blessed with an attractive natural environment, sitting on the edge of the Atlantic Ocean with river wetlands to the South and a dune forest that embraces the community to the East and North. Founded in 1760, the community also has a rich cultural heritage. In spite of these valuable assets, all is not well in Essaouira. The

fishing industry is in decline and tourism is often problematic as a stable economic anchor. Moreover, the town's natural environment and cultural heritage are under siege.

These troubling trends prompted the leaders in the municipality and province to undertake the Localising Agenda 21 (LA21) process under the guidance of UNCHS (Habitat). LA 21 is a comprehensive approach to community planning and problem solving that brings together a cross section of stakeholders who are capable of advancing, and on occasion blocking, a forward looking programme of urban development and environmental protection that is sustainable over time. (It is one of those "soft technologies" we will be saying more about as an initial intervention tool to bring about environmental management changes at the community level.) One of the first steps undertaken by the stakeholders in Essaouira was to hold a Consultation Workshop; a consensus building event designed to reach agreement on a common plan of action. It included a shared, integrated vision of the community's future; priority action steps that would move them toward that vision; and, a decision making structure to assure implementation of the plan.

The shared vision of Essaouira's future includes a culturally and economically vibrant, but physically contained, community that will attract visitors to enjoy their artistic traditions within the old Medina, complemented by the creation of an institute for arts and handicrafts. To achieve the vision, community leaders will employ a variety of measures including: institutional strengthening, training, planning support, rehabilitation, environmental protection, infrastructure improvement and employment generation.

Among the results to be achieved as a result of the action planning process are: protection of the nearby river outlet as a natural wetlands site; limitation of further housing development in the forest dunes; improvement of the environmental quality of new housing estates; restoration of the town wall between the Mellah and the ocean; and, implementation of a greening programme in collaboration with local NGOs.⁽¹³⁾

If you have any doubt about the power and wisdom of bringing key stake-holders together to help in your elected leadership role as **Guardian of the Environment**, we suggest you plan to visit Essaouira and see the results firsthand. If that's not convenient, contact the Localising Agenda 21 staff of UNCHS (Habitat) for more information.

Postscript

Earlier in this discussion of partners and coalitions, we listed over twenty benefits to be derived by bringing stakeholders together to plan and problem solve on behalf of their community. In the case of Essaouira, over half of these benefits were achieved in the planning and conduct of the initial Consultative Workshop.

If you apply broad definitions of stakeholders, you will soon realize they involve people and institutions who are often far beyond the organizational boundaries of your local government institution and the physical boundaries of your community. Earlier we described local self-governance as the keystone for environmentally sound development, recognizing the potential powers of persuasion and action that are vested in open, democratic institutions at the local level. *Webster's Dictionary* tells us that *a keystone is something on which associated things depend for support*.

As **Guardians of the Environment**, councillors can become keystones for change by supplying capacity for action (the enabling role) to the myriad of individuals, groups and organizations (stakeholders) that make up your community. Some examples of potential stakeholders (partners to mobilize and coalitions to form) that you can call on and ways you might get them involved in your efforts to guard the environment:

- School children: help them learn new ways to conserve energy and preserve the natural beauty of the community.
- Small manufacturing plants: work with them to find safer alternatives to handling toxic wastes.
- Civic clubs: garner their support to help the council adopt new environmental policies.
- Multinational corporations: draw on them as a possible source of new ideas and commitment to sustainable development. (There is growing awareness on the part of many multinational institutions that the use of environmentally sound technologies, for example, is not only being a good neighbor, it is good for business).
- Small and medium size enterprises (SMEs): encourage them to adopt environmentally sound technologies that have become mainstream operational strategies in multinational corporations (as successfully practiced in Asia through promotion of the Asia Pacific Technology Transfer Centre of the Economic and Social Commission for Asia and the Pacific).
- Colleges and universities: seek their involvement in assessing the consequences of adopting new environmental technologies.

- Low income housing associations: collaborate to find ways to generate jobs from neighborhood recycling programmes.
- Commercial businesses: help them obtain financial assistance to retrofit inefficient and energy wasting heating, ventilating and lighting systems in the central business district.

Stakeholders can involve just about everyone in your community. The challenge is to mobilize their strengths and resources to help you and other councillors in your role as *environmental guardians*. Before going on to the next drawer in our toolbox (the one with the assessment tools), we want to share a successful experience one councillor had in mobilizing *partners* and *stakeholders*, and forming *coalitions*, to carry out the role of **Guardian of the Environment**.

One Councillor, a few strategic coalitions and many stakeholders

Cities in developing countries are experiencing unprecedented and unplanned growth, putting pressure on the delivery of basic services, such as waste management, which in turn, more often than not, run afoul of the environment. Quito, Ecuador is not immune from these modern day urban maladies. To counter these adverse affects, Quito established a Neighborhood Recycling Programme designed to establish waste collection services in low income neighborhoods, strengthen neighborhood organizations and provide a modicum of local employment.

The recycling programme began as an experimental project initiated by City Councillor Roque Sevilla and facilitated (another of those councillor roles) by him and his assistant. The first step was awareness by Sevilla of the need to clean the ravines and streets in his neighborhood of garbage and other waste materials. By reaching out and involving citizens in the neighborhood (key stakeholders) his efforts ultimately served as a model for establishing neighbourhood recycling programmes in a number of low income areas of the city. The programme encompasses environmental, social and economic development goals demonstrating the cross cutting nature of many of the opportunities to engage in environmentally sound technologies, however limited their scope might be. The neighborhood is participating in the recycling services. These neighborhood enterprises collect cardboard, mixed paper, newsprint, glass, metals and plastics, all materials that are recyclable and in demand by brokers and users of secondary materials. The proceeds from the sale of these recyclables is used to fund other neighborhood improvement projects.

There was an emphasis on building coalitions and partnerships, of engaging an ever widening circle of stakeholders in the programme. While the project was the vision of one councillor, he quickly involved his neighbors and then other key elected officials and municipal officers to gain the necessary support and resources to put the programme in place. The programme has demonstrated that community participation can help municipalities mobilize resources and expertise within local communities to design and implement appropriate service delivery strategies that foster sustainable approaches to social and economic development.

To summarize, Councillor Sevilla and his assistant demonstrated their ability to manage change in their neighborhood. Their efforts utilized many of the tools we have been discussing: awareness, vision, partners, coalitions, stakeholders and the importance of reaching out to others in initiating and implementing sustainable development efforts, however small. There is one other point we would like to emphasize. Remember our earlier discussion about the need to *conceptualize* before you begin to en-vision what you might want as a future result. In the case study about Quito's recycling programme, the author says the decentralization process "generated new ways of **conceptualizing** service delivery and has created a climate in which senior municipal officials are receptive to innovation."⁽¹⁴⁾

Reflection

1. Who are the major stakeholders you and your councillor colleagues rely on now to address development-environment concerns? Who else do you believe should be involved?

2. What are their principal interests in the development-environment dialogue?

3. What do you, as a **Guardian of the Environment**, want or need from these key stakeholders?

4. How can you achieve the results you want or need, working with these stakeholders?

The importance of transparency and openness

Before putting these tools back in the toolbox and reaching for our assessment tool, we want to make a final observation. To reinforce our point we will call on a major stakeholder as our witness. When we begin to involve partners and build coalitions for sustainable development, we must also be aware (this tool keeps reappearing!) of the importance of transparency [disclosure] and openness in developing problem solving relationships. The International Finance Corporation (IFC), the private investment arm of the World Bank Group, recently made an announcement that it would “increase transparency and public access to information as part of a strengthened effort to ensure that the views of local communities and environmental considerations are factored into project design and investment decision making.”⁽¹⁵⁾ The announcement goes on to stress the importance of consulting with the people likely to be affected by projects that have significant environmental impact. One wonders how many large development schemes (by the World Bank Group and other major investment institutions) would have been done differently, or even initiated over the past few decades, if policies of increased transparency and public access to information had been the norm.

Involving partners and building coalitions in development requires a high level of transparency and openness if the new relationships are to be productive. And, this means greater opportunities to test the long term viability and sustainability of new investments with those who will be left with the consequences when the investment bankers move on. One of the “key improvements” in the IFC disclosure policy is: *making environmental assessments publicly available as soon as possible in the project’s appraisal stage*. This suggests disclosure happens after the assessment has been done. We are, of course, advocating that the assessment process is strengthened when it involves the key stakeholders. If you recall, they are the people *with information, with authority and resources to act, and those who will be affected by what happens*.

While experts are often loath to open their decisions to public scrutiny and input from the “less informed,” the world is strewn with environmentally unsafe investments and unsustainable development programmes. Involving partners and building coalitions are important tools to councillors for closing the gap that often exists between economic development decisions and environmentally sound decisions. Central to better decision making through the involvement of others are norms of transparency and openness. Let the sun shine in!

3. ASSESSING RISKS

Assessing Risks is the process of taking your awareness and pursuing it further through additional data gathering, information expansion, analysis and confirmation. Assessing risks is concerned with problem finding, a diagnostic process that sheds light on barriers to sustainable development and environmental protection. Assessment results in greater clarity regarding the situation you hope to influence in your policies, decisions and actions as elected leaders in your community. Assessment should increase your confidence in these policies, decisions and actions; confidence that they will produce the outcomes you want.

In the literature you will find a number of assessment techniques with, sometimes, rather confusing names. Out of this host of assessment methods, we want to briefly introduce only two: Environmental Risk Assessment (EnRA) and Environmental Technology Assessment (EnTA). These are major strategic planning tools for decision making in environmental management. While EnRA evaluates the environmental status of, e.g., a city, to predict future consequences of exposure to hazards, EnTA mainly focuses on the ecological opportunities and risks of new technologies. Environmental Technology Assessment, however, would also include in the analysis – to give an example - trade-offs between economic and ecological impacts.

EnTA can be done in the context of problem finding (acknowledging that the technology itself can be problematic) and as a process for evaluating alternative technical solutions to a problem. In the first context, EnTA is integral to the risk assessment. In the second, it becomes a legitimate tool for evaluating options for action. The case studies that follow are designed to illustrate the range of possibilities in the environmental risk assessment process. But before we present them, here are some concerns about relying too heavily upon experts to conduct either of these assessment tasks.

Assessment traps to avoid

Assessments, either of the risk or technology kind, can become so complicated that they are taken over, or perhaps handed over, to the experts. That may have been part of the problem in Nakuru where the flamingos departed the local scene and took most of the tourists with them. Technical specialists are essential to understanding and resolving most environmental challenges and should be brought into decision making and problem solving processes. However, we are concerned that local government councils often allow the assessment process to be taken over *by experts and specialists*, or they *hand it over* to the technical specialists without providing for proper *oversight*.

(Overseer: this is another of those important roles you have as an elected leader. Fortunately, it is covered in one of the companion handbooks in this series.)

Another potential trap in using the assessment tool is to become over confident in the conclusions that can be drawn from the data, when you and your elected colleagues make decisions. There is nothing as reassuring as a bunch of complicated data, even when it is wrong. Think about it. How many times have you, as a councillor, been lured into a decision based on the “validity of the numbers”? While we have waved this red flag of warning about over-reliance on the “predictability” of hard data, we also recognize the importance of technical experts and their counsel on environmental/development issues of increasing complexity.

And, of course, there is the trap of believing a comprehensive assessment of some environmental risk in your community, at some specific point in time, removes the need to continue the assessing process over time. The dynamics of interplay between physical, economic and social development, and the natural environment, is such that assessment must be an ongoing process.

Examples of risk assessment and appropriate technology for assessment

Assessment doesn't have to be complicated or comprehensive, although it can be both. In the three cases that follow, we discuss three very different approaches to environmental risk assessment.

1. The comprehensive environmental risk assessment carried out in Lancashire County, UK had many objectives, including: establishing baseline information on a wide range of environmental risks; identifying information gaps; and, enlisting the involvement and support of 65 key institutions, representing all major stakeholders, in the information gathering and analysis process with an explicit assumption that they would participate in problem solving.
2. The environmental risk assessment conducted on the Paco Estuary (in metropolitan Manila) had a much narrower mandate and objective. It was conducted by a non-governmental organization and paid for by a private firm operating within the community. The corporation's motive in having the assessment conducted was largely self serving (to clear its name by determining the real sources of pollution along and in the Paco Estuary) but it resulted in positive action taken by the community to address the sources of pollution.
3. In West Africa, an agricultural research institute undertook an anticipatory, or prevention oriented, environmental risk assessment project that turned the sequential process of assessing risks and problem solving (which also requires environmental technology assessment) on its head. They initially focused on the introduction of appropriate technologies that would address a range of practical concerns including sustainable development and preservation of the environment.

Philippines

At the Second Annual World Bank Conference on Environmentally Sustainable Development, 1994, Elisea Gozun, Coordinator, Metropolitan Environmental Improvement Project, Manila, reported on the role of community governance in urban environmental management. While her presentation covered a wide range of topics and experiences in the metropolitan area, we want to focus on her comments about how one community came to grips with a pervasive pollution problem through an assessment conducted from the outside.

While there was general *awareness* of the pollution problem in the community, a large multinational corporation was consistently thought to be the major contributor to the pollution in and along the Paco Estuary. Perhaps out of self defense, the corporation commissioned an NGO to study the problem, in other words, to *carry out an assessment*. When the assessment was completed, it revealed the Paco Public Market as the primary culprit. Assessment information isn't worth much if it isn't shared and acted upon, so a public workshop was held to share the results. Recognizing the need for *partners* and *coalitions* in any permanent resolution of the pollution problem in and along the Paco Estuary, the sponsors invited a wide range of *stakeholders* to attend. They included vendors, hawkers, market administrators, local elected officials, corporate officers working in the community, and representatives of metropolitan and national government agencies.

While the main source of pollution had been identified through an external assessment, it didn't stop the participants from pointing their fingers at everyone else as the culprit. Ultimately, the blame placing stopped and the major contributors of pollution signed an agreement to plan and implement a waste minimization project to stop the pollution of Paco Creek.

Assessment alone won't overcome sources of environmental degradation. As Ms. Gozun pointed out in her presentation: *The community must understand the problem and must be willing to act; and, individual members of the community must have a sense of ownership in the solution.* While many organizations (public, NGO and private) contributed to the success of the Paco Environmental Enhancement Project, the most heartening contribution came from the street vendors and hawkers. They spent personal time and effort to clean the Paco Estuary and hired their own street sweeper to help sustain the environmental quality resulting from the restoration effort.

United Kingdom

Lancashire County in the west-central part of the island of Britain lives with an environmental legacy that dates from the beginning of the industrial revolution. With a traditional economic base of mining and manufacturing based on technology that largely ignored environmental consequences, the county has had to work uphill to overcome past indiscretions against nature. But this *awareness*, coupled with a *vision* of what their future can be, in terms of sustainable development, is a story worth sharing. In 1990, the County Council of Lancashire (an urban community of 1.4 million people), motivated by the public's concern with both local and global environmental issues, funded the initial step in a six stage strategy to improve the quality of the local environment. This initial phase, financed solely from local tax revenue, was a comprehensive environmental audit (*assessment*) designed to "provide the people of Lancashire, and all interested parties, with the first comprehensive picture of their environment."

The audit, compiled over two years by a full time staff of five, resulted in a 325 page document that details all aspects of the county's environment, from topography to types of wildlife habitat to sites of significant noise pollution. Since most citizens can't be expected to read such a heavy tome, the county condensed the report to 60 pages for dissemination to citizens and other interested parties.

While the preparation of the audit was primarily the responsibility of the five person team, they had lots of *partners* and *coalitions* to work with. One important *partner* was the Geographic Information System staff while an invaluable *coalition* was the Lancashire Environmental Forum, a broad-based environmental *stakeholders* organization formed by the Steering Committee of the County Council. The Forum represented over 65 organizations within the county, including government agencies, industry, other forms of local government, NGOs, community groups, and academic institutions. The breadth of representation was designed to accomplish several objectives:

- to assure the broadest possible understanding of environmental conditions and attitudes within the community;
- to increase ownership of the audit and its consequences beyond the boundaries of local government;
- to serve as a focus for implementing recommendations and actions resulting from the audit; and
- to serve as conduits for information assembled by the audit team.

All are important, but we want to emphasize the last point. The data used in the audit (assessment) was not created by the team but rather gathered from other sources. The council recognized early on that most of what they needed to know about the environment in their large urban community was already known by some organization or person. The audit team's task was to ferret out the information and bring it together into a cohesive document.

The Green Audit had six objectives, all designed to turn the information and data in the audit into follow up actions. In other words, to assure it would not become a dust collector in the county's archives. These were to:

1. Provide a comprehensive statement and analysis of the present condition of Lancashire's environment.
2. Establish baseline information against which changes in the county's environment could be measured in the future.
3. Identify gaps in available information.
4. Furnish data essential to the task of deciding which actions to take on the environment.
5. Help the county and other levels of government assure their services are delivered in an environmentally friendly manner.
6. To enlist support of the people and organizations of Lancashire and other bodies in protecting the environment of the county. ⁽¹⁶⁾

Ghana

The Food Research Institute in Ghana saw the need to introduce appropriate technologies to reduce post-harvest losses and to provide technical support for the development and growth of the local food processing industry. Assessment techniques included direct observation, individual and group interviews with key stakeholders, including the target beneficiaries, and review of available written information sources about the history of local post-harvest losses and alternative technologies to reduce the losses.

Since the two main crops focused on by the Institute were fish and cassava, the socio-economic issues were quite different. Working closely with the fishermen and farmers, the Institute developed a list of constraints, needs and priorities. Criteria that influenced the final design of new technologies included:

- alleviation of drudgery;
- technical efficiency;
- ease of operation and maintenance
- choice of readily available, affordable and renewable energy sources;
- capacities to meet individual, group or community needs;
- flexibility of design to allow for adaptation; and
- affordability of technology by the target group.

The final criteria were important to assure that adoption of new technology wouldn't suddenly shift production to another socio-economic group, either within the community or beyond its boundaries. Affordability and sustainability were enhanced by opportunities to manufacture equipment and spare parts locally.

The assessment phase included pilot projects where the new technology was tested in relation to the criteria listed above. When Abigail Andah from the Food Research Institute spoke about their efforts at a Regional Workshop on Technology Needs Assessment in Support of the Transfer of Environmentally Sound Technologies, she reported that over 100 towns and villages in Ghana and neighboring countries had adopted sustainable technologies to process and preserve two of the main food products in the region.

We have looked at the use of assessment tools in three very different contexts as they relate to environmental issues and your role as **Guardian of the Environment**: assessing the viability and acceptance of new environmentally sound technologies along the coast of West Africa; finding the real source of pollution in one of the communities within the metropolitan complex of greater Manila; and, finally, a look at how an old industrial city in England built an information base for environmental decision making based on a collection of *assessments* carried out by other organizations.

More specifics about environmental risk assessment

The techniques used in environmental risk assessment are not new. In their rudimentary form they date back to the last century, evaluating the probability of a particular adverse effect occurring to humans or the environment as a consequence of specific actions. The actuarial tables estimating the life expectancy of men and women for insurance purposes is an example of the early use of the technology. The process of assessing environmental risk to humans grew more sophisticated over the years as exposure to certain elements became more prevalent. For example, the level of chemical risk to the human body was equated by looking at two fundamental variables, *toxicity* and *exposure*.

According to the experts, a risk does not exist unless two criteria are met:

1. The agent has the inherent ability to cause an adverse effect.
2. The receptor (individual organism or population) of concern is in contact with an agent for long enough, and at sufficient intensity, to elicit a response.

One of the authors had a direct experience with this assessment process when he was living in a village in South Asia many years ago. After becoming the host of some nasty amoebae, he sought a physician who fed him arsenic, but only enough to kill the squatter population (no pun intended). In this case the *Human Health Risk Assessment* (HHRA) was measured between two adverse consequences.

EnRA becomes more complicated when it takes on the challenge of estimating the environmental risk to ecological systems (expanding the definition to encompass the risks to all non-human elements in the environment). The experts call this technique *Ecological Risk Assessment*, or *EcoRA*. And, they point out three distinct differences between HHRA and EcoRA.

1. EcoRA can consider effects beyond those on individuals of a single species and may examine population, community, or ecosystem impacts.
2. There is no one set of assessment endpoints (environmental values to be protected) that can be generally applied.
3. Evaluation of the possible effects of non-chemical stressing agents are integrated into the Ecological Risk Assessment.⁽¹⁷⁾

Let's see if we can make sense out of these differences from a non-technician's perspective. Let us assume that some highly insensitive entrepreneur has created a junk yard of spent vehicles in your residential neighborhood. While it offends your aesthetic sensitivities, you are certain that it also has an impact on the community and larger ecosystem. For example, harbouring rats and eventually leaching certain unfriendly elements into the nearby estuary. The environmental values to be protected (assessment endpoints) are also a bit unclear; otherwise, why are there so many automotive junkyards in the world. Finally, the ecological risk assessors factor in the non-chemical stressing agents. You and your neighbors are suffering from emotional anxiety and visual deprivation, not to mention the possibility of some new strain of bubonic plague caused by rats ingesting high levels of used rubber and polyester seat covers into their daily diet. Given these fundamental differences, we are probably dealing with an ecological risk rather than a human health risk but an environmental risk nevertheless.

While this interpretation of the basic differences between the two types of environmental risks is no doubt simplistic and perhaps even misleading, it emphasizes the dilemma most lay persons are confronted with when trying to make sense out of complex, long range ecological impacts of every day living arrangements we have come to take for granted. For most of us it is difficult, if not impossible, to fathom the ecological impact we are having on the ozone layer every time we push the release button on a pressurized can of whatever. And yet, this individual act of indiscretion when multiplied by billions of similar acts around the world on any given day, if not restrained, will surely impact at some point on our ability to survive as residents of Planet Earth.

Human Health Risk + Ecological Risk = Economic Disaster in Surat, India and Other World Communities

When the Black Plague swept across Europe and Asia in the Middle Ages, it killed about one fourth of the population in Western Europe. As environmental and health standards improved around the world, the fear of plagues and recognition of the human devastation they could bring receded from our collective memories. Consequently, the world community was shocked when the Black Death scourge struck Surat, India in 1994. It was a chilling reminder of how rapid urbanization and the deterioration of the urban environment can bring people into contact with forgotten disease vectors.

While the outbreak of pneumonic plague in Surat was brought under control quickly, (keeping the death toll under 60), the human health risk was potentially devastating and the ecological risk factors still remain. Urban crowding and poor sanitation can provide ideal conditions for the spread of this type of plague. When the squalid living conditions that exist among the urban poor in Surat were combined with two natural disasters in the area (an earthquake and monsoon flooding), experts believe the stage was set for an influx of plague infected rats into the city from the surrounding forested areas.

This type of plague, if left untreated, can kill 100% of its victims and the fear of an epidemic in Surat was so intense that one quarter of the population of 2.2 million fled the city within four days. Fortunately, the death toll was relatively minor but the economic toll on the city and country was temporarily devastating. In financial terms, it was estimated the plague cost the Indian economy over \$600 million. More than 45,000 people canceled their travel plans to India, and the hotel occupancy dropped as low as 20% in some cities. Many countries stopped air and sea shipments to India altogether. In total, exports from the country suffered a \$420 million loss.

Surat is not an isolated example of the cost of ignoring the negative potential of environmental consequences to the social and economic fabric of urban communities. Vector borne diseases are largely preventable and the cost of prevention is often a fraction of what it can cost to engage in damage control once the "rat" is out of control.⁽¹⁸⁾

The challenge for local elected officials, as **Guardians of the Environment**, is to make sense out of these differences so they can be translated into environmental policies, programmes and actions that foster sustainable development in their individual communities. In order to undertake an ecological risk assessment, or more broadly defined, an environmental risk assessment, the UNEP International Environmental Technology Centre (IETC) recommends a three step process:

1. Problem formulation;
2. Analysis of the potential exposure and ecological effects; and,
3. Risk characterization (integration of the iterative analysis of exposure and effects).

Problem formulation, or what we prefer to call *problem finding*, is taking your collective *awareness* of the environmental concerns you believe are most critical (as expressed within the council and community) and focusing in on them. To formulate the problem is to hold an intense dialogue with it (e.g., *Why* are you a problem to us? Where are you a problem? When? How? What would happen if we didn't take any action to solve the problem? And always back to *Why?*). What you are looking for in this problem finding phase are quantitative and qualitative descriptions of the environmental conditions that provide wide-spread assurances that this is a problem you, as a council and community, are willing to deal with. Not all people will find (define) an ecological problem in the same way. Values and personal interests will quickly interject themselves into the dialogue and that's where the second two steps in the process can be useful in moving the assessment along.

The analysis stage pinpoints the extent and short and long range consequences of the environmental exposure confronting the community. The final step in the EnRA is the integration of these two factors (exposure and effect), a process the experts call *risk characterization*.

EnRA can be a complex and technically demanding process, one which will require your council to call on the knowledge, skills and experience of specialists. Often these experts are within your community. Other times you may have to search beyond the "city limits" for technical assistance. (Remember the earlier comment on the scarcity of ecologists in some parts of the world?) Nevertheless, it is important to realize that technical information is only part of the equation when it comes to solving complex environmental problems. Common sense and grassroots experience in dealing with the consequences of the problem (long before it became acknowledged by the council as a "problem") are equally important in any effort to seek long term and sustainable solutions.

We have talked about the importance of involving key stakeholders in the process of managing sustainable development. At no stage in that process is it more important to select the stakeholders with care and deliberation than in the *assessment of environmental and ecological risks*.

As IETC reminds us, *it is imperative that environmental risk assessment be based on mutual learning, sharing, and defining fears, expectations, hidden agendas, and values. Change, differing concepts of the world, and most importantly, the concept of human dignity must be recognized. After all, risk management is, in the end, a human judgment endeavour.*

Reflection

RISK! Before closing this drawer in your toolbox, think about the environmental risks that exist in your community. Record in the space below what you believe to be the three most important and urgent environmental risks facing your community at this time.

1. _____

2. _____

3. _____

4. DETERMINING OPTION AND CONSEQUENCES

Once the environmental risks are assessed, either past, present or future, councillors, organizations and communities are expected to make informed decisions that will eliminate or mitigate past indiscretions (sounds better than "mistakes"), resolve current problems, and keep new problems from happening in the future. When these kinds of decisions are

made, elected leaders, their managerial and technical staff and the extended family of decision makers in the community who need to be involved should consider both *the options* available to address the environmental risks and *the consequences* of each option. This is the “what are” and “what if” stages of environmental decision making. What are the realistic options? What will be the short term and long term consequences, *if* we decide to adopt a particular option or set of options to address the environmental risk(s)?

One caveat before we move on. Researching the options to be considered in addressing environmental risks, and the consequences of each, can be a complicated process. It will require the council to rely heavily upon its staff and occasionally on external experts, or technical specialists. This doesn't mean a “hands-off” attitude by elected leaders. Your role in setting policy guidelines, articulating community goals and ultimately deciding the allocation of scarce resources will continue to be the framework within which technical options and consequences must be considered. And, you need to challenge the staff and other specialists to be both rigorous and creative when presenting the council with options for addressing environmental risks. Encourage them to challenge you and others with new ways of thinking about environmental issues when presenting their recommendations.

Our intent, in describing this part of the toolbox, is not to make you technical experts but rather to arm you with some insights and ideas about the task of *environmental technology assessment* (EnTA) so your own role as **Guardian of the Environment** can be strengthened when technical proposals are brought before council for consideration. We will not be discussing the many nuances involved in the art of decision making. That task is better left to management texts.

Nakuru Revisited

Let's return to Nakuru for a moment as a way of understanding the importance and difficulty of choosing among technical options. While the option of creating a series of new lagoons is often a cost effective and “environmentally sound” alternative for dealing with liquid waste in a relatively small community, it had unexpected consequences when applied to the situation in Nakuru. It also raised the level of debate and discussion about the technical options in the national press and among concerned citizens and officials. We believe this new level of openness, resulting from the experience, will serve those who live beyond the shores of Lake Nakuru.

Harvey Brooks, in an insightful article on sustainable development and environmentally sound technology (and we will get to what this means in a moment), makes two points that are relevant to the situations like those experienced in Nakuru. First,

Dialogues among potentially affected stakeholders are important for the social sustainability of socio-ecological and socio-technological systems, but these dialogues may be insufficient without a method for surrogate representation of interests and perspectives that otherwise cannot participate (for example, young children or future generations).⁽¹⁹⁾

Imagine the citizens of Nakuru held a community dialogue about the liquid waste disposal problem and invited the flamingos to attend. Of course, this sounds silly. But, the flamingos were important stakeholders in the decision that was made in Nakuru and apparently their interests were not fully represented. What Brooks is suggesting we do in cases like this is provide surrogate representation of interests and perspectives that otherwise cannot participate. We talked earlier about the need to be creative and to think divergently. Perhaps there are times when asking individuals to represent stakeholders who can't be present at community dialogues might provide the input needed to understand future consequences from a different and important perspective. All of us might feel a bit foolish playing the role of a flamingo, but then, look at the consequences in Nakuru of not representing this important economic and environmental stakeholder.

Brooks also says:

“One of the greatest threats to sustainability in development may be the appearance of surprises and discontinuities that are unanticipated or impossible to anticipate. One of the major challenges to policy analysis for sustainable development is how to cope with such surprises-how to better foresee the possibility of improbable events and develop contingency plans or “hedging” strategies, given the low probability and random timing of any single event.”⁽²⁰⁾

We would add that policy makers and decision makers, in addition to policy analysts, must be prepared to cope with such surprises and the best coping mechanism is to foresee to the extent possible the consequences of your actions before they are taken. *Sustainability is primarily about present options and choices as constrained by past decisions and commitments.* Sorting through options and determining their consequences is an exercise that demands us to reach back into the past and to stretch forward into the future for clues that will make current decisions as timeless as possible.

The art and science of environmental technology

Environmental technology assessment is both an art (the political process of being roughly right in due time rather than precisely right too late) and science (the conduct of scientific inquiry to better understand the consequences of various actions before they become real). At the heart of EnTA is interaction between the political decision making process and efforts by the scientific community to develop readily applicable environmentally sound technologies (ESTs). The United Nations Conference on Environment and Development in Rio provided a definition of ESTs that still stands:

“Environmentally sound technologies protect the environment, are less polluting, use all resources in a more sustainable manner, recycle more of their wastes and products, and handle residual wastes in a more acceptable manner than the technologies for which they were substitutes.”

While this definition makes ESTs sound like the application of scientific methods and technological hardware, the UNEP International Environmental Technology Centre (IETC) in Japan adds that ESTs are a systems approach to problem solving that “includes know-how, procedures, goods and services, and equipment as well as organizational and managerial procedures.” From the perspective of the councillor as **Guardian of the Environment**, the art of EnTA is to assure that the criteria laid down in Rio and elaborated by the UNEP’s IETC become the guidelines by which your council makes decisions that have an impact on the environment. To better understand this mandate, we need to look more closely at what the experts say about EnTA as a scientific and political decision making process (the fourth drawer in our toolbox, the one labeled, *Determining Options and Consequences*).

Revival of the Moribund Rhine

For decades the Rhine River was known as the “sewer of Europe.” By 1970, the Rhine was dead. The daily deluge of untreated waste had depleted its oxygen and much of the aquatic fauna had vanished. Mercury and other deadly elements in the sludge were off the charts. Contamination was so rampant that a 160 mile stretch of the river near Cologne had been declared a danger zone. And then, something happened. The politicians got serious. But, not until a fire in a Swiss chemical plant dumped a deadly cocktail of toxic wastes into the river, killing tons of fish and other animals and prompting a drinking water alert for 50 million people down stream.

In the previous quarter century, European governments had spent close to \$70 billion in a largely fruitless effort to curb the pollution. Mere money and technology were not enough to turn the tide and restore life to the Rhine. While the politicians talked for decades (mostly in an effort to place blame elsewhere) the river deteriorated. The fire near Basel, Switzerland, turned the heat up on the elected and appointed leaders. Goaded by their constituents, the politicians finally acted-and acted in unison. In November 1995, nearly fifty years after their departure, salmon and sea trout had returned to the banks of this historic waterway.

Is there a moral to this tale? Yes. When the options are narrow, the consequences are often wide. Technology was not enough to save the Rhine, even \$70 BILLION worth! Governments and businesses needed a common understanding, commitment and agenda for action if results were to be achieved. Rigid safety precautions were adopted and enforced, involving a myriad of state and local governments; factories that generated dangerous wastes were moved away from the river to prevent accidental spills from going berserk; chemical companies donated hundreds of millions of dollars to universities and research centres to find new environmentally sound technologies and to win back disenchanted customers. But best of all, people from all spheres of influence and power began to talk with each other, not past each other. Dialogue had become necessary and fruitful.

An old Ethiopian proverb says, “when spider webs unite, they can tie up a lion.” While the battle for the life and soul of the Rhine is not yet won, the monumental progress made in the past decade has proven beyond a doubt the need for a systems approach to complex environmental challenges like the deteriorating state of this important European waterway. By employing a wide range of environmentally sound technologies from sophisticated hardware to managerial skills; unified legislative mandates; citizen involvement; enlightened self-interest; and, yes, courageous and selfless elected local and national leaders, a reprieve was sought and found for the river that emerges from the pristine lakes of Switzerland and makes its way to the Northern seas. ⁽²¹⁾

Types of technology

Environmentally sound technologies are those that contribute to solving environmental problems, or enhancing environmental opportunities, by reducing risk, improving cost efficiencies (so money can be conserved to serve other environmental needs), enhancing process effectiveness (achieving results more quickly), and create products, goods, services and processing mechanisms that are environmentally beneficial and, in the least - worst case scenario, environmentally benign. Environmental technologies can be more easily understood by breaking them into four categories: *cleaner production technologies; monitoring and assessment technologies; mitigation technologies; and local legislative mandates*. Listed below are illustrations of these categories of environmental technologies.

Cleaner production technologies

- legal mandates that eliminate the manufacture and use of certain harmful products
- educational efforts that enlighten the community to eliminate or minimize practices that do harm to the environment
- cleaner production (process) technologies in the industry sector reduce pollutants and the amounts of energy and natural resources needed to produce, market and use outputs by introducing changes to the core production technology.

Monitoring and assessment technologies

- routine evaluation of harmful emissions to assure that they fall within established standards of performance
- assessing the potential of new environmental practices to encourage their adoption
- require industry to disclose publicly chemicals and toxic hazards in their operations

Mitigation technologies

- end-of-pipe technology (involving the installation of equipment for treatment of pollution after it has been generated)
- restoring open pit mine areas to productive use
- isolating the deterioration of waste materials to assure minimum spread of harmful effects
- retraining personnel to operate equipment differently from past practices that have resulted in environmental degradation
- rendering materials harmless before they enter the environment

Local legislative mandates

- mandating certain standards and imposing penalties on those who violate them
- registration of all pesticides required with applicant certification and pre-market testing
- enforcement of toxic waste disposal regulations

Because local legislative mandates in the form of policies and administrative regulations are so important as a local government resource, they are often an integral function in the application of the other three types of environmental technologies.

Reflection

Stop for a moment and consider the types of environmental technologies available to councillors and local governments. In the space below, record examples of ways your local government and community have used these types of technologies to improve the environment, and opportunities for new uses.

<p>Cleaner Production Technologies</p> <p>Examples in use:</p> <hr/> <hr/> <p>Ones to consider:</p> <hr/> <hr/> <p>Monitoring/assessment technologies</p> <p>Examples in use:</p> <hr/> <hr/> <p>Ones to consider:</p>
--

Mitigation and restoration technologies

Examples in use:

Ones to consider:

Local legislative mandates

Examples in use:

Ones to consider:

While we could say much more about the process of assessing environmental technologies, and it is tempting, we realize your role as elected official is not to delve too deeply into the technical aspects of the myriad issues that come before council. This is the responsibility of local government staff and consulting specialists. Nevertheless, it is important to be able to evaluate the merits of environmental consequences and the potential consequences of their application, both short term and long run.

5. MOBILIZING RESOURCES

After using your *option and consequence* tool, it is time to open the fifth drawer in your toolbox. In this drawer are the tools you will need to garner the resources necessary to implement the agreed upon environmental technologies. If council has used its technology assessment tools effectively (assuring that no foreseen short term or long range adverse consequences will be incurred), the task of getting the resources should be made less difficult. (Note that we refrain from encouraging you to think that sustainable development will ever be easy!)

Several dictums should govern your actions at this point:

1. Given local government's many responsibilities, public resources alone will not be adequate to solve environmental problems and achieve a satisfactory level of sustainable development within your community.
2. Your local government organization is potentially your most valuable resource. Please note our qualifier, potentially. We will discuss this point in a moment, but suffice to say for now, most local government organizations are given neither the resources nor the responsibilities required to be your greatest ally in achieving a higher level of sustainable development.
3. Local government's role as Guardian of the Environment is enhanced when councillors and staff become *facilitators, enablers, power brokers, and negotiators, rather than implementers*, in forging new sustainable development endeavors.
4. Every individual, every group of individuals, every organization and institution in your community (and all the resources they represent) are resources to be mobilized. Please note the inclusive term *every*.

Every community is a bounty of potential resources

Environmental challenges affect all kinds of people, groups, organizations and special interests within the community. In many ways, this is good news. It means there are resources to be tapped that go far beyond the organizational boundaries of your local government and the physical boundaries of your community. When we said earlier that local self-governance is the *keystone* for environmentally sound development, we were recognizing the potential powers that are vested in open, democratic institutions at the local level. We want to remind you once again about the importance of elected leaders and local governments being the *keystone* or the mechanism that *supplies capability for action*. As Guardians of the Environment, councillors can become *keystones* for change by supplying capacity for action to the myriad of individuals, groups and organizations that make up your community. Mobilizing resources is often as simple as reaching out and involving others in decision making and problem solving.

To prove our point, we want to share some action words that Joseph Coates and Ashok Jain use to describe the options open to non-governmental organizations to either make your life miserable as a public official, or become one of your most valuable resources in addressing the development-environment challenge. ⁽²²⁾

√promote standards √supply volunteers √support policies √advocate √harass √educate √lobby √offer expert advise
√testify √raise money √organize √train √provide seals of approval √analyze and evaluate √publicize √campaign
√take direct action √communicate

It's quite a list. And, we suspect each of you could add more to it. The same is true of private sector organizations. We discussed earlier some of the things corporations are doing on their own to promote sustainable development. But, many of us who have served local governments in leadership roles find it difficult to reach out, to involve the larger community in tasks that have been traditionally defined as public responsibilities. Since this is a rather common dilemma, we think it might be useful to look in our "public official behaviour closet" to see what is hidden there. Here are some of the mental barriers we find that tend to make us less than effective in our role as *environmental guardians*.

Mental Barrier No. 1: *The small fish in the big pond syndrome. Whatever we do as a local government won't make any difference in the long run so why bother.* When this mental barrier jumps political boundaries and spreads from community to community, it takes on the characteristics of an infectious plague and nobody does anything to assure sustainable development. Luckily, there is growing realization that local governments are the pivots of environmentally sound development. Whatever one community does or does not do to take responsibility in this complex domain ultimately will have an impact, not only on its own citizens, but those beyond its boundaries.

Mental Barrier No. 2: An equally demobilizing barrier is the collective action of councils to buy into what someone called the *killer phrases*. You've heard them all during your service on council and maybe even uttered one or two of them on some rare occasion. They go something like this: "We tried that before ..." "Great idea but not for us..." "It may have worked somewhere else but it'll never work here"... "Don't be ridiculous..." "The citizens will never go for it..." "It isn't our responsibility..." "You've got to be joking..." "Look, I've only got two years left before I run for re-election..." "It's not in the budget..." "If the state can't do anything to solve the problem what makes you think we can..." and, of course, the old reliable standby which seems to work when just about anybody suggests any thing new, "Yes, but ..." Well, you get the picture.

Mental Barrier No. 3: Perhaps the barrier that constrains sustainable development most is *the growing tendency to deal with complex issues in fragmented bits and pieces*. Although just about every action we take, as individuals and communities, is connected to everything else in our lives, we tend to engage in incremental and fragmented approaches to problem solving. This often leads to inadequate solutions. What we need is a healthy skepticism of simplistic solutions and the courage to move beyond our own experience in search of new responses.

One of the best ways to understand the dilemma created by fragmented problem solving is to look at your own local government organization and how it thinks and functions in an increasingly complex and interconnected world. At the beginning of this discussion about resources, we said your own local government organization is potentially your greatest resource for implementing your leadership as **Guardian of the Environment**. Unfortunately, the tendency to think and act in fragmented ways often shields local government organizations and their leaders from systemic thinking and actions.

This barrier is reinforced by the collection of policies, organizational structures, procedures, rules, regulations, and established ways of doing things that have been defined and refined over long periods of time. When a law is passed, an institution created, a procedure put in place, they take on a life of their own. When this happens, it is difficult to retrace the legal footsteps, challenge the permanency that institutions assume, and take back the power vested in bureaucratic rules and regulations.

Examples of fragmented organization behaviour

Let's look at some of the more obvious limitations to sustainable development that reside within the walls of our local governments and often lead to fragmented thinking and ineffective organizational behaviour:

1. Chronic problems of working across departmental, professional and governmental boundaries to address complex environmental and urban development challenges that ignore all of these invisible but often impenetrable barriers in their search for resolution.
2. Lack of any effective strategic planning capability to forge long-term, broad-scale perspectives that are proactive and visionary.
3. Outdated and ineffectual land use and physical planning concepts and practices that assume a top-down, high control posture over land uses and activities in a dynamic world that has long ago exposed the irrelevance of such mechanisms.
4. Inadequate ways of involving the public and key stakeholders in an on-going dialogue that leads to consensus and collaborative efforts in planning, decision making, and problem solving;
5. Lack of working models to encourage and ensure productive public-private partnerships that address the duality of purpose in sustainable development endeavors;
6. The anemic state of local government finances brought on by central control, lack of sufficient options to raise local revenue, and the dearth of local expertise and experience in the array of financial management tools and strategies necessary to implement and manage sustainable development opportunities;
7. Failure to use financial incentives and disincentives to achieve sustainable development and environmental protection goals (e.g., penalties for environmental violations; tax breaks for industries that install pollution control devices).
8. Shortage of appropriate skills and experience required to apply and operate environmental management and urban development systems (both within local governments and the larger community) and the capacity to keep pace with emergent human resource development needs.
9. Outmoded and inadequate information gathering and processing capabilities brought on by failures to share what is already known, the inability to access and process data and information easily and quickly, and the norm that sharing information is equivalent to losing control.
10. Reluctance to empower every employee and official in local government to contribute their fullest potential in building economically viable, environmentally sound communities.

Reflection

We suggest you stop for a moment and consider the list of organizational concerns listed above. As you review them, are there particular maladies you believe are particularly characteristic of your local government organization? In the space below, take some time to record the most problematic concerns and what you believe might be done to address them.

1.	I believe the following organizational limitations impede our ability as councillors to pursue the goals of sustainable development: <hr/> <hr/>
2.	Here are some steps I believe we could take as a council to remove these barriers: <hr/> <hr/>

This litany of organization maladies may seem awesome to many of you. They are not, however, insurmountable. They are, more often than not, man-made and, therefore, can be undone by human endeavors. (We, as authors, recognize the potential incorrectness of the term "man-made" but want to emphasize that, in fact, most of the maladies just listed are made by men who still control a lion's share of the world's resources and make most of the critical decisions.) The

potential for sustainable development will be greatly enhanced when these inequities are addressed. We encourage you to conduct a thorough assessment of your local government's institutional capacity to undertake forward looking, aggressive programmes of sustainable development.

Seeking out unlikely partners and coalitions

We have talked here and earlier about the importance of forging partnerships and coalitions with institutions, organizations, groups and individuals beyond the boundaries of your own local government. And, the challenges of reaffirming and re-establishing a leadership role for your local government staff and organization.

Before we move to a discussion about the last drawer in our environmental toolbox, *Achieving and Sustaining Results*, we want share an experience from Calcutta, one of those cities that define the future of urban living in many developing countries. The story is significant because it describes the courage and fortitude of two men, one of whom influenced the direction of a large public bureaucracy that was rampant with organizational maladies. They also established some unusual partners and coalitions on the way to success.

Sunshine in the "City of dreadful night"

Kipling's tales of Calcutta, in his classic *City of Dreadful Night*, conjured up images of poverty, overcrowding and human chaos. The images continue as the city, built for a million people, stretches far beyond 10 million souls and continues to grow bigger and more chaotic each waking day. But Calcutta is also a dynamic and exciting urban environment and the challenge to survive by the poorest of the poor in Calcutta has brought new meaning to the notion that poverty is the mother of invention. Some of the most innovative and resourceful efforts to meet the needs of the urban poor and cope with impending environmental disaster have emerged from the ranks of the "natural ecologists," marsh farmers and fishermen who work and live on the edge of hope. Their growing contribution to the ecology of Calcutta is significant and owes much to the work of two dedicated and persistent public servants.

Over the past hundred years, Calcutta has developed a system of sewage and waste disposal that ranks among the most enlightened in the world. As described in *The Wealth of Communities*, "The architects of this system which transforms sewage and organic waste into fish and vegetables are the fishermen and farmers of places like Mudialy and East Calcutta Marshes. Every day the Mudialy Cooperative takes in 25 million litres of polluted water an oxygen-less cocktail of sewage and industrial effluent and every day harvests over a tonne of fish and expels some 23 million litres of reasonably clean water."

The efforts of this Cooperative, that largely emerged from trial, error and desperation, have been replicated with public blessing on the other side of the megalopolis. In the East Calcutta Marshes, 20,000 people transform daily over a third of the city's sewage and almost all its domestic waste into 150 tonnes of vegetables and 20 tonnes of fish. It is one of the most efficient and productive systems of sewage treatment in existence, and probably the cheapest. The process is not without problems and critics but it works. Unlike many other complex, mechanized and expensive waste treatment systems, this one, according to Dr. Ghosh, is "money saving...and we could do something similar almost anywhere in the world, and certainly anywhere in the tropics."

Their efforts have not always been appreciated nor supported by the city administration and the larger community. A few years ago public technocrats, who often see no role in low tech solutions, and developers, lusting after reasonably vacant and inexpensive land, nearly threw the natural ecologists from their habitat. To their rescue came two public servants: a self-effacing ecologist from the West Bengal Fisheries Department, Mulu Choudhury, who was interested in helping the fishermen improve their lot through better practices; and, Dr. Dhrubajyoti Ghosh, a sanitary engineer and then executive director of the Calcutta Metropolitan Water and Sanitation Authority, a man driven to find new low cost solutions to the burgeoning waste problem of Calcutta. Both men suffered the indignities of being loathed by all sides in the sewage saga. The fishermen, who had carved an existence from the waste of others and had come to trust no one from hard experience, were wary of outsiders. Many of the decision makers in public places saw no possibilities for personal gain from self-help sanitation solutions. For over ten years, Dr. Ghosh researched the potential, plead the case, took abuse for his persistent and courageous stands, and finally prevailed. Further development of the wetlands around Calcutta was stopped by the courts and the Calcutta Metropolitan District Authority affirmed the need to preserve the wetlands to function as a waste recycling region.⁽²³⁾

There are a number of lessons to be learned from this experience as we rummage around in our tool kit looking for ways to mobilize resources for sustainable development.

1. Don't ignore the contributions that nature can make to solve environmental problems and support development. These contributions are often kind to public budgets.

2. There is growing evidence that even the poorest of the poor can be resourceful and contribute to your efforts to engage in sustainable development. As Muket, the Fisheries advisor, said about his work with the cooperatives in the wetlands of Calcutta, “We can provide advice but they have to motivate themselves ... and there has been no need for the government or anyone else to provide money and it helps solve the unemployment problem.”
3. Don't ignore those in the organization who rock the boat, or worse yet, punish them as was the case with Dr. Ghosh. Hear them out. Seek their advice and counsel. Remember the organizational maladies we spoke about earlier? Being a **Guardian of the Environment** is rarely business as usual.
4. Forge working relationships with those who oppose you. The fishermen in Mudialy were reluctant and unlikely partners in the sewage dilemma confronting Calcutta officials. They resisted any intervention in their community for fear it might work against them. After all, they had everything to lose. It was only after an element of trust was established that the dialogue could begin in earnest.

Not to mention other resources

You no doubt noticed that we haven't mentioned the types of resources one normally finds in such discussions. For example, money, staff, money, equipment and materials, money, experts, money, time, money. We've ignored them for two good reasons: (1) either you already know how to mobilize these types of resources; or, (2) you use them as an excuse not to engage in sustainable development. Either way, we figure it's not very useful to dwell on them.

On the other hand, you may discover that monetary strategies can be employed to achieve your sustainable development and environmental goals and objectives. Some examples are: revenue bond issues to solve long term environmental problems, such as solid waste collection and disposal; economic sanctions to reward good environmental behavior and curb those that are destructive; and, tax incentives for citizens and local firms to use appropriate and indigenous environmental technologies, and engage in natural resource management and preservation strategies. Recognize and reward those who reduce, re-use and only then *re-cycle*, when dealing with those materials that deplete the natural environment or mess it up.

(We are aware that some of you may think these past two paragraphs are somewhat contradictory. However, we never once used the word money in describing alternative fiscal strategies that are available to most local councils.)

Other non-monetary ideas for nurturing sustainable development

Any organizational renewal efforts should recognize the importance of securing active partnerships and forging productive coalitions to build toward a future that assures your children's children that their environment will be safe and sound. And remember the “natural ecologists” in the Calcutta wetlands when you reach out to involve others. There may be resources in your own community that have never been called upon to get involved. Look for tradeoffs and reciprocal gain opportunities.

For example:

- if your company gives the city a firm commitment to decrease the level of air pollution it currently creates by “x” percent, the city will rezone the land adjacent to your factory so you can expand;
- if your neighborhood establishes a recycling program that can be sustained, the city will provide an additional day care center you have been requesting; and
- if the local schools establish an environmental curriculum, the city will donate a wetlands area for research and class room studies.

To summarize, mobilizing the resources needed to implement sustainable environmental and development programmes will be a challenging task. As we said earlier, the municipal budget will never be large enough to address all your concerns and opportunities in these two inter-related aspects of community leadership responsibility. Given this reality, we urge you to take a look at your own organization and determine how the council can assist the managerial leadership to renew (re-engineer, in present day parlance) the organization so new environmental challenges can be addressed more effectively and efficiently. Remember, it's potentially your best and most powerful resource to achieve community goals.

6. ACHIEVING AND SUSTAINING RESULTS

Achieving and sustaining local results, in the global competition between economic development and protecting the environment, will never be easy. The political necessities of meeting present day demands are often too strong to worry about the future. And yet, your elected leadership role also carries expectations of a longer term view and concern. While the case studies we have presented describe some successes as well as failures of local government efforts to fuse economic development and environmentally sound practices into a viable strategy, they should not be taken as prescriptions of how or how not to address sustainable development challenges in your community.

Achieving and sustaining results will depend in large measure on the ability of your council and staff to involve others in setting the agenda (determining the environmental risks to be addressed in what order of priority) and finding solutions that are unique to your communities needs and resources. It will also test your tolerance for ambiguity and change. What is sustainable development in today's terms may not be sustainable in the future. Rapid changes in demographics, life styles, and technologies, as well as natural disasters over which your council has little control, can rewrite the book on sustainability as a criteria for development.

The toolbox we have provided, thus far in our discussion, should work on any size, shape, type and model of economic development and environmental challenge. But, don't be deceived into thinking a major tune-up of your community's sustainable development strategies and programmes will endure for long. For example, comprehensive environmental audits, because they are so time and energy consuming, are often seen as one-time ventures. Consequently, they become a static snapshot of environmental healthiness at that point in time, not an evolving video tape that records on-going progress in all critical areas of environmental concern. It is better to conduct environmental audits that are more modest in scope and assure on-going conducts of inquiry and action, than to create archival documents of historic value.

But, this discussion is about those councillor tasks that follow visioning, coalition building, risk and technology assessment, response planning and resource mobilization. Specifically, how to achieve environmental results and sustain them, using the tools of implementation, and strategies for monitoring and evaluating results and consequences. First, let's look at the councillor role regarding implementation within the context of *guarding the environment*.

The fine art of supporting implementation

While implementation is largely a management and staff responsibility, the quality of the implementation process will depend, in large measure, on council's guidance (policy directives) and the acquisition of necessary resources. We have already discussed how the act of *acquiring resources* to achieve sustainable development and environmental protection is different from the more traditional elected role of *allocating budget funds*. Acquiring resources assumes an extra-budgetary process of garnering resources from and through a variety of mechanisms (e.g., sharing costs across organizational and political boundaries; bartering scarce resources for mutual gain; providing tradeoff opportunities with private corporations and community groups to achieve long term environmental goals).

An example of the latter is a scheme of credits to industries that exceed pollution standards which they can barter or sell to firms that are not yet in compliance. While the scheme at first blanche seems counterproductive to goal achievement, it is an incentive for individual organizations to raise their standards and to pass the cost on to others who are not yet in full compliance. The more difficult sustainable development and environmental visions can only be realized through incremental actions and sustained commitment. Updating the old adage that Rome wasn't built in a day, it took a quarter of a century to bring the Rhine River back from its near death experience.

The councillor role in implementing policies and programs is always problematic, given the conventional wisdom surrounding the policy-administration dichotomy. That's why we have dubbed this section the *fine art of supporting implementation*. But, the role of managers in the implementation process becomes increasingly ambiguous (fuzzy) when responsibilities for broad community mandates, like sustainable development, are shared across political and organizational boundaries. John Bryson and Barbara Crosby have given considerable thought to the dilemma of "tackling public problems in a shared-power world." In fact, it's the sub-title of their book *Leadership for the Common Good*. As they remind us,

New policies, plans, programs, or projects do not implement themselves automatically, nor necessarily as their authors intended. Instead, implementation, or the operationalization of change, typically is a complex and messy process involving many actors and organizations that have a host of complementary, competing, and often contradictory goals and interests.⁽²⁴⁾

Bryson and Crosby also offer some guidelines for councillors to consider in the performance of their leadership role in the complex and often ambiguous arena of implementation.

1. *Think strategically about implementation.* This strategic approach to implementation involves a *pattern* of policies, plans, programs, actions, decisions and resource mobilization that defines the framework within which implementation will take place from the perspective of all affected stakeholders. Reconciling differences and reaching consensus on issues of mutual concern and interest is important and builds essential bridges between *thinking strategically* and *acting strategically*.
2. *Have the appropriate public officials, and other key stakeholders with implementing responsibilities, develop action plans.* These plans should detail the tasks to be performed, identify individuals and parties who are responsible for specific tasks, spell out deadlines and time frames, and define resource requirements.
3. *Encourage and support changes that can be made easily and rapidly.* Nothing fosters confidence, and builds on success, like success. Or, dashes hope and enthusiasm like bureaucratic malaise and other unnecessary implementation barriers.
4. *Build into the proposed change the necessary resources to insure success.* And, this means redundancy of resources in those places important to program implementation. We have all heard horror stories about multi-million dollar waste water plants and similar facilities becoming inoperative for lack of simple replacement parts. Less than a month after the Prime Minister of one South Asian country dedicated a new water treatment plant, it ceased operation when the local technicians couldn't repair a malfunction. In this case, orientation and operation training had been overlooked in the startup costs and operating budget. Employee training is a cost of business, not a fringe benefit.
5. *Develop and maintain a coalition of implementers, advocates, and interest groups.* We have discussed the importance of partners and coalitions earlier but worry that the process may be seen as necessary only in the visioning, assessment and policy making arenas (processes that are sometimes seen as the responsibility of elected officials, community leaders, business executives and environmental advocates). Those who are charged with implementing responsibilities also need to think and be encouraged to act within the broader framework of partnerships and coalitions.
6. *Ensure that the policies, administrative orders and other top-down directives facilitate rather than impede the implementation of environmental efforts.* It is not unusual for higher levels of government to legislate solutions that are sometimes unworkable at the local level. And, local councils have also been known to adopt policies and encourage administrative orders that challenge the ingenuity of managers to implement. Effective policy implementation begins with an open and collaborative dialogue among those who make policy, those the policy will affect directly, and those who will have the responsibility for implementing the new directive.
7. *Exercise patience and persistence.* Sustainable development and environmental protection and problem solving activities are often long term ventures with minimal evidence of immediate gain. This puts a strain on the political process, particularly at election time. The more open and widespread the "ownership" of environmental policies and programs are within the larger community, the easier it is maintain the implementation momentum.

Achieving the results of environmental programs and directives will depend on an implementation strategy and resource base that are congruent with the challenge. The ability to sustain the results can be strengthened when there are procedures and processes in place to monitor and evaluate on-going implementation. We will only look briefly at these important councillor tasks because they are described in much more detail in the *Councillor as an Overseer* handbook which is an integral part of the UNCHS Series for *Elected Leadership Training*.

Monitoring and evaluation

The fundamental questions to be asked in monitoring and evaluating all local government projects and programmes are:

1. Are we doing what was decided should be done? (issues of implementation based on action plans developed by implementing agencies and organizations and approved by authorizing bodies.).
2. Are we achieving the intended goals and objectives? (based on the results we had hoped to accomplish).
3. Does the programme, policy, service, project still make sense, given new events, demands, technology, etc.? (does it meet our expectations of sustainability?)

These questions become very difficult to answer when the implementation of complex development and environmental endeavors span the entire range of community engagement. And this broad gage involvement (many partners, coalitions and stakeholders) should be the case when undertaking and carrying out comprehensive development and environmental protection efforts designed to achieve results that are sustainable over time. Because the monitoring and

evaluation process is so important, it should not be vested in some obscure corner of the municipal auditor's office. These are responsibilities that need to be built into the environmental risk and environmental technology assessment stages of diagnosis and to each component of implementation.

Monitoring is a process of what the specialists call *formative evaluation*. It identifies glitches and hiccups in the implementation stage so they can be fixed as they are discovered. It is also a navigational devise to keep projects and programmes on track. Which means it is tied directly to the goals and objectives your council wants to achieve. Perhaps you recall Murphy's Law. Anything that can go wrong will go wrong. It is hardly reassuring to remember that Murphy was not only considered to be a wise sage about managerial matters, but also an optimist. Monitoring is an on-going management responsibility and needs to be budgeted and built into the cost of *implementation*.

Successful implementation also includes something called summative evaluation which answers the questions concerned with: Were the policy and programme goals achieved as intended, and how successfully were they achieved? In the context of this discussion, did your efforts result in a cleaner and more livable environment and can those accomplishments be sustained over time?

Reflection

For the final time in this discussion of your role as **Guardian of the Environment**, we suggest you pause for a moment and reflect on the challenges of achieving and sustaining success in this role.

Think of a policy or programme that you as a councillor supported, or better yet, championed, and yet were disappointed in the final results. Record what you believe caused the gap between your expectations and the reality of implementation? <hr/> <hr/>
What do you believe could have been done differently to have achieved the anticipated success of the policy or programme? <hr/> <hr/>

From concepts and dreams to reality

As we near the end of this discussion, we want to share a story of success from the ranks of local elected leadership. It is one that many of you have probably heard before but it bears repeating and reflecting upon as you fulfill your role as **Guardian of the Environment**. It is the success that citizens of Curitiba, Brazil have experienced under the leadership of former Mayor Jaime Lerner, his elected colleagues and a team of dedicated professionals. They rewrote the book on how to solve seemingly intractable urban problems. They consistently thought and acted outside the boundaries of conventional wisdom in their search for practical solutions. They believed in the values, strategies and possibilities of sustainable development — and made it happen!

<p style="text-align: center;">How do you spell sustainable development? C-U-R-I-T-I-B-A</p> <p>The civic leaders of Curitiba have done us all a favor. They have demonstrated that sustainable development is more than an interesting theory in search of implementation. The elected leaders, professional staff, employees and citizens have transformed their city of 2.2 million people, in the predominately agricultural region of Southern Brazil, into a street smart laboratory of urban innovation and change. While their concerns for improving the quality of life for all citizens are noteworthy, we want to focus on efforts to integrate the goals and implementation strategies of land use and transportation planning. They are often separate domains that strive to deny the potential for sustainable development.</p> <p>Like many cities in countries such as Brazil, Curitiba has experienced rapid population growth, spurred by the migration of rural poor from surrounding areas. The city nearly doubled in size in the 1970s (from 0.9 to 1.6 million) and continues to grow. Fortunately, Curitiba laid the groundwork back in the sixties with a comprehensive plan that called for the integration of traffic management, transportation and land-use planning to support its strategic objectives. These objectives sought to relieve traffic and congestion through decentralizing employment providers; encouraging social interaction by providing leisure areas and pedestrian zones; and, promoting the use of public transport and cycling as alternatives to private motor vehicles.</p> <p>The planning objectives were adhered to (not always a common practice with local governments) by using a variety of policies and infrastructure strategies. These included: incentive zoning; housing intensification along main streets;</p>

placing public housing along major corridors (to optimize the use of public transportation alternatives); and, preventing urban sprawl and enhancing the quality of life through zoning and park development (the city has increased open space by a factor of 100 since 1970 at the same time the population expanded by 164%).

By creating high density population corridors that support public transportation modes and services, the quality of housing and transportation has been enhanced, and many of the environmental problems inherent with rapid urban growth ameliorated. Despite one of the highest automobile ownership rates in Brazil (one car for every four persons), Curitiba has the highest public transport ridership of any city in the country (70% of the average daily commuter trips are by public transport).

The need to accommodate future transportation needs is secure with several “structural axes” crisscrossing the city. These axes were designed with future growth and changes in technology in mind. While currently dependent on fleets of express, articulated and conventional buses (which operate at subway speeds because of loading platforms and express lanes) the infrastructure can be modified in the future to accommodate electrified light rail vehicles. And, as former Mayor Lerner notes, “ We won’t need to waste a generation building the subway”. Sounds like a well deserved barb directed to those local officials who talk a good game but spend a lot of time on the sidelines. Curitiba is both a symbol of sustainable development and proof that economic growth can be achieved without destroying the physical environment and social fabric of our urban societies.²⁵ Its achievements are worthy of emulation.

Key concepts and ideas

- Your role as **Guardian of the Environment** is supporting development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Your responsibilities within this role transcend physical and time boundaries. Your decisions can affect the lives of your neighbors and your children’s children.
- There is a symbiotic relationship between economic and social development and the state of the environment. Since technology is at the leading edge of each of these dynamic forces, the pursuit of technological solutions to sustainable development cannot be separated from the social, economic, cultural and political reality in which it takes place.
- The environment is something to be managed on a sustainable basis—not something to be “protected” from development.
- The leadership role in sustainable development requires awareness (seeing what is) as well as vision (what can be)
- Seeking partners and building coalitions may be the most important thing you do to achieve sustainable development as a community goal. It’s everyone’s responsibility and everyone’s future — so involve the private sector, NGO’s, social clubs, religious organizations, schools and universities, and every man, woman, girl and boy in your community to make it happen.
- Developing scenarios (verbal pictures describing potential future states based on various assumptions) can help update your community’s guidance system. Invite participants to take surrogate roles for those who aren’t present (e.g., girls and boys, future generations, the likes of Nakuru flamingos)
- Assessing environmental risks is the process of taking your awareness and pursuing it further through additional data gathering, information expansion, analysis and clarification.

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PART II WORKSHOP

OVERVIEW

Purpose

The central challenge of the 21st century as enunciated by the Earth Summit in Rio is to achieve sustainability. Local Agenda 21 stresses the growing importance of local authorities as stewards of the environment. As pointed out in the preceding essay, however, the role of the councillor as **Guardian of the Environment** is complex and challenging. Few local authorities understand much about the environmental quality of their own areas or how their present actions and decisions affect the ability of future generations to sustain themselves.

Learning process

The workshop is to create conditions through which councillors can learn to perform effectively as environmental guardians. At the core of the workshop is a progressive learning process that begins with an environmental awareness exercise and ends with a focus on how to achieve environmentally and developmentally sustainable programmes. A principal theme of the workshop is the relationship between development and the environment and the recognition and use of environmentally sound technologies as the creative link between them.

Audience

The workshop is planned with several training audiences in mind.

- One of these consists of mayors and councillors from separate local governments. The assumption we make about these officials is that they have not worked together and may not even know each other before attending a **Guardian of the Environment** workshop. Hence, we use the term “stranger group” to describe this training audience.
- A second training audience consists of mayors and councillors who serve together in the same local authorities and who are invited to participate in the workshop as teams. For this audience we use the term “councillor teams.” The learning activities that follow were developed on the assumption that the stranger group format will be the most often used. We have provided the trainer with special instructions for modifying stranger group exercises for use with councillor teams.
- A third training audience might augment the preceding audience with department heads, other local government staff, and even community leaders.
- A fourth training audience might consist of any of the above combinations of participants plus officials from adjoining communities that have or may experience similar environmental problems.

Workshop design options

Many options are available for the use of **Guardian of the Environment** workshop materials. One set of design considerations is related to time. For example, all of the workshop components might be used for a six consecutive training day programme (Sunday afternoon through Saturday noon). Or, the programme might be reduced to three days by omitting the case studies and role plays (Sunday afternoon through Wednesday afternoon). Another possibility is to plan a series of one or two day workshops each focusing on one or more of the components. This format may prove more satisfactory when councillors are unwilling to be away from home more than a couple of days at a time. Finally, one or two of the components might be used for a short workshop before or after a conference of local elected officials to encourage conferees to attend longer programmes planned for a later date.

Other considerations might influence the design of **Guardian of Environment** workshops.

1. Environmental workshop components might be used in conjunction with concepts, exercises and case study materials from other workshops in the UNCHS Habitat *Elected Leadership Series*. For example, an exercise on programme evaluation planning in the *Councillor as Overseer* could be used to provide participants with additional skills in monitoring and evaluation to assure more successful implementation of sound environmental technologies. Exercises included in the *Councillor as Enabler* and the *Councillor as Negotiator* could be used to good advantage by a trainer to give participants more skill practice opportunities with coalition building and in using the language of negotiation to get desired results without impairing relationships with important environmental groups.

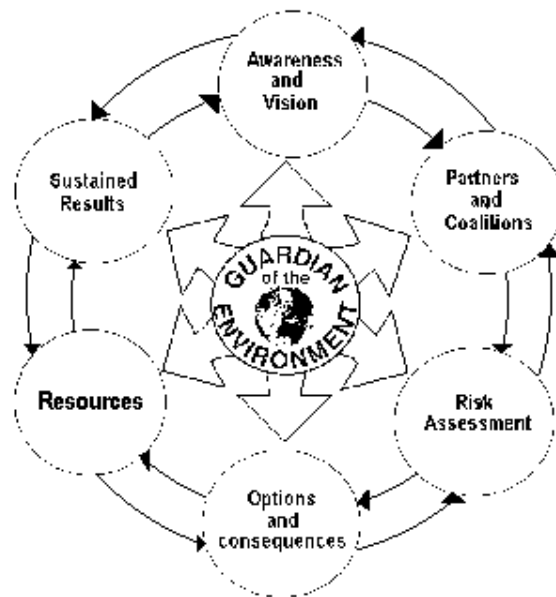
2. Workshop materials might be used to engage a single council or councils from neighboring communities in environmental problem solving and planning. For this purpose, the exercises on problem finding, focusing, visioning and stakeholder analysis might be employed as a form of environmental strategic planning with the trainer serving the community(ies) as a consultant de-signer/facilitator.
3. *Reflection* activities in Part I might be used as group exercises. One of the local trainers in a field test of these materials in Kenya, for example, used reflection questions as a group exercise to identify stakeholders.

Clearly there is considerable opportunity for trainers to improvise with these materials in workshop design and planning.

Materials

The training activities included in this workshop anticipate the active involvement of participants with each other and the learning concepts presented. These activities consist of:

- Instructor presentations that provide participants with relevant concept information at appropriate times to stimulate thinking and reflection.
- Small group exercises designed to lead participants through a systematic process of planning and problem solving relative to their own environmental problems. Although the problem solving process in the handbook is designed to move ahead sequentially, in practice participants might start anywhere in the process, perhaps beginning with the conception of a vision and then backwards to assess the nature of the problem. A model illustrating the interactive nature of the various steps in the process is shown below.
- **Questionnaires and checklists** to assist participants in conducting environmental self-assessments and to gather relevant data on their respective environmental problems.
- **Case studies and role plays** that focus participants on realistic, challenging situations selected to encourage reflection and participant interaction.



Presentations

Concept information is organized into “short burst” presentations, each structured according to well-established principles of instructional design. Rather than concentrated in one or two long presentations, conceptual material is sequenced for delivery just prior to or sometimes just after related skill practice or reflection activities. We call this “just in time” presentation. This approach emphasizes the importance of exposing participants to small amounts of relevant concept material and then engaging them in activities that put the new knowledge or skill to use before moving on to new material. Strongly emphasized is the repetition of ideas and the active involvement of participants with information being presented. Each presentation consists of three sections. The first, *focus*, is to create interest and

introduce participants to the subject. The second, *main points*, is the body of conceptual ideas to be covered by the trainer. The third, review, summarizes and reinforces the ideas just presented.

Trainers Notes

Instructions for the trainer called “*trainers notes*” are provided from time to time in each presentation. Some trainers notes encourage trainers to develop and use questions. Asking good questions at appropriate times can stimulate participant interest, promote understanding and encourage the back-home application of learning. Other trainers notes suggest the reinforcement of oral presentation with visual aids. Simple techniques include printing key points on flip chart sheets for wall display or copying them onto transparent plates for overhead projection. Still other trainers notes describe any advance preparations or special materials that must be available for use by participants during the exercise.

Other handbooks in the *Training for Elected Leadership* series and various manuals published under separate cover by UNCHS (Habitat) offer valuable guidance for trainers preparing to facilitate these and other learning events included in this handbook. ⁽¹⁾

Pre-workshop reading

The preceding essay is a rich source of information on the role of the local elected leader as environmental protector and sustainer. It is the conceptual basis for all of the Part II workshops. Any elected official registered to attend a **Guardian of the Environment** workshop would benefit greatly by reading this essay or portions of the essay selected by the trainer to accompany the components to be included in a planned programme. While there is no guarantee that the materials will be read, officials who have agreed to attend a workshop should be provided with a copy of the selected essay materials at least one week before a programme is scheduled to begin.

Pre-workshop assignment (optional)

Councillors registered to attend a **Guardian of the Environment** workshop may be asked to complete a pre-workshop assignment. The assignment is to identify and record information about existing and potentially hazardous environmental problems observed during a 30 minute walking or riding tour inside the boundaries of their local authorities. The assignment is meant to demonstrate that environmental problems exist in every community, and they can be identified readily by observant councillors. Home-generated data heighten the realism and immediacy of a workshop experience for participants. It is believed that councillors who complete the assignment will adapt more quickly to the workshop environment and make more effective use of the learning experience after returning home from the training. Although many councillors may not take the time to complete this task, we recommend that trainers include it in their workshop designs anyway and encourage all councillors planning to attend a workshop to bring a completed worksheet with them.

To simplify the task, councillors who are asked to complete the assignment are furnished with a copy of the *Environmental Awareness Worksheet* (see the Pre-Workshop Assignment Section of the Handbook) several weeks in advance of the workshop.

Alternative design

Groups of participants who know each other and work together might be asked to complete the Environmental Awareness Worksheet as a group before leaving home to attend the workshop and to bring the results with them to the workshop.

CONTENTS

A brief description of each learning activity is shown below with an approximation of the amount of time required. The order of these learning activities may be changed, something omitted, or appropriate training material added to complement the training situation. Exercises that are sequential steps in the environmental problem solving process are highlighted in *italics* for easy identification.

13.1 Warm-up Exercise: A Councillor’s Worst Nightmare

Participants read an incident in which a local authority is accused of willful and persistent damage to the local environment and decide what they would do if faced with a similar situation. (60 minutes)

13.2 Trainer Presentation: Concepts and Problems

Brief presentation to clarify the meaning of several important environmentally related concepts - problems, *hazards, risks* - and to familiarize participants with the problem formulation process (30 minutes).

- 13.3** *Exercise: Environmental Problem Finding*
 Participants compile a list of local environmental problems from the pre-workshop assignment (option A) or compile the list based on a process of sharing their collective ideas and experiences (option B). (90 - 120 minutes)
- 13.4** *Exercise: Problem Formulation*
 Working in small groups, participants narrow the focus of their groups to one high priority environmental problem based on the application of a common set of criteria (60 minutes).
- 13.5** **Trainer Presentation: Visioning**
 Brief presentation on visioning as a critical step in moving from awareness of environmental issues to the achievement of sustainability. (30 minutes)
- 13.6** *Exercise: Exploring the Future*
 Using one of the risks from the pre-workshop assignment, participants in groups prepare visions of the future. (240 minutes)
- 13.7** **Trainer Presentation: Stakeholders**
 Brief presentation on the importance of *stakeholders* to the process of environmental sustainability and how to ensure that all stakeholders are represented. (30 minutes)
- 13.8** *Exercise: Stakeholder Mapping*
 Participants use a stakeholder mapping technique to identify key stakeholders and develop strategies for making productive use of stakeholder interests and capabilities. (120 minutes)
- 13.9** **Case Study: Revival of Hope for Krakow**
 Participants read a case that involves serious potential risks to human health and the ecology and answer questions about appropriate governmental responses. (60 minutes)
- 13.10** **Trainer Presentation: Environmental Risk Assessment**
 Brief presentation on the value of regular, systematic assessment of environmental problems and the use of assessment data to set priorities for local government intervention. (30 minutes)
- 13.11** *Exercise: Assessing a Local Government's Capacity for Environmental Performance*
 Participants use an audit questionnaire to evaluate the current capacity of their local authorities to manage several common categories of environment risk. (90 minutes).
- 13.12** *Exercise: Environmental Profiling*
 Participants compile problem-specific, environmental data useful in understanding the constraints imposed by the infrastructure and the institutional framework through which the problem must be solved. (90 minutes)
- 13.13** **Trainer Presentation: Options for Action**
 Brief presentation on the use of environmentally sound technology to achieve the goals of environmental sustainability. (30 minutes)
- 13.14** *Exercise: Thinking about Technology, the Environment and Sustainability*
 Participants answer questions about the environment and technology designed to help them act appropriately, responsibly and sustainably. (120 minutes)
- 13.15** **Role Play/Case Study: Evaluate a Technology for Waste Management**
 Participants take part in a role play/case study that engages them in the process of deciding on the suitability of a prospective technology by using criteria specifically designed to evaluate a technology's potential impact on the environment. (240 minutes)
- 13.16** **Trainer Presentation: Resources**
 Brief presentation to prepare participants to evaluate the resources available for implementing agreed upon environmental technologies and to overcome institutional barriers to their use. (60 minutes)
- 13.17** *Exercise: Resource Needs, Opportunities and Institutional Barriers*
 Participants identify innovative ways to think about the resources needed for the successful adoption and use of environmentally friendly technologies and to overcome institutional barriers to resource mobilization. (90 minutes)

13.18 Role Play/Case Study: Taking a Stand for the Environment

Participants take part in a role play/case study and experience taking a stand as a council in the face of critics of the council's environmentally - friendly policy recommendations. (90 minutes)

13.19 Two Case Studies: Learning from the Experience of Others

Participants read two case studies and contrast the implications of each for environmental policy implementation. (90 minutes)

13.20 Exercise: Results through Action Planning

Participants use an action planning scheme to set the stage for successful implementation and evaluation of their selected technologies. (90 minutes)

13.21 Closing Exercise: Learning Experience Transfer

Participants complete an exercise that helps them reflect on the learning value of the workshop and plan the application of workshop learnings to their duties and responsibilities as **Guardians of the Environment**. (30-45 minutes)

PRE-WORKSHOP ASSIGNMENT

Instructions

As a registrant for a **Guardian of the Environment** workshop, you may be asked to complete this environmental data-collection assignment before leaving home for the workshop and to bring the information with you to the workshop. If this is the case, your assignment is to identify and record information about existing and potentially hazardous environmental problems observed during a 30 minute walking or riding tour inside the boundaries of your local authority. Please include in the tour several different areas of your community (e.g., residential neighborhoods, commercial districts, industrial complexes, and open space areas with either streams, rivers, estuaries, wetlands or shorelines). The worksheet on the following pages is for use in recording your observations.

Conditions described in the left column of the worksheet are common examples of environmental problems found in urban areas. Serving only as illustrations, they are not meant to exclude other problems that you may encounter during your own tour. Blank rows are provided at the bottom of the worksheet to add information on environmental problems for which no example is given. The second column is for your use in rating the importance of each problem as a risk to the local environment. The greater the risk, the larger the number. The third column is to identify one or more areas of negative environmental impact that the problem represents for the community. The final column is to record your opinion about the degree of urgency in taking action to lessen the risk of the problem to people or the natural environment. Again, the greater the urgency, the larger the number.

We urge you most strongly to complete the worksheet in the field while the experience is still fresh in your mind. Avoid the temptation to commit your observations to memory for recording at a later time.

Don't forget to bring the completed worksheet with you to the workshop. This is important! Data from the worksheet may be used for individual and small group planning activities during the workshop. The assignment is meant to demonstrate that environmental problems exist in every community, and that these problems can be identified readily by observant councillors. Home-generated data will heighten the realism and immediacy of the workshop experience for you and other participants. It is believed that councillors who complete back-home, pre-workshop assignments adapt more quickly to the workshop environment and make more effective use of the learning experience after returning home from the training.

Environmental Awareness Worksheet									
<i>What is the environmental problem?</i>	What level of importance is this problem?			Which of these areas is affected by this problem?			How high a priority should be given to solving this problem?		
	Low	Med	High	Low	Med	High	Low	Med	High
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Uncollected and rotting garbage on the streets or walkways									
Under maintained and visibly deteriorating road ways									
Congested vehicular traffic									
Water distributed through public taps or water vendors									
Drainage channels restricted by refuse and waste									
Houses or small businesses built on steep and unstable slopes									
Loss of vegetation and erosion of hillsides									

Housing, public buildings and infrastructure built in river valleys and flood plain areas									
Overcrowding in settlements without building density controls									
Burning of refuse accompanied by heavy smoke and rank odors									
Sewage disposed of through pit latrines, septic tanks, rivers									
City streets clogged with trucks and busses pouring out noxious fuel emissions									
Lagoons and wetlands filled in to provide family housing or increased agricultural activities									
Loss of farmland caused by illegal squatter settlements and sub-dividing land									
Natural green spaces displaced by urban transport links									
Absence of open spaces for recreation and practicing urban agriculture									
Open dumps that are unsightly and seemingly unmanaged									
Industrial effluents causing severe corrosion of the infrastructure									
Poorly controlled emissions from power plants, industries, heating plants, and vehicles									
Surface waters contaminated by municipal sewerage, mine discharges and seepage									
Low income housing projects carried out without adequate foundations and drainage									
Soils in urban extension lands contaminated by inappropriate solid waste disposal									
Pollution of beaches or scenic lake areas that restricts their recreational use									
Undisposed waste, solid or liquid, resulting from roadside activities (vendors, food kiosks, garages, etc.)									
Other (enter description)									
Other (enter description)									
Other (enter description)									
Other (enter description)									
Other (enter description)									
Review the environmental problems identified above and select the three problems which you believe represent the most serious existing or potential hazard to the community. Describe the three problems in the space below. To the right of each problem, classify it by the environmental category to which it belongs (e. g., air, water, noise, solid waste, transportation, overcrowding, overbuilding).									
Priority Environmental Problems					Category				
1.					1.				
2.					2.				
3.					3.				

WORKSHOP COMPONENTS

13.1 WARM-UP EXERCISE: A COUNCILLOR'S WORST NIGHTMARE

(Workshop Trainer's Notes)

Time Required: 60 minutes

Objective

This workshop opener is to help participants recognize that environmental vigilance begins at home.

Process

Read the incident ⁽²⁾ *A Matter of Environmental Ethics* to participants (see next page).

After participants have heard the situation, divide them into several small groups. Ask each group to answer the following questions about the situation.

1. How do you think a situation like this could have occurred and persisted for so long a time?
2. What action should be taken and by whom to bring responsible officials to justice?
3. What should the present council do in exercising its role as **Guardian of the Environment**?

After about 30 minutes, reconvene the participants and ask for reports from each small group. Discussion.

A MATTER OF ENVIRONMENTAL ETHICS

You were elected as town councillor over ten years ago in this well-known seaside resort community and now have principal oversight responsibility for local authority works maintenance and environmental matters. In a telephone conversation late last week with Barbara Botelho, an official of the national Ministry on Environmental Affairs, you were told that employees of the works department in your local authority have been dumping hazardous chemicals and other debris at 26 sites within local authority boundaries for more than fifteen years. Ms. Botelho said her information came from a letter to the ministry from a former employee of the authority's works department.

You learned from a fax copy of the letter sent to you by Ms. Botelho that a road emulsifier containing naphtha and kerosene, oil, and transmission fluid are the chemicals that the former employee claims have been dumped routinely at authority maintained park sites and on public roads. Vague reference was made in the letter to chemical burns experienced by works employees and toxic fume omissions. There was nothing in the letter that revealed the name of the employee who wrote the letter, but many of the employees responsible for the dumpings were mentioned by name.

In a later conversation, Ms. Botelho warns you that the ministry is preparing an investigation of the alleged dumpings and that, if the facts support the allegations, the local authority is in possible criminal violation of public law. "Our concern," said Ms. Botelho, "is not only about the possibility of chemical burns suffered by authority workers and releases of toxic vapors, but also the risk of water table contamination."

Preliminary investigations conducted by staff members of your office confirm evidence of toxic waste dumping at the 26 sites mentioned in the letter. In interviews with personnel named in the letter, investigators found that the dumpings were performed by works employees who claimed they were acting under the orders of their superiors.

When asked by a local newspaper reporter to confirm a tip she has received about toxic chemical dumping and the ministry's concern, you reply: "Our investigations confirm that some dumping of possibly toxic materials has been observed in several locations in public park areas and in ditches along public roads. They [ministry officials] are upset because, at a minimum, we [local authority officials] could be responsible for created unlicensed landfills and introduced hazardous or toxic materials into these landfills in a way that violates the law."

Meanwhile, park workers and road crew employees who dumped the material during the last ten years under orders from their superiors are helping local and ministry officials to identify the chemicals and arrange to dispose of them. A

price tag on the clean-up has yet to be determined, and it is too early to know if criminal charges will be filed against those who ordered the dumping.

Postscript

Since the events described in this case, a new director has been assigned to manage the park department. The director has ordered the assessment of all park sites to assure adequate clean-up. Directives covering proper methods for toxic waste disposal have been published and park department employees have been trained in what to do and what not to do when handling and disposing of toxic materials.

**Trainer Presentation: Concepts and Problems
(13.2 - Workshop – Trainers Notes)**

Time Required: 30 minutes

Objective

This presentation is to: 1) clarify the meaning of several important environmentally related concepts which have different meanings but are often used interchangeably causing confusion, and 2) familiarize participants with the problem formulation process.

Preparation

Develop a short presentation to prepare participants for the following exercises on identifying and formulating environmental problems. As preparation, use the material on *Assessing Risks* from *Part I* supplemented by the following information and ideas of your own.

Focus

Precision in the use of environmental terms is important. The terms *problem*, *hazard*, and *risk* are used extensively in the environmental literature to describe conditions associated with the threat of exposure for humans and the ecology degrading influences. Used interchangeably, however, as they often are, these terms can be a source of confusion and misunderstanding. Accurate formulation of environmental problems is a way of narrowing the focus of concern to the “real” environmental problems and avoid spending time on symptoms and solutions masquerading as problems.

Main points

The environmental field is replete with technical terms. Owing to the complexity of the terminology and the resulting potential for differences in meaning, many technical documents on environmental matters come with a glossary of technical terms. Lay people, like councillors, have little need to know or use many of these terms. However, a few of the more common ones can be problematic if they are used incorrectly or as synonyms for one another. We have selected several of these common terms for this presentation. We have selected these particular terms because they are so often used interchangeably and because of the difficulty of communicating effectively about environmental matters without using them. The three terms we want to clarify are:

- 1. Problem
- 2. Hazard
- 3. Risk

Trainers Notes

Introduce these three concepts by printing them in large letters on a sheet of newsprint and keeping them in front of participants throughout the presentation.

Normally any discussion among councillors or with staff or community residents about unsatisfactory urban environmental conditions will include use of the terms problem, hazard, and risk. Lets take a few moments to agree on a common definition for each of them and then look at how they are related to one another.

Trainers note

A good starting point is to ask participants how they would define each of these terms, one term at a time. Write down a few of the definitions they offer for each term on a sheet of newsprint. Observe any obvious differences in the definitions and comment on the confusion that can result when important terms like these mean different things to different people. Then write your own definition for each of the terms (see below) and continue with the presentation.

Trainer's definitions

1. *Problem*: the discrepancy between what is wrong and what is right as related to urban environmental conditions.
2. *Hazard*: a possible cause of harm to people or damage to the ecology.
3. *Risk*: the probability of an adverse effect, direct or indirect, on human health or the ecology.

Let's look more closely at these definitions. When we speak of a problem, as defined this way, we mean conditions that are not as they should be. For example, the existence of uncollected and rotting garbage at the curb in an urban residential area might be regarded as an undesirable condition or problem. A problem becomes a hazard when it has the potential to harm people or cause damage to the environment. Curbside rotting garbage, for example, is a hazard to human health to the extent that it serves as a food source for rodents with disease-carrying potential. A hazard poses a risk when exposure to the hazard is sufficient in length and intensity to produce expected ill effects. The hazard posed by curbside rotting garbage, for example, becomes a risk when it continues to be uncollected and there is evidence of illness in the neighborhood that could be the result of contact with contaminated food or disease-bearing rodents.

A graphic and perhaps oversimplified portrayal of the relationship of these three terms might look like this:



Trainers note

Print this simple graphic in large letters on a sheet of newsprint and tape it to a wall of the training room so that it is in front of participants throughout the workshop.

As we have observed, the first contact for most councillors with issues of environmental sustainability is a problem with possible environmental consequences. Problem formulation, sometimes called problem finding, is taking steps to more fully understand environmental concerns that could be hazardous and, thereby, pose a significant risk to humans or the ecology. Problem formulation might be described as narrowing the focus of concern. This is necessary to provide widespread assurance that the problem is serious and urgent enough that the community and the council are willing to invest resources to deal with it. Formulating the problem involves taking a closer look at it; that is, asking questions about the problem that can aid understanding. Questions that might be asked are:

- Why is it a problem?
- What possible hazard does the problem represent?
- What is the probability that the problem could lead to an environmental risk?
- What might happen if nothing is done about the problem?

Trainers note

List these questions ahead of time on a sheet of newsprint or a transparency plate for overhead projection.

Be careful in problem formulation not to fall into one of two common traps. The first trap is to mistake the problem for one of its symptoms, i.e., a local authority cleaning up a polluted wetland area without adopting tough, new regulations that would prevent this from happening again. Another trap to avoid is confusing the problem with a solution. A common example of this dilemma is the local authority with a solid waste disposal problem. When asked to identify the problem, councillors might say they need to acquire a sizable, accessible tract of land for the disposal of the community's solid waste. A solution it is, but what's the problem? By looking more closely at the situation, councillors might discover two problems hiding behind their solution. One, doubling of the weekly volume of garbage for disposal resulting from a recent population explosion. Another, rising cost for compliance with new disposal regulations imposed by the central government. Discovery of the "real" problem could help councillors realize that the landfill was only one of several possible solutions to their two-faced solid waste disposal dilemma.

Review

A common vocabulary is important in any field of endeavor. With respect to environmental sustainability, agreement on the meaning of basic words like *problem*, *hazard*, and *risk* is particularly important to avoid fundamental disagreements and misunderstandings, particularly among councillors serving as **Guardians of the Environment**. An early step in the process outlined in this workshop is problem formulation whereby councillors examine environmental problems more closely to avoid mistaking the "real" problem for a symptom or a solution.

Exercise: Environmental Problem Finding

13.3 Workshop – Trainer’s notes

Time Required: 90 - 120 minutes

Objective

This exercise is to provide a list of high priority local environmental problems to serve as the basis for small group work throughout the workshop.

Process

There are two process options for this exercise. *Option A* is the appropriate choice if participants have been asked to complete a pre-workshop assignment and arrive at the workshop with completed worksheets. Otherwise, choose *option B*.

Process: Option A

Ask participants to review the worksheets they have completed as a pre-workshop assignment and to select three problems from these worksheets which they believe are now or may soon become significant hazards to the local environment. In other words, the problems selected would represent high priorities for resolution by the local authority. Suggest that participants ask problem - formulating questions like:

- Why is it a problem?
- What possible hazard does it represent?
- What might happen if nothing is done about it?

While participants are selecting priority problems from their worksheets, print on a sheet of newsprint, in large letters, six to ten environmental problem categories such as air pollution, solid waste disposal, water supply, transportation, land use, housing, sewage disposal, and so forth. Be prepared to add other categories if necessary.

When participants have selected their three problems, explain that they will be working during the workshop in small groups of between five and ten organized according to environmental problem categories. Present the list of environmental problem categories, printed earlier on newsprint, and ask participants if other categories should be added to the list. Ask each participant to choose an environmental problem category which is associated with one of the participant’s high priority problems. Then organize participants into small groups that correspond with their selections.

Trainers note

Some environmental problem categories may be more popular than others. If so, two or three small groups may be formed around the same one. If there are too few participants interested in a category to create a group, participants from other groups can be asked to switch if the category is a priority for them.

When participants have chosen the small groups in which they want to work, assign each small group to a specific work area where they will be meeting through-out the workshop. Suggest that participants, in their small groups, take approximately one hour to share their problem priorities and to agree on a specific aspect of the risk category to focus on during the workshop. For example, a solid waste group might choose to focus attention on problems related to the accumulation of solid waste in roadways rather than those related to landfill overloading or vice versa. Specific problems brought to the group by participants from their own local authorities should be the basis for defining the focus of the small group.

Trainers note

There may be a tendency of participants to choose either too broad or too narrow a topic for their small groups. During a field test of these materials, participants that began with a focus on drainage later broadened the focus to include other infrastructure problems. Caution participants to choose a narrow, more manageable focus for their efforts, and to stick with the decision.

Process: Option B

There is an alternative process for assembling a list of local environmental problems assuming you decided to omit the pre-workshop assignment described previously or in the event participants arrive at the workshop without having completed their worksheets. *Option B* makes use of a well-known idea generating activity called the *Nominal Group*

Technique (NGT). Equipment and materials required for the NGT include an easel and newsprint sheets, index cards or “post-it notes,” if available, and masking tape.

Serving in a facilitator role, proceed as follows with the five step NGT process:

Step 1

Write a statement like the following in large letters on a sheet of newsprint to focus the group’s attention:

What are the most relevant environmental problems currently facing the community served by your local authority?

Step 2

Give participants four to five minutes to think about the question and to print the relevant problems facing their respective communities in concise, one sentence statements on index cards or “post-it notes,” if available, one statement per card.

Step 3

Ask for participants to tape their completed index cards or “post-it notes” on a designated wall of the training room.

Step 4

Allow ten minutes (depending on the size of the group) for clarification of problem statements to prevent possible misunderstanding.

Trainers note

To keep things moving along briskly, you might read each statement aloud, saying what you think it means. Ask the participant who offered the statement: “did I get it right?” and then ask other participants: “does everyone understand the problem?” The intent is to avoid long-winded explanations or invite unwanted debate.

Step 5

The final step in the NGT is to reduce the relatively long list of problem statements to a short list of potentially high risk environmental hazards. Allow a few minutes for participants to “browse” along the wall where the cards containing problem statements have been taped. Ask participants to review the cards and select the three problems which each believes represent the gravest threat to the local environment. Ask participants to record their selections by placing a check mark (P) on the three cards containing their choices. Problem statements with the most mentions are top candidates for assignment to small groups for subsequent workshop activities.

Trainers note

When the number of problems is quite large (e.g., over 30 problem statements), participants can be asked to rank their choices 1, 2, 3. Weights can then be assigned to the rankings (i.e., 1st choice =5 pts; 2nd choice = 3 pts; 3rd choice =1 pt. To help participants make their choices you might suggest the use of criteria as described above in option A.

The formation of small groups can be based on the assignment of participants who are interested in similar environmental problems to appropriate environmental problem categories as described above in *option A*.

Exercise: Problem Formulation (13.4 – Workshop – Trainers Notes)

Time Required: 60 minutes

Objective

To narrow the focus of each small group to one high priority environmental problem based on the application of a common set of criteria.

Process

In each small group, give participants a *Problem Formulation Worksheet* and ask each participant to complete the worksheet working independently on his or her highest priority problem. Explain that a later discussion of answers to the questions on the worksheet are meant to give participants a basis for choosing one of the priority problems as the group’s workshop project. Caution participants to avoid the common traps of defining the problem as either a symptom or a solution. Tell each participant to be prepared in about 15 minutes to discuss the results of this analysis with other

small group participants and participate in a discussion to agree on one of the several problems as the group’s project for the workshop.

PROBLEM FORMULATION WORKSHEET

Instructions. Take a few minutes to answer each of the following questions about your top ranked environmental problem.

1. **Why is it a problem?** (Your answer should help to clarify what is happening as a result of the problem that would not be happening if the problem were to disappear.)

2. **What possible hazard does the problem represent?** (Your answer should identify the innate potential for harm to people or damage to the ecology from the problem.)

3. **What is the probability that the problem is an environmental risk?** (Your answer should predict the likelihood of the problem leading to an adverse effect, direct or indirect, on human health or the surrounding environment.)

4. **What might happen if nothing is done about the problem?** (Your answer should offer a brief, realistic appraisal of the effect on people and the environment should the environmental problem be allowed to persist.)

Trainer Presentation: Visioning (13.5 – Workshop – Trainers Notes)

Time Required: 30 minutes

Objective

This presentation is to provide participants with a perspective on visioning as a critical step in the process of moving from an awareness of environmental issues to the achievement of sustainability.

Preparation

Develop a short presentation to prepare participants for the following exercise on visioning. As preparation, use material on “the importance of vision” from the preceding essay supplemented by the following information and ideas of your own.

Focus

According to an old Chinese proverb, “unless you change direction, you are likely to arrive at where you are headed.” The message of the proverb is that we are destined to repeat past mistakes and suffer the painful consequences without a vision of how things might be in the future and a plan for realizing the vision. For the next few minutes we will be

discussing the importance of vision as the inspiration and motivating force for environmental change and an indispensable tool for councillors as Guardians of the Environment.

Main points

It has been said that the surest way to find what we want is to imagine an ideal future while holding an uncomfortable, current reality in our minds. The tension between the two creates an impulse in us to close the gap.⁽³⁾ Once you know what you are dealing with, a useful next step is to create an image or vision of the best situation that could exist at some specific future time, spelled out in the most descriptive way possible.

Trainers note

This is a good time to ask participants for a definition of “vision.” A good way to proceed is to ask, when you think of the word “vision,” what other words come into your mind? Write down some of the words you hear on a sheet of newsprint.

Vision has been defined as an affirmation in the present of an ideal and inspirational future;⁽⁴⁾ a realistic, credible, attractive future.⁽⁵⁾ Inspiring visions are focused on a better future. They encourage high aspirations and appeal to common values. Inspiring visions make use of word pictures, images, and metaphors to state positive outcomes. When successful, they communicate enthusiasm and kindle excitement.⁽⁶⁾

Thinking about the future takes practice. To think long-range, it helps to focus your attention on a community problem in urgent need of corrective action. Let’s assume, for example, that the concern is air quality. You might, individually or in cooperation with others, identify some trends that are likely to influence the community’s air quality in the future. These trends might be classified for convenience as economic, social, political, technological, or simply as community “wants or needs.” The resulting trends may be good with respect to the abatement of air pollution or they may not be. Either way, they may be foreseeable and, thus, useful as a basis for planning. Here are some examples.

Trainers note

The five change categories that follow can be made into useful visual aids by printing them ahead of time on newsprint sheets or converting them into overhead transparencies.

1. What major changes in *community needs and wants* could affect air quality in our community in the future?
 - Increasing opportunity for community self-reliance - people have the freedom to make decisions on how best to satisfy their own needs.
 - More universal access to resources and income-producing opportunities for an increasing share of the urban population.
 - Wider distribution of social benefits (nutrition, health, protection from environmental degradation).
 - Opportunities to release the creative potential in more people so they can contribute to and benefit more from the communities to which they belong.
2. What major *economic* changes could affect air quality in the future?
 - More and universally accepted and stringently enforced standards for air quality.
 - Widespread use of industry incentives like tax breaks, low-interest loans and depreciation allowances to encourage less toxic products and more energy efficient processes.
 - Trend toward a decline in the energy intensity of industrial production world-wide.
 - Economic policies and practices that manage the demand for renewable resources so that the rate of depletion falls as the demand declines.
3. What major *social* changes could affect air quality in the future?
 - Increasing reliance on community initiatives and low-cost technologies to alleviate basic human needs for housing, water supply, sanitation and health care.

- Movement toward the equalization of energy use between industrialized and non-industrialized countries.
 - Environmental education that fosters a sense of responsibility for the environment and teaches individuals how to monitor, protect and improve it.
 - Redistribution of work and work patterns that reduce commuting distances.
 - Social systems in which people are able to enjoy rather than have to endure the conditions in which they live.
4. What major *political* changes could affect air quality in the future?
- Multilateral treaties prohibiting the production and stockpiling of chemical weapons of war.
 - Shifts in public policy that support the restructuring of investments to favour the development and use of energy-efficient technologies.
 - Governmental action that promotes increased use of gaseous fuels for domestic uses and cooking owing to the lower CO₂ content of these fuels.
 - Sustained governmental policies that encourage investments in renewables, energy-efficient industrial processes, transport vehicles, and energy services.
 - Greater public participation in environmental decision making and free access to relevant information.
5. What major *technological* changes could affect air quality in the future?
- Effective removal of sulfur and nitrogen from coal reducing the prevalence of acid rain in the atmosphere.
 - Dismantling of nuclear reactors at the end of their service life and safe disposal of nuclear waste products.
 - Removal of many air pollutants from fossil fuel combustion processes.
 - Transition from gasoline powered vehicles to electric powered.
 - New communication technologies, like fiber optics, that lead to a redistribution of work and work patterns.

These issue lists and the discussion leading to their formation helps to build a foundation of knowledge for the visioning process. In environmental visioning, it is important to identify the end product or “vision” in the most concrete terms possible. The focus should be on the condition or conditions that must exist for the achievement of environmental sustainability in a specific area of concern. In an industrial area, for example, *levels of particulate matter from industries, power plants, heating plants, and automobiles reduced from three times to twice the “allowable” level in the fifth year and reduced to allowable levels by the end of the tenth year.*

Trainers note

Print this example on newsprint ahead of time and refer to it at this point in the presentation. In large letters on the next sheet, print the words, WHAT DO YOU WANT? On the next page, print the word HOW? On the page after that, print the word OBSTACLES. Turn to these pages at the appropriate point in the following presentation.

In approaching this task, focus your thinking on one simple question (*in relation to their environmental area of concern*): What do you want? In the search for an answer to the question, avoid thinking about how to get it. This kind of thinking causes confusion. If you try to find the way to get somewhere before you know where you want to go, you can expect confusion to accompany the journey.

Shifting the focus from what you want to *how* [see note] it can be achieved also leads to doubts about whether or not the vision is achievable at all. Once doubt surfaces, it is quickly reinforced by others who say: “be practical; be more

realistic; consider the magnitude of what you're up against." Public officials who are preoccupied with the *how* quickly lose sight of the *why* and can be readily persuaded to abandon the quest for sustainability.

Confusion also results when you qualify what you want by becoming preoccupied with the obstacles [see note] that stand in the way (concerns about financing, political feasibility, technological capacity). Instead of a description of what you really want, your vision gets blurred and is reduced to *the best you can hope for under the circumstances.*" This is a good way to repeat history; but, it's a poor way to bring something new into existence.

Keep in mind that for every urban place that has been stopped in achieving its environmental vision because of difficult circumstances, there is an urban place somewhere in the world with similar circumstances that has achieved and even exceeded its vision. Knowledge that there are "benchmark" places in the world can encourage the search for environmental visions that do not depend for their achievement on current policies, practices, and technologies. This is known as an exercise in creative thinking, an indispensable tool of all visionaries and planners.

Review

A vision of sustainability is a "snapshot" of the future we want to bring into existence for ourselves and for our children. More accurately, a vision of sustainability is a composite of snapshots, each focusing on a category of future environmentally-related events - social, economic, political, technological - that together create an ideal picture of how things will and must be. Creating and holding to a vision takes persistence, commitment and hard work. Potent forces within a council or outside can destroy or distort the vision. Staying on track means not becoming preoccupied with how to achieve the vision before becoming committed to why, and not becoming overwhelmed by the obstacles that always confront any significant effort by responsible officials to change things for the better.

Exercise: Exploring the Future (13.6 – Workshop – Trainers Notes)

Time Required: 240 minutes

Objective

To begin the process of establishing an effective and appropriate environmental planning and policy-making capacity in local government through a creative process for thinking about the future.

Process

Provide each participant with a copy of the worksheet *An "Inspired" Vision of the Future (next page)*. Explain that participants will be working in their groups to construct an ideal future relative to the environment problem selected by their group

Remind participants that the end result of this exercise is not to construct an accurate picture of tomorrow. This is an unrealistic task. Rather, it is to give environmentally conscious local officials a tool they can use to ask better questions and make better decisions.

Before breaking into small groups, explain that participants in each small group are to work together to complete the worksheet. In other words, each small group is to prepare a single group vision. The resulting group vision should be printed, sketched, or otherwise entered on newsprint as a group report.

When all groups have their visions recorded on newsprint, each group is asked to join the other groups and present its vision in any way it chooses. Encourage groups to be creative in their presentations (e.g., a public presentation; television show; article in a local newspaper or international news media; a large, dramatic drawing). Ask participants in each group to make notes on themes they hear from other group reports and prospects for change or improvement they find interesting.

Alternative design

Groups of participants who know each other and work together can construct 10-15 year visions for environmental conditions in urgent need of attention in their own communities based on results of their pre-workshop awareness assignments.

Creating an “Inspired” Vision of the Future Worksheet	
Step 1: In the space below, describe the environmental problem your group has selected for this exercise.	
Step 2: To help focus your group’s thinking, reflect for a minute on shifts in community needs and wants, social trends, economic trends, political factors, and technological advances that could influence the future in relation to the environmental condition your group has selected for this exercise.	
Identify shifts in community needs and wants that could influence the future in relation to this problem (e. g., redistribution of social benefits, better access to income production activities, enhanced self- reliance of individuals to craft solutions to their own problems).	
1.	Timeframe:
2.	Timeframe:
3.	Timeframe:
4.	Timeframe:
5.	Timeframe:
Identify trends in the <i>economy</i> that could affect the future in relation to this problem (e. g., use of industry incentives to encourage greater energy efficiency, decline in energy intensity of industrial production, more universal environmental standards and enforcement).	
1.	Timeframe:
2.	Timeframe:
3.	Timeframe:
4.	Timeframe:
5.	Timeframe:
Identify <i>social</i> trends that could affect the future in relation to this problem (e. g., redistribution of work patterns that reduce commuting distances, increased environmental education, greater reliance on community initiatives and lower cost technologies).	
1.	Timeframe:
2.	Timeframe:
3.	Timeframe:
4.	Timeframe:
5.	Timeframe:
Identify <i>political</i> trends that could affect the future in relation to this problem (e. g., government policies that encourage investment in energy- efficient industrial products, restructuring of investment policies favouring energy - efficient technologies, greater public participation in decision making).	
1.	Timeframe:
2.	Timeframe:
3.	Timeframe:
4.	Timeframe:
5.	Timeframe:
Identify <i>technological</i> trends that could affect the future in relation to this problem (e. g., transition from gasoline powered vehicles to electric powered, removal of air pollutants from fossil fuel combustion processes, new communication technologies leading to a redistribution of work patterns).	
Step 3: Put yourself ten to fifteen years in the future. Assume that local government in this city has become committed to a sustained programme of effective action to eliminate problems that are known risks to the local environmental and has made appropriate and consistent use of environmentally sound technologies. Keep in mind the trends and conditions identified earlier as a reality test, but don’t spend time speculating about what local government actually did to make this happen. Simply visualize the situation <i>as you would want it to be if this was your city</i> and as if the vastly improved condition you are visualizing <i>actually exists in the present</i> . Spend enough time to imagine in the most vivid detail possible what this situation would be like. When you have pictured the situation in your mind, describe it in the space below. Remember, this is an exercise in creative, “inspired” visioning of the kind of sustainable environmental condition that you would feel pride in having helped to create. And also remember to stay on track by avoiding concerns about <u>how</u> to achieve the vision and avoiding a tendency to become preoccupied with the obstacles that always confront any significant effort of this kind.	

Trainer Presentation: Stakeholders (13.7 – Workshop – Trainers Notes)

Time Required: 30 minutes

Objective

To help participants appreciate the importance of stakeholders to the process of environmental sustainability and learn how to ensure that as many stakeholders as possible are represented.

Preparation

Develop a short presentation to prepare participants for the next exercise on stakeholder mapping and analysis. As preparation, use material on *Partners and Coalitions* from the preceding essay, Part I, supplemented by the following information and ideas of your own.

Focus

In any effort to change things for the better, there are parties who are affected by the causes and consequences of the impending change. Nothing is of more importance to the councillor as **Guardian of the Environment** than knowing who they are, what interests they have in what is being proposed, and what influence they hold over the success or failure of the undertaking. For the next few minutes we will be discussing who the stakeholders are in any effort to achieve environmental sustainability and the importance of keeping them informed and involved.

Main points

Natural resources and hazards to the environment are influenced by the activities of many people and institutions in a community. In turn, people and institutions are affected by environmental factors. Those who influence or are influenced by environmental matters can be said to have a “stake;” hence, the familiar term, “stakeholder.”

According to public affairs authority John Bryson, a stakeholder is “*any person, group, or organization that can place a claim on an organization’s attention, re-sources, or output, or is affected by that output.*”⁽⁷⁾

Trainers note

Ask participants what institutions, organizations, groups in their own communities would fit Bryson’s definition of “stakeholders”? Make a list of their responses on newsprint.

Examples of a local authority’s stakeholders are citizens, service customers, the governing body, employees, labor organizations, political parties, environmental groups, the banking industry, business interests, other governments, non-governmental organizations (NGOs) and the media. Without stakeholder influence, active participation, and resource commitments, little progress will be made by urban communities toward their goals of environmental sustainability. Therefore, the actions of local authorities that affect the environment must involve “*the broad-based, active participation of all those whose interests are affected, all those who can contribute to solutions, and all those whose cooperation is necessary for successful implementation.*”⁽⁸⁾

Why are stakeholders important?

Trainers note

Ask participants to answer the question. Offer the two reasons below and engage participants in a discussion.

For at least two reasons. One reason has to do with a fundamental principle of human systems: people will support what they help to create. Applying this principle to the process of sustainable development, including stakeholders in partnership with one another or technical support staff at critical points in planning and decision making will ensure their support at later stages. Issue-specified working groups comprised in this manner are considered a primary mechanism for involving stake-holders in a Sustainable Cities Programme.⁽⁹⁾

Another reason for viewing stakeholders as important has to do with the concept of comparative advantage. Local authorities can’t do everything. In fact, no local authority should do anything related to sustainable development on its own that could be done as well or better by someone else (a stakeholder). Moreover, by focusing their resources on what they can do best, local authorities avoid paying the opportunity cost for concentrating on less productive pursuits. The role of the councillor in facilitating or enabling the involvement of others in activities normally performed directly by government is discussed more thoroughly in other handbooks of the *Training for Elected Leadership* series.

Three questions must be answered by a local authority that seeks to involve key stakeholders in its environmental planning and decision making.

- *Who are our key stakeholders?* This question must be answered for each of the environmental issues identified. Stakeholders will be important to the resolution of environmental issues for either or all of these reasons: (1) their interests are affected by governmental plans and actions; (2) they have the power to control or possibly block

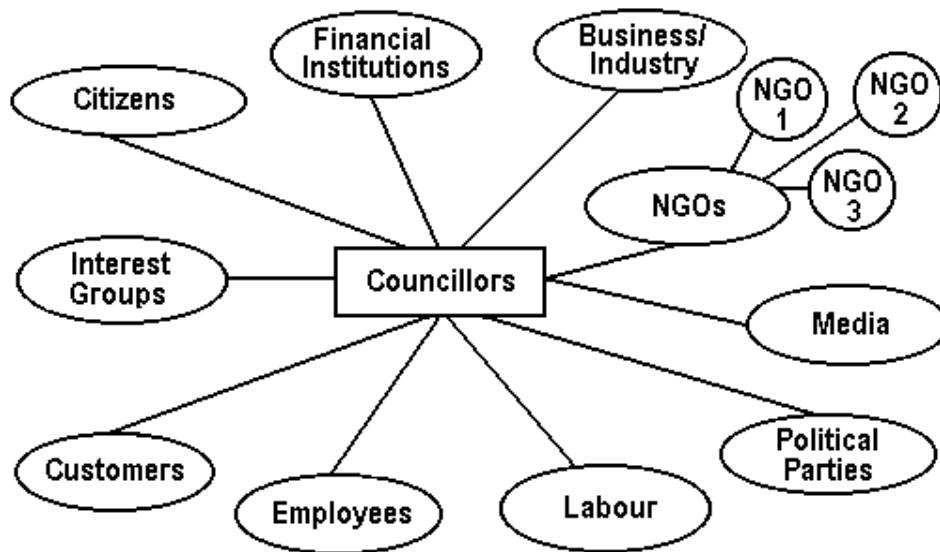
implementation actions; and (3) they possess expertise and information useful in the development of implementation strategies. One way to identify stakeholders to an issue is to draw a map of the stakeholders in relation to the primary change-instituting institution (i.e., councillors).

Trainers note

Copy the map on the next page onto a transparent plate for projection or, if this is not feasible, draw the map on a sheet of newsprint and tape it to a wall of the training room.

- What is their principal interest in local environmental issues? Interests will vary dramatically among stakeholder groups. They may be supportive or they may have reservations. For example, older citizens may be concerned with the health implications of an environmental risk. Conservationists may be interested only in its implications for preservation of the ecology. Government’s main concern may be the consequences of delay in development. And the business community may be apprehensive about actions of government that could jeopardize its economic interests. These concerns sometimes disappear and turn to into support or they may move the other direction into outright opposition.

Stakeholder map - an illustration



Note: councillors are placed at the centre of the map in this illustration, but any institution or group might be shown as the focal point for stakeholder mapping.

- *What do we want or need from each of them?* This question can be answered in two ways. First, it is vitally important to address the interests of key stakeholder groups in such a way that their support is obtained or, at least, their opposition does not become a significant obstacle to implementation. Second, to the extent that stakeholders can provide needed expertise or information, their advice or assistance should be solicited and their contributions re-warded.

The importance of identifying all key stakeholders to the development and implementation of new environmental plans, policies, and technologies and involving them in appropriate ways is made clear in a Michigan (USA) case from the early 1980s. The case involves the efforts of a citizen group to protect the wilderness characteristics of certain state-owned land. In this case, the citizens and the involved state agency did not do a thorough assessment of all the possible stakeholders. Hence, one county with authority over some of the land at issue was left out of the process for reaching an agreement. During implementation, the county was unwilling to abide by a portion of the agreement pertaining to the regulation of motorized boats. It took an additional six months of hard negotiation with the county to implement parts of the agreement to which the county was opposed. The outcome was not only considerable time lost in implementation but increased animosity between county officials and the state agency. ⁽¹⁰⁾

Contrast this Michigan case with the experience of local councillors in Linz, Austria. In need of a local means for the disposal of large volumes of hazardous wastes, the city was planning to construct its own incinerator and to test an

innovative new technology for hazardous waste disposal. After local residents began to organize a city-wide protest against the incinerator, councillors decided to appoint a 65-member advisory board assisted by an expert committee to evaluate the efficiency and suitability of the new technology. It was agreed that further use of the new technology was to be contingent on the advisory board's favorable evaluation of the testing phase. After the testing phase, the citizens concluded that the new technology was promising but recommended further testing. The wisdom of this decision was borne out by massive problems with the technology in the Czech Republic where it was later implemented without testing or citizen involvement. ⁽¹¹⁾

In view of the many and often competing interests in the process of attaining environmental sustainability, it stands to reason that knowing the key stakeholders and keeping them actively involved is an absolute necessity. Depending on their interests and capabilities, stakeholders can become involved in a number of useful ways. Here are just a few possibilities.

Trainers note

This is a good time to ask participants to describe ways in which their local authorities have involved stakeholders. Encourage discussion by adding the ideas below prepared in advance on transparent plates or newsprint sheets.

- Helping to identify and prioritize the principal environmental issues to be addressed.
- Serving on working groups assigned responsibility for developing and negotiating issue-specific action strategies and plans.
- Participating in specialized groups assigned to review the environmental soundness of new and existing technologies.
- Coming together to coordinate policies and strategies across sectoral and geographic lines and create coalitions for this purpose as necessary.
- Taking part in review panels organized to monitor and evaluate the impact of strategy implementation.

Review

The most important point is this. The active participation of stakeholders should be an integral part of every step in the process of planning for environmental sustainability. Nothing that can do more good if done consistently; nothing can do more harm if ignored.

Exercise: Stakeholder Mapping (13.8 – Workshop – Trainers Notes)

Time Required: 120 minutes

Objective

To gain experience using stakeholder mapping to identify key stakeholders and develop strategies for making productive use of stakeholder interests and capabilities.

Process

Divide participants into four groups that correspond with the groups that have been working together on awareness and vision. Give each group a blank stakeholder map and a set of task instructions. Tell the participants in each group to prepare a stakeholder map (*see map design on the next page*) relative to the environmental issue on which the group has been working. Explain that the map is to show the governing body of the local authority at the center and the names of key stakeholder groups, institutions and organizations in the outlying circles connected to the center. Tell participants to read and follow the instructions for the exercise and to report back when they have completed the assignment.

When small groups return, ask for facilitators from each group to display and explain the small group's results. Encourage a discussion of the exercise with questions such as the following: *how would an exercise in identifying, prioritizing, and classifying stakeholders help you as a Guardian of the Environment in your local authority?*

Alternative Design

Groups of participants who know each other and work together might be asked to complete the stakeholder mapping and analysis (next pages) for stakeholders in their own communities relative to the environmental issues identified

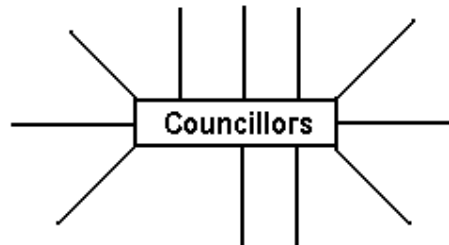
during their back-home, pre-workshop assignment.

Worksheet Small Group Instructions for Stakeholder Mapping

This mapping exercise is carried out in three steps:

Step 1: Generation of names

After joining your small group, select a member of your group as its facilitator. That person draws a single, large-scale map on a sheet of newsprint (see diagram below). In turn, and one at a time, you and other participants write the names of problem relevant, prospective stakeholder groups (e.g., small businesses, NGOs, financial institutions) on index cards or “post-it notes,” if available. Tape each of your cards at the end of one of the lines on the diagram. This process continues until the map is filled with names of stakeholder groups. Note: the person serving as facilitator may have to rearrange the cards so that similar stakeholder groups are clustered together on the map.



Step 2: Evaluation of stakeholder groups

Evaluate each of the stakeholder groups on the map according to the stakeholder group’s perceived support for action on the environmental problem. Based on a small group discussion, agree on the placement of a positive (+) symbol next to those stakeholder groups that are expected to be supportive or that have important resources to contribute. Place a negative (-) symbol next to those stakeholder groups that are expected to oppose the action.

Step 3: Prioritizing stakeholders

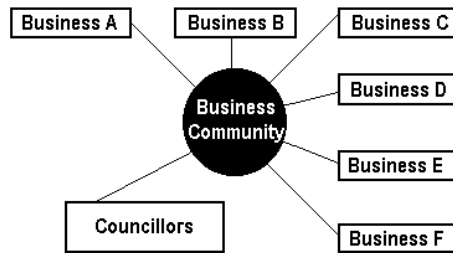
When the stakeholder map is complete, prioritize stakeholders according to the relative importance of their participation and support. To do this, write on a slip of paper the three stakeholder groups on the map whose participation and support, in your opinion, is most important relative to the group’s ability to manage its chosen environmental problem. Of the three you have selected, choose one as the most important, another as the second most important and another as the third. Indicate your choices by numbering the three stakeholders as follows.

<u>3</u>	Stakeholder A ...
<u>1</u>	Stakeholder B ...
<u>2</u>	Stakeholder C ...

Give your slip of paper to the facilitator who will compile the results for all members of your group. Weights may be assigned by the facilitator to the three choices on each slip of paper (e.g., choice #1 receives a weight of five; choice #2 a weight of 3; choice #3 a weight of 1). The facilitator will complete the step by identifying the stakeholder group which has received the highest weighted score as the top priority for your small group.

Step 4: Specifying stakeholders

On another blank map provided by the facilitator, write the names of several specific stakeholders within the top priority stakeholder group whose participation and support would be important for the successful achievement of the group’s plan for managing its environmental problem. For example, if the stakeholder group is the business community, identify specific businesses that you feel must be included as resource providers, active partners or, perhaps, as part of a business environmental coalition (see following diagram). This step can be concluded by collecting the names of specific stakeholders from small group members and listing them on the diagram.



Rejoin other small groups in a plenary session to report your stakeholder priorities and the list of specific stakeholders considered by the group to be important contacts for work plan development.

Case Study: Revival of Hope for Krakow (13.9 – Workshop – Trainers Notes)

Time Required: 60 minutes

Objective

The case study is to help participants appreciate the importance of making decisions about investments in programmes to improve the environment based on data-based assessments of environmental risk.

Process

Provide each participants with a copy of a case called *The Revival of Hope for Krakow*. Ask participants to read the case. When participants have read the case, divide them into small groups. Ask each group to discuss and answer the question that follows the case and report back in about 20 minutes.

When small groups have reported back, ask each group how it answered the question. Encourage a general discussion and comparison of points of view.

Trainers note

The point of this case is for participants to begin recognizing the importance of making decisions based on a thorough, data-based environmental assessment and to avoid premature, off-the-wall decision making.

THE REVIVAL OF HOPE FOR KRAKOW

Note: The following situation is freely adapted from *The Wealth of Communities*, a collection of stories about communities that are meeting their own needs and at the same time protecting the environment for future generations.
(12)

The situation

Nowa Huta, a 10,000 acre complex of coke ovens, blast furnaces and rolling mills is the workplace of some 25,000 people. It presents an awesome spectacle with its great plumes of glutinous, nicotine-colored smoke rising from a thick forest of chimneys. By the end of the 1980s, Nowa Huta was producing startling levels of pollutants: 170 tons of lead, seven tons of cadmium, 470 tons of zinc and 18 tons of iron a year. This falls as dust on and around Krakow together with other pollutants spewing out of 200,000 domestic chimneys and wafting down from the industrial region of Upper Silesia.

With steel production down, air pollution has declined as well. But it is still severe enough to inflict a sore throat on the visitor within a day or so after arriving. According to unofficial estimates, over half the food produced in the Krakow region is unfit for human consumption. Infant mortality is well above the Polish average and four times greater than in Sweden, while life expectancy is about eight years less than in Western Europe. Krakow and upper Silesia also suffer high incidence of cancer, and most observers conclude this is attributable to the high levels of pollutants.

The air pollution is so severe that many of Krakow's buildings are rotting away. The statues of the 12 apostles which stood unblemished outside St. Peter and Paul's Church have been reduced to featureless lumps of stone in recent

memory. Newly painted buildings are transformed, in a matter of a couple of years, from bright strawberry and yellow to dirty shades of gray.

Since 1989, the city government's Municipal Services Department has given considerable thought to such issues as waste management and pollution abatement. "We have more power now," says Janusz Kala, deputy-director of the department, "but less money than before [the change of government], and everyone agrees that the costs to improve the environmental situation are colossal."

At the present time, initiatives taken by city government and others are barely scratching the surface in meeting Krakow's immense environmental problems. However, these initiatives have brought people together who previously had been strangers to one another. Government initiatives have encouraged people to cooperate. The idea that individuals are responsible for their own actions, and that everyone can take positive steps to help improve the environment, is at last beginning to take hold in Krakow.

Question

Assume you are a member of the Krakow City Council and that you have just been elected on a platform that has promised strong governmental action to cleanup Krakow's polluted environment. What is the first action you would propose to determine the extent of the problem facing the council?

Trainer Presentation: Environmental Risk Assessment (13.10 – Workshop – Trainers Notes)

Time Required: 30 minutes

Objective

To help participants recognize the value of regular, systematic assessment of environmental risks and to use assessment data to set priorities for local government intervention.

Preparation

Develop a short presentation to prepare participants for the next exercise on environmental risk assessment. As preparation, use material from Part I of the preceding essay, *Assessing Risks*, supplemented by the following information and ideas of your own.

Focus

Risk is the likelihood of adverse effects resulting from exposure to dangerous events or conditions. *Assessment* is a systematic process for examining the potential exposure of people and the ecology to the harm presented by a risk. Environmental risk assessment is a way of estimating the environmental risk to humans or ecological systems from toxic agents. Applied to the role of government, an environmental risk assessment can provide councillors with an economically, socially, and politically defensible basis for investments in policies or programmes to protect, preserve or enhance the local environment.

Trainers Note

To encourage thinking about identifying existing or potential sources of risk, you might ask a question at this point such as: what methods do you use as a councillor to learn about conditions in the community that need to be corrected or to assess the actual impact of public policy implementation? A second question might be used as a follow up: how could these methods be more systematic? Engage participants in a discussion.

Main Points

Environmental risk assessment is a practice long used to evaluate the probable risk to human life from adverse elements in the environment. The process has become more sophisticated over the years as exposure to adverse elements in the environment has become increasingly common. The need for a systematic process for assessing risk has been stimulated in recent years by several factors. One of these is population growth, urbanization and industrialization, flooding, land slides, noise and many other problems which have vastly different consequences for more and less developed parts of the world. Another factor is the increasing concern for potential harm to ecological systems, resulting in a new body of knowledge about non-human elements in the environment leading to a process known as *ecological risk* assessment. Further complicating things is a vast increase in the amount of information available to the public about the hazards of environmental pollution spurred on by large-scale and widely publicized environmental disasters like Chernobyl and Mt. Pinatubo.

Undertaking an environmental risk assessment is a process with three steps. The first step is *problem formulation* or taking steps to more fully understand environmental problems that are a potential risk to humans or the ecology (refer to Exercise 13.4 for a review of the problem formulation process).

The second step in undertaking an environmental risk assessment is analysis of the potential exposure and effects. Analysis includes all necessary steps to evaluate the extent of long and short term consequences of the environmental exposure facing the community. The third step, risk characterization, is the integration of both the exposure and the effect of that exposure on those who would be adversely effected. These two steps, often technically demanding, may persuade the council to seek the specialized knowledge and skill of experts. Expertise such as this often can be found near home, although characterization of the risk may make it necessary to seek technical assistance elsewhere.

It is important for local officials to realize that technical assistance is only part of the process of finding solutions to complex environmental problems. Environmental risk assessment is a means for assembling relevant information about a problem. It is not, in itself, a decision about what should be done. What is done is a judgment call by the people concerned based in part on their understanding of the data but also on their values, fears, and concepts of what is important. It is the task of the councillor to interpret the will of the people and act accordingly.

The Sustainable Cities Programme (SCP) is a process for assessing environmental issues leading to the discovery of environmental hazards (natural and human-induced). SCP is the product of an operational collaboration between UNCHS (Habitat) and UNEP's IETC. An important step in the SCP is the assembly and analysis of existing data on a participating community's environmental problems. Together with information on the community's existing environmental infrastructure and services and on nearby ecological systems, a SCP Environment Profile is compiled. The profile becomes the community's environmental data base. It is gradually refined through public discussion and used to reach agreement on strategies and action plans by problem-specific working groups consisting of stakeholders and technical support staff.

The Sustainable Ismailia Project is good illustration of environmental profiling. Ismailia is an Egyptian town of 270,000 inhabitants located on the Suez Canal. An early step in Ismailia's SCP was the preparation of an environmental profile. The profile was prepared to identify both environmental and developmental concerns. Some of the concerns identified for development of the profile were these:

- Land tenure and physical constraints greatly hamper the reclamation of lands that have become waterlogged and overly saline in content because of inadequate drainage.
- There is increasing pollution of Lake Timsah, an important tourist attraction, from ships and shipyard activity, pesticide run-off from agricultural hinter-lands, and sewage from unserved parts of the community.
- A complex institutional framework in Ismailia complicates decision making with much of the power centralized in line ministries, severe constraints on the mobilization of local resources, and many national agencies with extraordinarily independent powers.
- Environmental data is dispersed throughout many local institutions or can be found only by searching through national or international agency offices in Cairo.
- While the economy is dominated by government, there is a dynamic private sector in the areas of land reclamation, manufacturing, tourism and contracting.
- Non-profit organization, whether community-based or voluntary, are weakly represented in Ismailia. ⁽¹³⁾

Ismailia's profile was more than a data base on environmental concerns. It included development issues as well. Also analysed was the physical, economic, social, and institutional context within which environmental action planning would take place.

Trainers note

The information on the Sustainable Ismailia Project could be photocopied, reproduced and circulated as a participant handout. Or it might be used as the basis for another case study in the event there is a need for supplemental workshop content. A useful question for discussion might be: "Given this mix of development issues, what would you suggest as a way to assess the extent of the problem facing Ismailia's public leadership?"

Risk Assessment is a process for examining the potential exposure of people and the ecology to the harm presented by an existing or potential risk. Assessment of environmental risk is a process consisting of three steps: problem formulation, analysis of exposure and effects, and risk characterization. Environmental profiles, an important

component of the Sustainable Cities Programme, provide decision makers with a comprehensive and renewable source of information on a community's most critical environmental issues, the capacity of its infrastructure and institutions to respond, and the vulnerability of its ecology to systemic environmental hazards.

Exercise: Assessing a Local Government Capacity for Environmental Performance (13.11 – Workshop – Trainers Notes)

Time Required: 90 minutes

Objective

To furnish participants with an opportunity to assess their local authorities' present capacity to provide a high quality environment for local residents and the ecology.

Trainers note

Additional materials required for this exercise consist of enough 5x7 in cards so that each participant can have at least two cards. If possible, half the cards should be a different color to aid in differentiating the data each contains.

Process

Give participants copies of the *Environmental Audit Questionnaire* and ask them to complete it following instructions printed on the questionnaire. Explain that the results will help them assess the progress of their own local authorities in recognizing and dealing effectively with environmental risks.

While participants are completing the questionnaire, distribute 5x7 in cards, two cards per participant (*different colors if possible*). When all participants have completed their questionnaires, ask them to identify statements which are checked either "no" or "don't know" on the questionnaire. When these have been identified, ask participants to write the word "no" at the top of one of their cards. On the same card, ask participants to list all the statements checked "no" on the questionnaire. The statements may be identified by number instead of written out to save space and time. On the other card (*different color if possible*), ask participants to write the word "don't know" and then list on that card those statements checked "don't know."

As participants finish entering their scores on the two cards, collect the cards. Separate the cards into two stacks, the "no's" and the "don't knows." Enter the results by placing a check mark on a sheet of newsprint for each number entered on each of the cards. One sheet of newsprint might be used for the "no's" and a second for the "don't knows." You might recruit two of the participants to help you with the data entry task and give the others a refreshment break until the task is complete.

When participants have returned from their refreshment break, ask them to look over the newsprint sheets and comment on the results of the data entry. To guide the discussion, ask them to notice where the most "no's" are concentrated and the most "don't knows." Ask them how they would interpret these results. Useful discussion-starter questions might include:

1. What does the distribution of the "no's" reveal about the general level of government activity in preventing, controlling or remedying local environmental problems?
2. What does the distribution of the "don't knows" reveal about the level of councillor awareness of their local governments' interventions with the environment?
3. In general, what does this exercise suggest about the value of environmental assessment to the councillor as a **Guardian of the Environment**?

At the end of the discussion, suggest that participants review their individual scores, comparing them with the group totals, and reflect on their current levels of environmental awareness and the implications for their effectiveness as **Guardians of the Environment**.

Alternative design

Groups of participants who know each other and work together might be asked to conduct the exercise relative to environmental practices from their pre-workshop assignment instead of those listed on the next couple of pages. The participant groups might be asked to consolidate their questionnaire results as described in the exercise to take advantage of an opportunity for shared experience.

ENVIRONMENTAL AUDIT QUESTIONNAIRE

Instructions. This questionnaire contains thirty statements that describe practices that most authorities would regard as positive steps toward environmental sustainability. The statements are grouped in five categories: environmental governance; water supply and waste water disposal; solid waste and recycling; land use and planning; and transportation. To the right of each statement is a degree of compliance scale containing three responses: yes, no, don't know. Read the first statement. If the statement is reasonably applicable to your local authority, check the block under the "yes" category. If the statement is not applicable to your local authority, check the block under the "no" category. If you are unable to check either the "yes" or "no" blocks with any degree of certainty, then check the third block, "don't know." Continue with the next statement, and so forth, until you have checked one item on the scale for each of the thirty statements in the questionnaire. Complete the questionnaire by summing each of the three columns and entering the result at the bottom.

ENVIRONMENTAL PRACTICES	DEGREE OF APPLICABILITY		
	YES	NO	DON'T KNOW
Environmental Governance			
1. The council is taking a proactive stand on environmental sustainability.			
2. The council has incorporated local opinion into environmental policy development and implementation.			
3. The council has created coalitions of governmental and private groups to initiate local programmes to further the aims of sustainable development.			
4. Local authority staff are trained to work effectively with stakeholder groups.			
5. Local authority staff have an opportunity to participate in relevant skill training.			
Water Supply and Wastewater Disposal			
6. Investments in water storage, distribution and purification facilities are keeping pace with local demand for water.			
7. There is no evidence of salt-water intrusion or other sign of subsidence owing to the over-extraction of ground water.			
8. Measures taken to increase water supply have not resulted in the detriment of downstream fishing or other water-dependent local industries.			
9. Measurable progress is being made to promote any onsite sanitation system (non-polluting, resource recovery technology, or even traditional on-site systems such as pit latrines and septic systems).			
10. The city's sewerage treatment system is being expanded as needed to keep pace with collected waste water demand.			
11. The natural environment is still capable of absorbing wastewater so that no risk exists of lasting damage to natural water courses or health hazards to the population.			
Solid Waste Reduction and Recycling			
12. Alternative technologies are being considered for the routine collection of household waste to avoid littering and the use of less environmentally-friendly methods.			
13. Increased pressure on local institutions to reduce generation of waste and to recycle has achieved a major reduction in the amount of waste paper, plastic, and metal products ending up in the landfill.			
14. Use is being made of methane gas generated during landfill decomposition as an alternative energy source.			
15. Landfill conditions are monitored regularly for the suppression of nuisances from odor, dust, airborne paper, combustibles and various pests.			
16. Smoky, smelly, manually-fired destructor-type technologies are no longer used to incinerate household waste.			
17. Serious attention is being given to the use of refuse-derived fuels or other promising new technologies as alternatives to landfilling and the incineration of waste.			
18. There is strong public support for waste reduction, reuse and recycling. Priorities of reducing and revising wastes are acknowledged.			
19. Local special waste handling facilities are being used to avoid long-distance transportation of hazardous waste.			
Land use and planning			
20. Proposals for new development are reviewed in relation to their possible effects on the			

environment (e.g., groundwater sources, geological terrain, and soil contamination).			
21. Accessibility by foot, pedal and public transport is an important criterion for assessing proposals for locating public facilities and new commercial or residential developments.			
22. Brownfields (i.e., old industrial areas) and infill sites are given priority in the siting of new housing developments.			
23. Green spaces and corridors within the town are preserved and, where scarce, are being provided.			
24. New developments provide convenient opportunities for growing food locally.			
25. Current policies favor preserving woodland areas and increasing the number of trees in town.			
26. Conservation areas have been identified and published plans for preservation and enhancement have been implemented.			
Transportation			
27. There are convenient alternatives to the single passenger car in low density and rural areas where public transport is not available (e.g., car sharing, minibuses, shared taxis). Bicycle use is encouraged through infrastructural measures (road maintenance, bicycle tracks).			
28. Walk and Ride, Park and Ride or Bike and Ride provisions are made in or close to commuter settlements and to connect conveniently with public transportation.			
29. A significant percentage of capital programmes for transportation improvement are shifting their emphasis away from road building for single-occupancy vehicle use.			
30. Comprehensive pedestrian walkways designed for convenience, safety, and beauty are linked to local land use policy.			
TOTALS			

Exercise: Environmental Profiling (13.12 – Workshop – Trainers Notes)

Time Required: 90 minutes

Objective

To compile problem-specific, environmental data useful to decision makers in understanding the constraints imposed by the infrastructure and institutional frame-work through which the problem must be solved.

Process

Give participants an *Environmental Profile Worksheet* and ask them to complete the worksheet in their small groups in relation to the environmental problem identified by their respective groups in Exercise 13.4 on problem formulation. The completed profile should provide a realistic picture of the urban infrastructure relative to the problem and the framework of public, private, and community-based institutions that will influence the outcome of strategies devised to manage the problem. The completed profile also includes an analysis of the ideal composition of a working group organized to move to next steps in decision making and implementation.

Ask participants in each small group to read each of the questions on the worksheet. Then suggest that they identify one or more participants in the group who has knowledge about the infrastructure setting and institutional framework for the group's environmental problem. Suggest that they engage in a dialogue with this person or persons and, using another member of the group as a facilitator/recorder, compile information from the discussion on a sheet of newsprint as answers to each of the questions.

Ask participants to be prepared in about one hour to report their results in a plenary session.

ENVIRONMENTAL PROFILE WORKSHEET

1. Describe the environmental problem and the potential hazard it poses for people or the ecology if it is allowed to persist.

2. Identify complications or barriers to environmental problem solving presented by the urban infrastructure. Examples for you to consider in preparing your own list:
- ✓inadequate sewer capacity
 - ✓large areas of the area unserved
 - ✓shortage of drinking water
 - ✓systemic problems like flooding, landslides, drought, deforestation, sea-erosion
 - ✓lack of an efficient transportation system
 - ✓loss of agricultural land due to urbanization and industrialization
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3. Identify barriers to environmental problem solving represented by the institutional structure. Examples for you to consider in preparing your own list:
- ✓a tradition of “top down” central planning
 - ✓the absence of formal linkages among responsible agencies
 - ✓poor accessibility to information
 - ✓inexperience in inter-sectoral cooperation
 - ✓centralization of power
-
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4. Identify the ideal composition of any working group (partners and coalitions) that would be organized to develop problem-specific, environmental strategies. Examples for you to consider in preparing your own list:
- ✓governmental representatives
 - ✓business and community groups
 - ✓those with relevant technical expertise
 - ✓those with substantive concerns that may be affected
 - ✓those with important decision-making powers
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Trainer Presentation: Options for Action (13.13 – Workshop – Trainers Notes)

Time Required: 30 minutes

Objective

To provide participants with a perspective on the appropriate deployment of technology to achieve the goals of environmental sustainability.

Preparation

Develop a short presentation to prepare participants for the next exercise that offers participants a practice experience evaluating technologies. As preparation, use material on *Determining Options and Consequences* from *Part I* supplemented by the following information and ideas of your own.

Focus

As *Guardian of the Environment*, you are responsible for action to deal effectively with environmental risks. As we have seen previously in this workshop, this involves becoming more sensitive to the local environment and working to either enhance or at least hold the line on the quality of life that currently exists in your community. It also involves the selection of interventions that are capable of managing environmental risks without causing new and even more detrimental conditions for urban inhabitants or the local ecology.

Main points

Vastly complicating the role of the local official in protecting and preserving the environment for future generations is the relentless pressure of new development and demands from local inhabitants for economic well-being. This complex

task is brought into sharp focus by the term “sustainability;” that is, to make it possible for citizens to enjoy the most economic prosperity possible without diminishing the ability of future generations to enjoy equal or better prosperity.

Also important to environmentally conscious public officials is the concept of “environmentally sound technology.” No one needs to remind you of the importance technology plays in the complex task of governing a local authority. Neither are you likely to dispute the proposition that all forms of economic progress involve some degree of environmental modification. When you approve the construction of a roadway or approve plans for siting an industrial plant or housing project, for example, the result will entail some compromise with the environment. For the environmentally conscious official, the question is how much compromise in each situation is acceptable. More particularly, the question is how sound is the application of a particular technology compared with alternatives that you might consider. These are questions which involve technical, economic, political, and social factors as well as those that are purely environmental or ecological.

Four major categories of environmentally sound technologies have been identified by UNEP’s International Environmental Technology Centre (IETC): *cleaner production technologies, monitoring and assessment technologies, local legislative mandates, and mitigation (end of the pipe) technologies*. Most local officials have knowledge of or experience with each of these technologies in some form or another.

Trainers note

Print each of the four technologies with a definition on a sheet of newsprint and tape the sheet on a wall of the training room where it can be read easily by all participants. One at a time, define each of the four categories of technology. Before giving an example, ask participants if they can think of an example of the first technology. Discussion. Then give an example of your own. Repeat the process with the other categories. The idea is to create a mini-discussion around each type of technology to promote participant comprehension and interaction.

- *Cleaner production technologies* are activities used to avoid conditions or alter practices that could result in damage to the environment. These technologies are meant to encompass product substitution or the redesign of an entire production process rather than simply the use of new pieces of equipment. Example: the substitution of natural gas for oil as a heating fuel.
- *Monitoring and assessment technologies* are activities used to investigate and evaluate the condition of the environment including the release of pollutants and other materials of a harmful nature. *Example*: use of aerial photography to determine the tree cover in an area which is one measure of the level of CO₂ absorption in the atmosphere.
- *Mitigation technologies* make use of so-called “end of the pipe” methods to restore or improve ecosystems that have deteriorated due to naturally induced or anthropogenic effects. *Example*: the introduction of a toxic waste disposal unit to improve the performance of a waste incinerator.
- *Local legislative mandates* are meant to render hazardous substances harmless before they have a chance to affect the environment. *Example*: the registration of required pesticides with applicant certification and pre-market testing.

Local legislative mandates are included as a category of technology in this hand-book for councillors as **Guardians of the Environment** because legislative mandates, including standard setting and enforcement, are among the most important responsibilities of local self-governance.

While technology has made possible the incredible progress enjoyed by much of the world, particularly since the industrial revolution, it is equally responsible for many of the world’s woes, particularly in the less developed parts of the world. There are many reasons for technological mishaps attributable to the actions or omissions of local government officials.

Trainers note

Write each of the following four mishap categories [italicized words] on a sheet of newsprint. Ask participants if they can recall or have heard of examples of technological mishaps. Ask for descriptions of each. Then ask participants to fit their examples to one of the four categories or create new categories as needed. Do this before using the examples given or in place of them if the discussion is sufficient without them.

- *Continued reliance on a technology designed to serve the needs of an earlier, less urbanized environment*. Built in a river delta, Bangkok constructed a series of klongs (canals) during the first century of the city’s life to add to the natural waterway in the delta. Thai society was oriented around these water-ways which provided domestic and agricultural water supplies, waste disposal, and the city’s primary means of transportation. The drainage function

of the klongs is one of the casualties of Bangkok's aggressive form of modernization. Many of the canals no longer exist, having been filled in to provide land for roadways. The ones remaining have to cope with the vastly increased urban run-off inasmuch as so much of the land has been built upon or paved over. ⁽¹⁴⁾

- *Unwise expansion or over exploitation of an otherwise sound technology.* The watershed of Lake Naivasha, located about 60 miles north of Nairobi, is an important center for horticulture and a major cash-crop industry, providing a bountiful source of fresh vegetables for lucrative European markets. The business has expanded rapidly, creating jobs and generating foreign currency. Growers say they are careful with the precious lake water and use sustainable production methods based on a voluntary code of practice. However, environmentalists fear that voluntary controls cannot be relied upon to prevent over-exploitation of the lake by multi-national growing companies and wealthy landowners when a probable consequence would be the loss of jobs and foreign exchange. ⁽¹⁵⁾
- *Use of technology to respond to immediate growth problems without regard to future consequences.* Returning to Bangkok for another example, heavy use is being made in that city of easily accessible groundwater to meet the needs of an exploding population, largely in areas without an existing water supply. The result has been severe subsidence in rapidly developing areas, particularly in central and eastern Bangkok. The practice continues owing to the prohibitively high cost of providing an integrated water supply system over a large area. ⁽¹⁶⁾
- *Insufficient effort to actively support the development of indigenous technologies by people who will benefit the most.* Whenever people contribute to a project, they look after it. In the Annapurna region of Nepal, a drinking water project planned and built in Ghandruk at a cost of 6.4 million rupees without any consultation with local inhabitants soon broke down and fell into disuse. Subsequently, the villagers, with the help of a locally formed technical assistance group, planned and built their own system. The cost was a mere 50,000 rupees, half of which was paid by the locals themselves. The system is still in perfect operating condition. The success of the Nepali water system demonstrates why the development of appropriate technologies initiated by indigenous populations and built with their participation are often more effective than high priced, donor prescribed solutions. ⁽¹⁷⁾

Review

In this presentation, we are concentrating on the role of technology and the ability of local officials to recognize and make use of technologies that are environmentally sound. This poses two challenges for the local official as **Guardian of the Environment**. The first challenge is to develop within your local authority an organizational capacity to recognize and implement appropriate technologies to deal with identified risks or hazards to the local environment. The second challenge is to ask enough questions when considering the merits of keeping or changing any activity or practice with environmental consequences to avoid unfortunate mishaps or over-sights as those described above.

Exercise: Thinking about Technology, the Environment and Sustainability (13.14 – Workshop – Trainers Notes)

Time required: 2 hours

Objective

To familiarize participants with the information councillors need to have to act appropriately and responsibly relative to environmentally sound technologies or technologies that might be incompatible with sustainable development.

Process

Distribute the attached worksheet that contains questions to be answered by participants of small groups in relation to technology options. Ask participants to complete the worksheet in their small groups relative to the environmental problem identified by their respective groups in *Exercise 13.4* on problem formulation. Tell participants that the questions are meant to provoke thought about factors that must be taken into account by government decision makers when faced with the need to consider and act on new and emerging technologies. Explain further that the exercise is not intended to produce a specific technology as the solution to the small group's environmental problem. Rather, the intended learning value of the exercise for each small group is how to develop a strategy for compiling information needed to determine the nature and appropriateness of technologies under consideration.

Trainers note

This exercise is intended to focus the attention of participants on the questions councillors should be asking about the environment and technology options. The assumption we are making is that the complexity of choosing technologies

is beyond the scope of most councils. Answers to the questions on the worksheet are meant to help councillors confronted with an issue involving technology to assemble enough information to act responsibly and consistent with sustainable development. In times like these, a thoughtful question can be a councillor's best friend.

Ask small groups to assemble to discuss the questions on the worksheet and to compile their answers. Give them one hour to complete this task. At the end of the time, ask the small groups to reconvene. Ask each group to describe how it answered each of the questions and ask about the rationale used by the group in developing its answer to the final question.

After all groups have reported, encourage a general discussion of local government's role and responsibility relative to technology, the environment and sustainable development.

EXHIBIT QUESTIONS FOR COUNCILLORS VIS-À-VIS THE ENVIRONMENT, TECHNOLOGY AND SUSTAINABLE DEVELOPMENT

When considering the environmental consequences of new technological developments, the goal may not be just to take a particular proposed technology and improve it. It may include consideration of the technology in relation to a range of options, many of which may have previously been unexplored. Local government has a special responsibility for managing technology, whether the technology is being imported into the community or exported from it. This responsibility focuses on existing technologies that are being proposed or are under consideration but may extend beyond that to emerging or potentially emerging technologies.

Questions

1. In the situation facing your small group, would you define the role of the local government in relation to the type of technology under consideration primarily as:
 - *Advice giver.* A source of information on government policies, regulations and incentives relative to the development and use of technology.
 - *Consent giver.* A source of necessary approvals (i.e., permits, licenses, etc.) for the development and use of technology.
 - *Funder.* A possible financial underwriter of development or other costs related to new or emerging technology.
 - *Operator.* The actual user of a technology developed inside local government or imported from elsewhere.
 - *Monitor.* An instrument for the review and analysis of new or existing technology for compatibility with criteria of environmental soundness and sustainable development.

2. Would you characterize the action(s) to be taken by the council in this situation as:
 - Tactical and relatively short-range in nature and aimed at dealing only with a specific environmental problem.
 - Strategic and relatively long-range in nature with a focus on establishing a policy framework for local government's role and responsibility relative to technology, the environment and sustainable development.
 - Both (please explain)

3. As a stakeholder in finding a solution to the environmental problem selected for action by your group, would you see local government's principal concern as (check all items that apply):
 - The type and cost of infrastructure necessary to support a new or emerging technology.

- The possible undesirable consequences of local technology development and what to do about it.
 - and use elsewhere in the country or the world.
 - Other (please explain)
-
-

4. By what means might a council confronted with the situation identified by your group obtain the information it needs to take action to deal with it?

- Assign responsibility for conducting a study to policy or technical analysts within the organization.
 - Contract with one or more technical service providers to study technology options and make recommendations.
 - Organize a stakeholders committee assisted by a panel of appropriate technology experts to make recommendations.
 - Transfer responsibility for the decision to an appropriate public or private organization or coalition of organizations and agree to be bound by their decisions.
 - Other (please explain)
-
-

5. In view of your answers to these questions, what tactic, strategy or approach would be most appropriate for a council faced with the situation under study by your group? Consider political, socio-economical and cultural aspects as well as technological solutions. Write your group's conclusions in the space below.

Role Play/Case Study: Evaluating a Technology for Waste Management (13.15 – Workshop – Trainers Notes)

Time required: 3 hours

Objective

To engage participants in the process of deciding on the suitability of a prospective technology by using criteria specifically designed to evaluate a technology's potential impact on the environment.

Process

Start the exercise by giving each participant a copy of several handouts: 1) the case study that is the basis for the role play exercise; 2) a description of the role play task that includes three roles to be played by participants in each group as they carry out the task; 3) a set of guidelines for use in evaluating the adverse effects, transfer potential and capability for monitoring and management of the technology's impact (see the attached exhibit); and 4) an observer worksheet. *Note:* Owing to the amount of reading to be done, consider providing participants with copies of the handouts in advance of the workshop either in an advance mailing or at least one day ahead.

When participants have read the handout materials, divide them into small groups of not less than five or more than ten. Explain that each small group will be assuming the role of a local government advisory committee that has been given the task of recommending for or against the adoption of a new solid waste disposal technology for the clean up of a major public market in the hypothetical city of Marimba.

Ask participants to recall from the reading that some of the participants in each group, as committee members, will be asked to play a role that is concerned primarily with the potentially adverse effects of a technology based on the facts provided and the guidelines. Other participants will be asked to play a role concerned primarily with performance of the technology under similar circumstances elsewhere. Still other participants will be asked to play a role concerned primarily with questions of how effectively the technology's effects on the local environment can be monitored and

managed. Finally, at least one member of each group will be asked to serve as an observer. Observers have the task of observing and reporting the interaction of small group participants as they discuss the task in their respective roles.

Before leaving to begin their small group task, ask each participants in each small group to choose the roles they wish to play, including observers. Provide each small group with a reasonably private work space and easels and chart pads for recording ideas and drawing conclusions. Ask if there are any questions about the exercise. When questions have been answered, ask participants to move into their assignment work areas and to return in one hour.

At the end of one hour, ask participants to reconvene. Ask for each small group to repeat the role playing that took place as role participants deliberated the pros and cons of the proposed technology and formulated a conclusion about what to recommend to the city council. Tell each group it has 10-15 minutes to complete its role play. Allow another five minutes for observer reports from each group.

When the role playing has been completed, pose some general questions about difficulties in making decisions about assessing the appropriateness and environmental soundness of technologies and the usefulness of criteria in the decision-making process. Encourage a general discussion of lessons learned.

Case Study: Cleaning up the Public Market

Note: The following situation is freely adapted from Making Cities Work: The Role of Local Authorities in the Urban Environment, published in collaboration with The United Nations Environment Programme. ⁽¹⁸⁾

The situation

Disposal of solid waste in the city of Marimba (population 720,000) has become problematic owing to an increasing population density and an inefficient collection system. Uncollected garbage is left to rot in the streets or is thrown into waterways and drains to make worse an already serious flooding problem. Past efforts to encourage recycling in Marimba have failed for several reasons. Commitment to environmental protection on the part of political leaders and citizens is low. Nothing has been done to educate the public on the health risks of uncollected, decomposing household waste. There has been no effort by local government to take advantage of informal systems such as organizations of market vendors and hawkers already in operation throughout Marimba.

The Central Marimba Waste Management Project is the outgrowth of a study commissioned by a leading consumer manufacturing firm with offices in Marimba to identify the source of pollution in a canal that runs through the firm's property. The study showed that 40% of the waste came from the Juba Public Market, another 40% from the squatter and low-income settlements along the banks of the canal and 20% from uncontrolled dumping upstream.

In another part of the country, Port Marcy, a coastal community of 100,000 has initiated a waste processing and recycling project as a joint effort of the local government, a private company, and an NGO. The local government furnished the company with space in the municipal landfill and loaned the company money to set up a recycling and composting facility. The NGO, in turn, educated local residents on composting and recycling. With the project operating in the town's central market and adjacent commercial area, 40% of the town's waste is now being recycled or turned into organic fertilizer.

Inspired by a waste reduction strategy initiated in Port Marcy and bending to pressure for action from the manufacturer, the Marimba City Council, recently appointed an advisory council committee to consider adapting the Port Marcy model to Marimba. Primary emphasis is being placed on community participation in the advisory committee by including several non-council members. Through exploratory meetings in the market and surrounding neighborhoods, several talented and influential individuals are identified and recruited to the advisory committee.

Following extensive examination and evaluation of the environmental risks associated with the waste accumulations in and around the Juba Public Market, the advisory committee begins a careful analysis of the potential of a composting facility similar to the Port Marcy model. The committee's efforts focus on the potential for creating a profitable composting and recycling business that provides the economic incentive for a sustained clean-up effort. Unlike the Port Marcy model where the composting and recycling facility is owned by a single company, the hawkers and market vendors would form a cooperative which will own the facilities. More than 1000 members will benefit from the profits.

The cooperative is to be the main service provider. Its members would segregate the waste, operate the composting facility, and conduct educational campaigns in the community. The city of Marimba would continue to collect the waste and provide a sanitary inspector and market master to enforce regulations in the Juba Public Market. The manufacturer would continue to furnish in-kind support to the project and assist the cooperative in its educational campaigns. A private company located in Port Marcy would serve as a consultant to the project. Its main

responsibilities would be to prepare a feasibility study, help to transfer the technology used in Port Marcy, and identify buyers for the organic fertilizer produced by the composting plant.

Financing for the project would be provided by a complex financing arrangement. Ten percent would be provided by the manufacturer. Thirty percent would come from a World Bank/UNDP ecological waste management grant. The remainder would come from a city council reserve fund appropriation. The funding scheme was intended to provide full funding for the first three years and then funding on a declining basis for another two years. After that, the business was expected to be financially self-supporting. When the project is fully operational, 50-60 percent of the waste would be composted while 20-30 percent would be recycled.

Postscript

The project on which this case is based has produced a strong, neighborhood-based cooperative which is establishing and will own the composting and recycling facilities and is firmly committed to cleaning-up the market area. One major achievement of recycling and clean-up efforts to date is the elimination of flooding in the market area, previously an annual occurrence because of clogged drains.

ROLE PLAY MATERIALS

Task description

Each small group, acting as the advisory committee, is to evaluate prospects for a successful transfer of the composting/recycling technology used in Port Marcy to Marimba and to make a recommendation to the city council based on this evaluation. As a guide for its evaluation, the committee has obtained from the United Nations Environment Programme (UNEP) a set of guidelines on information that should be considered before the transfer/adoption of any technology (see the attached exhibit). The guidelines consist of three types of information:

1. Information concerned with environmental releases and potentially adverse effects;
2. Information concerned with environmental performance of the technology in other locations; and
3. Information concerning environmental monitoring and management

Three members of each small group are asked to play the roles of *Robert Winsgood* who is concerned primarily with the adverse effects aspect of the guidelines, *Angela Romacky* who is concerned with the transferability potential, and *Elizabeth Cloette* who is concerned with questions of environmental monitoring and management (see their role descriptions below). Other small group members choose one or another of the three roles with which they will align themselves during the role play. One or two members of each small group is assigned as an observer and asked to complete the worksheet (also shown below).

Small group members with role assignments take the lead in applying the guidelines assigned to them and, based on the results of the interaction, reach a decision on what to recommend to the city council before the one hour time period has elapsed. It is important to allow enough time at the end of each small group discussion for the observer report and to plan a 10-15 minute presentation on the small group deliberations for the general session.

Role descriptions

Councillor Elizabeth Cloette

The Mayor has asked you to chair the advisory committee and to give special attention to the guidelines related to Environmental Monitoring and Management Programmes (see 3rd column in exhibit.) Like the Mayor, you embrace the concept of ecological waste management, having for many years been employed as a civil servant in the environmental division of the Ministry of Environment and Natural Resources. However, you have reservations about on-going management of a project modeled after a much smaller city and the prospect for adequate performance standards and monitoring procedures to keep the project on track. You also have grave doubts about the success of a project entrusted to a cooperative of vendors unfamiliar with the management of public projects. Besides, as you see it, the bottom line is not profitability but environmental sustainability; and you have difficulty accepting the notion that the public good can be assured when those in charge are motivated primarily by the pursuit of profit. With respect to project monitoring, you have always ascribed to the notion that one does not entrust protection of the hen house to the fox. This is a job for government. However, it may be difficult to find government people with the expertise to manage and monitor the project; and you have been told that adequate training of this kind is not available locally for unskilled personnel.

Ms. Angela Romacky

For many years you have operated a vegetable kiosk in the Juba Public Market. Your leadership in the local vendor’s association made you a good choice to represent the interest of market vendors on the advisory committee. You are impressed with Port Marcy’s success in joining multiple sectors in a joint venture that could produce a profit and were pleased when you were asked by the Mayor to work with the guidelines related to technology in other locations (see 2nd column on exhibit.) As an entrepreneur, you were quick to see the profit potential and were instrumental in encouraging formation of the hawker/vendor cooperative as owners of the composting and recycling facilities. On the other hand, you can see obstacles to a successful adaptation. The Juba Public Market is large, unplanned and overcrowded, making it harder to move garbage through the market and workers harder to organize. Although supportive, the size and complexity of the local government bureaucracy could delay implementation. Other differences include the presence of squatters and the lack of sanitation facilities in and around the market which contribute to the environmental degradation of the area and difficulty finding undeveloped land suit-able for a processing site.

Mr. Robert Winsgood

As the manufacturer that is underwriting a portion of the start-up cost for the composting and recycling facility, your firm has asked the Mayor to include you on the advisory committee. Inasmuch as your company has suffered for several years from pollution of the canal that runs through its property, it has a vested interest in finding a way to reduce the disposal of solid wastes in the canal upstream from the plant. Since your firm is particularly interested in the nature of the pollutants and the potential damage to the environment should they not be abated, the company president has requested your participation to focus on the guidelines related to Environmental releases and adverse affects (see 1st column on exhibit.) A particular concern of yours is the possibility that toxic or hazardous materials contained in the raw pollutants might contaminate the organic fertilizer to be harvested for sale. Frankly, you were surprised to learn that the city government was supportive of ecological approaches to waste management. You were particularly pleased that the city took the initiative to create a vendor’s cooperative to run the project and invited an experienced firm from Port Marcy to serve as a consultant.

OBSERVER’S WORKSHEET

As the group’s observer, watch closely what takes place during the role play activities of your small group and answer the questions below about the interaction. Be prepared to report your observations before the small group planning period is over and assist role players to demonstrate for the general session how they developed their findings and conclusions through role playing.

1. Describe how members of the group adapted to the group task and their respective roles?

2. How and to what extent were the information gathering guidelines used by any of the group members to evaluate the technology under consideration?

3. What conclusion was reached by the group regarding the appropriateness of the technology being considered and what factors weighed most heavily in the ultimate decision?

4. What would you suggest to the group in preparing for its presentation at the general session?

GUIDELINES FOR INFORMATION GATHERING ON POTENTIAL ENVIRONMENTAL IMPACTS OF TECHNOLOGIES

In an effort to assist technology decision-makers acquire adequate information about technologies deemed to be environmentally sound, the United Nations Environment Programme (UNEP) developed the following guidelines on information that should be made available to prospective technology users before transfer/ adoptions of any technology

Concerning Environmental releases and potentially adverse affects	Concerning Environmental performance of the technology in other locations	Concerning Environmental monitoring and management programmes
A description and quantification of the releases, including emissions and discharges to air, surface water, groundwater, soil and solid and hazardous waste streams.	Identification of locations where the technology has been operated in the past.	A description of the environment monitoring [programme for the technology, including emissions and ambient monitoring to be carried out, along with a description of the sampling and analysis methods to be used.
A description of the potentially adverse affects of these releases on human health and safety and ecological systems.	Description of the environmental standards applicable to the technology at those locations.	A description of the environmental management programme for the technology, including the actions that should be taken to minimize environmental releases and their potentially adverse release.
The demand of the technology for new materials (including toxic or hazardous materials), water and energy and the potential environmental implications of providing them.	Identification of the environmental regulatory information responsible for issuing the permits or monitoring environmental compliance of the technology at those locations.	A description of actions that should be taken in response to both routine and accidental release
The potential environmental impacts of products produced by the technology including impacts of testing, discarding and disposing of the products.	The environmental compliance record of the technology at those locations including identification of violations of environmental damages and adverse health effects and accidental releases that have occurred.	The expertise and skills of management and personnel necessary to operate, maintain, monitor and manage technology in an environmentally sound manner.
	The environmental policy of the technology supplier with respect to exports; specifically whether the expected technology is designed and intended for operation in accordance with the environmental standards in the supplier's home country, or the most protective standards in other locations where the technology has operated	The maintenance and repair programme necessary for successful operation of the technology from an environmental point of view.

Trainer Presentation: Resources (13.6 – Workshop – Trainers Notes)

Time required: 60 minutes

Objective

To prepare participants to evaluate the resources available to them as councillors to implement environmental technologies and to overcome institutional barriers to their use.

Preparation

Develop a short presentation on the resources available to the local official to implement environmentally sound technologies. Important components of this presentation are a council's capabilities to mobilize resources and sources of assistance inside and outside the organization and council recognition of institutional barriers to implementation and what can be done about it. As preparation, use material on Mobilizing Resources from Part I supplemented by the following information and ideas of your own.

Focus

For new government programmes to come into existence, decisions must be made to acquire new resources or shift existing resources from other purposes. The needed resources may be people, equipment, materials, money, information or a combination of these. As a result, finding the necessary resources to achieve a higher level of sustainable development involves either some adjustment of government priorities or new resource commitments from outside the organization.

Main points

Every councillor knows or soon learns after being elected to public office that there are never enough public resources to do everything that needs to be done. Government's capacity to raise revenue through tax levies or other means is limited. Public money, therefore, must be thoughtfully allocated to priority needs and efficiently managed. Opportunities must be sought to leverage public resources by using them to attract private capital and other external investments. New programmes must rank high as a measure of critical public need in order to compete successfully with existing programmes for limited public funds.

In many urban places, the depletion of natural resources and the growing weight of environment degradation falling on the urban poor is producing a shift in priorities. Taking advantage of a period of change and restructuring, Durban, South Africa initiated a Local Agenda 21 campaign in 1994 aimed at creating a more healthy, viable and sustainable urban environment for its population of some 2.5 million, approximately a third of whom live in squatter or informal settlements. Funds were shifted within Durban's local government to create an environmental branch in the urban development department for administering Local Agenda 21. The position and role of Local Agenda 21 in Durban has been strengthened by a workshop held in Drakensberg and attended by councillors and officials representing local authorities throughout the metropolitan area. It was through this educational process that local councillors developed the vision that has led, in turn, to their willingness to commit public resources to the new programme emphasis.⁽¹⁹⁾

Within every community and the urban environment within which the community exists is a reservoir of resources that can be used to achieve environmental goals. As a catalyst for mobilizing needed resources, city councils, like yours, are ideally suited to the task of identifying the resources needed and determining how to get the necessary participation and support from interested parties who have control over them. The needed resources may vary in form and come from many different sources.

Trainers note

You might print on a sheet of newsprint or a transparency the names of the three cities that are used below as examples of successful and creative mobilization of external resource so participants have something to look at while you are talking. Underline the types of resources being used in each case.

1. In Nepal, the formation of the Annapurna Conservation Area Project in 1986 through the ingenuity of three men, a national park warden, a micro-hydro specialist and a medical geographer, has been a catalyst for the introduction of energy-saving and energy-creating measures to reduce reliance on wood and practices aimed at protecting and enhancing Nepal forests. The project has been successful in stimulating the active involvement of village women in entrepreneurship, community health and conservation activities.⁽²⁰⁾
2. In a unique example of mobilizing resources and expertise, Quito, Ecuador's mayor and municipal council engaged local community organizations to help design waste collection and recycling services for poorly served, low-income neighborhoods. Commitment of resources to this scheme has fostered job creation and the establishment of micro-enterprises in these neighborhoods.⁽²¹⁾
3. The seaside city of Santos, Brazil, through a partnership with a local university, has achieved a 50 percent reduction in the concentration of bacteria in canals that drain onto the city beaches. Unregulated emission of sewerage from city buildings into the canals had become a major source of pollution to Santos beaches and the cause of a dramatic decline in the city's tourist industry. Since 1991, engineering students of University Santa Cecilia dos Bandeirantes, who receive monthly stipends and are supervised by a municipal engineer, have inspected 31,000 properties and detected 23,000 irregular clandestine hookups to the city's storm water canals. The use of these students as resources coupled with a vigorous enforcement programme by the city is the chief reason for a significant improvement in water quality along Santos' beaches.⁽²²⁾

There are resources far outside the boundaries of your local government and even the physical limits of your community that can be tapped to achieve the purposes of environmental sustainability. The City Council of Dar-es-Salaam, Tanzania, a participant in the UNEP/UNCHS/Habitat Sustainable Cities Programme, serves as a catalyst to mobilize local resources and focus them for effective action. Participating local resource groups include desk officers and principal secretaries of relevant ministries, parastatals, NGOs, community-based organizations, and private groups providing technical support. These local resources, in turn, provide the leverage to stimulate investments and interventions from external public and private sources including the Ford Foundation, the European Union, UNDP,

IDRC (Canada) and others. The experience of Dar es Salaam provides local officials with an important lesson: it is more effective to coordinate resource mobilization at the local level where the investments actually take place than from the national level. ⁽²³⁾

Unfortunately, there are significant barriers to the effective mobilization of local resources. Local policies, laws, institutional procedures and work practices define how things get done in every local government. These approaches, perhaps the result of earlier regimes, may be ill-suited to the needs of today's increasingly complex urban environment. The point is, when not re-examined from time to time and altered as necessary, outmoded policies, procedures and work practices can become barriers to progress. They may contribute to stalling or misdirecting government action and leading to less than desirable outcomes. ⁽²⁴⁾

Several of these barriers are described below. Some of them, no doubt, will be painfully obvious to you. As each is identified, recall an experience of your own where a policy, procedure or practice has slowed progress of a programme or actually brought it to a halt.

Trainers note

Ask participants to use the following worksheet to record specific experiences where one or more of these policies, procedures or practices has slowed progress of a programme or actually brought it to a halt. Read each barrier and ask participants to share examples from their worksheets.

- Lack of will or capability to look ahead with vision and plan strategically.
- Lack of cooperation and collaboration across departmental, sectoral, and governmental lines.
- Outmoded approaches to urban planning that are deterministic and assume an unrealistic degree of local government control over urban development.
- Inexperience with the daily participation of citizens and key interested parties as regular and equal partners in urban planning and governance.
- Inexperience with public-private collaboration and coalition building that recognize the duality of purpose in sustainable development.
- Failure of local government to take full advantage of opportunities available for local financing.
- Shortage of skills for effective environmental management and urban development planning.
- Inadequate information gathering capabilities.
- Reluctance to share what is already known out of fear of losing control.
- Failure to enable every local government employee and official to contribute fully to the purposes of sustainable development.

This may seem an awesome list of barriers. But none of them is insurmountable. Another of your tasks as **Guardian of the Environment** is to assess your local government's ability to overcome institutional barriers like these.

Review

New environmental initiatives by local governments are fueled by the mobilization of needed resources. Needed resources include people, equipment, materials, money, information, or a combination of these. Finding the necessary resources to achieve a higher level of sustainable development involves either some adjustment of government priorities or new resource commitments from outside the organization. It also involves overcoming policy, structural, procedural and other kinds of barriers within the local government that would prevent shifting resources to the support of desired initiatives.

Worksheet

Institutional Barriers to the Mobilization of Resources

1. *Barrier.* Lack of will or capability to look ahead with vision and plan strategically.
Example: _____

-
-
2. *Barrier.* Lack of cooperation and collaboration across departmental, sectoral, and governmental lines.
Example: _____

 3. *Barrier.* Outmoded approaches to urban planning that are deterministic and assume an unrealistic degree of local government control over urban development.
Example: _____

 4. *Barrier.* Inexperience with the daily participation of citizens and key interested parties as regular and equal partners in urban planning and governance.
Example: _____

 5. *Barrier.* Inexperience with public-private collaboration and coalition building that recognize the duality of purpose in sustainable development.
Example: _____

 6. *Barrier.* Failure of local government to take full advantage of opportunities available for local financing.
Example: _____

 7. *Barrier.* Shortage of skills for effective environmental management and urban development planning.
Example: _____

 8. *Barrier.* Inadequate information gathering capabilities.
Example: _____

 9. *Barrier.* Reluctance to share what is already known out of fear of losing control.
Example: _____

10. *Barrier.* Failure to enable every local government employee and official to contribute fully to the purposes of sustainable development.
Example: _____
- _____
- _____

Exercise Resource Needs, Opportunities and Institutional Barriers (13.17 – Workshop - Trainers Notes)

Time required: 90 minutes

Objective

To identify innovative ways to think about the resources needed for the successful adoption and use of environmentally friendly technologies and to recognize institutional barriers to resource mobilization.

Process

Introduce the exercise by telling participants they will be working for approximately one hour in their small groups on two resource-related tasks:

1. The first task is to think of creative ways to invent, shift, purchase, or otherwise acquire needed resources - people, equipment, facilities, finances, information or a combination of these from within the organization or from outside. The context of the task is the resolution or amelioration of the group's chosen environmental problem through the adoption of a more environmentally sustainable new technology or the discovery of less risk-prone use of an existing technology.
2. The second task is to identify institutional policies, procedures or work practices that could be barriers to the acquisition of these resources and to decide what might be done to alter them in such a way that they are no longer barriers. Suggest that participants refer to the information on institutional barriers compiled during the trainer's presentation on barriers to resource mobilization.

Advise participants to refer to Exercise 13.3 that describes the nominal group technique (NGT), a good process for completing the two tasks.

Trainers Note

Handout a worksheet (next page) for participants to use in completing the two assigned tasks. Remind participants to monitor their time so that an equal amount is available for each of the tasks.

When participants understand the two tasks, ask them to begin work in their small groups. Ask each group to complete a worksheet and record the product of its work on sheets of newsprint. After one hour, ask participants to return to the plenary session to report results.

WORKSHEET IDENTIFYING RESOURCES AND OVERCOMING BARRIERS TO RESOURCE MOBILIZATION

Part I: Creating or acquiring needed resources

Prepare a list below of the resources - people, equipment, materials, information, finances or other resources - which must be acquired separately or in combination from *within* or *outside* the organization in order to deal effectively with the environmental problem identified by your group.

1.	6.
2.	7.
3.	8.

4.	9.
5.	10.

Part II: Identifying barriers to resource mobilization

Identify and write in the space below several institutional policies, procedures or work practices which, in your opinion, could be barriers to acquisition of the resources listed above. Suggest in the space to the right of each barrier identified what might be done to remove the barrier or prevent its negative effect. Refer to the worksheet compiled during the trainer's presentation on resource mobilization for assistance in completing this task.

Barriers	Actions to remove/alleviate barriers
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

Role Play / Case Study: Taking a Stand for the Environment (13.18 – Workshop – Trainers Note)

Time required: 90 minutes

Objective

To provide participants with an experience in taking a stand as a council when challenged by critics of the environmentally-friendly policy recommendations of a council-supported citizen's environmental team.

Process

Ask six workshop participants to volunteer for a role play/case study. When you have the six volunteers, explain that the five-member local authority council is meeting to hear a grievance from a prominent local businessman about current spending on environmental programmes and to make a decision about continuing to commit public resources to support the recycling scheme.

Give each of the volunteers a description of the situation and the roles to be played. One role is for a member of the local council who is a strong advocate of investments in sustainable growth and participatory planning processes. A second role is for another member of the local council who chairs an environmental team [Forum] appointed by the council. The environmental team has responsibility for review and comment on all policies to ensure that environmental considerations have been taken into consideration. The third role is for a prominent local businessman who is critical of the council's emphasis on protecting the environment as potentially bad for business and is skeptical of the council's increased reliance on appointed groups like the environmental team to influence policy. The meeting has been called to allow the businessman to make a statement. Three of the remaining volunteers assume roles as other members of the local council. One of them is the mayor whose chief duty in the role play is to preside over the meeting. Another is a male councillor who works for the same company as the local businessman who is to make a statement and reports to him. The last is a new female councillor who is undecided on the issue of sustainability and might vote either way. All remaining participants are to serve as observers (*see the observer worksheet below*) to record and report later on what happens at the meeting.

Trainers note

Make every reasonable effort to select participants for the various roles who are in gender agreement with the roles they have volunteered to play. Change the name of actors as necessary for compatibility with different nationalities and ethnicities.

Give the volunteers about five minutes to read the situation and the role descriptions. While they are discussing the situation and their roles, set up a table with five chairs on one side and one on the other. When role players are ready, signal to the mayor to begin the meeting.

After the council has been deliberating for about twenty minutes or has made a decision, end the role play. Ask each of the role players to comment on the meeting in four ways:

1. How effectively did the council defend its policies and programme commitments to Verdeville's Local Agenda 21?
2. How persuasive were the arguments put forth by Max Mayhem in criticism of council policy?

3. Was the outcome of the council's post-meeting deliberations reasonable and consistent in view of what happened during the meeting?

When role players have answered these questions, ask for observer reports and broaden the discussion to include other workshop participants with these additional questions.

1. If you were going to ask your own council to do something at this point, what would it be?
2. What do you do in your own council when confronted with active conflict like this?

VERDEVILLE'S "GREEN" TOWN COUNCIL ⁽²⁵⁾

The situation

The town of Verdeville, self-proclaimed as "green town," has adopted goals similar to those set forth at the Rio Earth Summit in 1992. "We call it a blueprint for Verdeville, our version of Local Agenda 21," said Councillor Agnes Hemmings, head of Verdeville's environmental Forum. Verdeville was the only city in the nation represented at the Rio conference. Verdeville's Local Agenda 21 includes a "participatory planning goal" that requires the council to include citizen input in the development of council policies to ensure that their impact on the local environment is taken into account. Moving decisively to implement this goal, the council created an environmental Forum as a separate body consisting of representatives from governmental, private, non-governmental, and educational institutions.

With input from the Forum, the council has adopted environmentally-friendly policies of energy efficiency and "green" purchasing. Critics, including local businessman Max Mayhem, argue that the cost of the city's recycling scheme for plastics and cans far exceeds the financial return for those items. Mayhem is also critical of what he calls an inequitable use of public funds to finance improvements on private property. This use of public money, he contends, does not directly benefit the general public, and such practices should be discontinued by the council immediately.

Councillor Agnes Hemmings, representing the Forum, argues that recycling costs have not been weighed against what it would cost to landfill these recyclables. Moreover, she says, Verdeville can boast that instead of spending money to buy home owners more fuel, the city now offers energy grants for natural gas heat conversion and to install other approved energy saving facilities. In the long run, Hemmings suggests, such home energy initiatives will save residents money on fuel bills and reduce sulfur dioxide emissions.

Duana Yonder, a councillor who supports Local Agenda 21, defends the initiatives of the council, reminding critics that its energy conservation policies are not quick fix solutions. "You won't see the effects of today's policies until much later down the line," she said. "Besides," she said, "Local Agenda 21 is a programme that can't succeed without a lot of ideas and all the people pulling together."

Agnes Hemmings

You were appointed by your fellow councillors to head the Forum after returning from the 1992 Rio Earth Summit. You are responsible for Verdeville's designation as "greentown" and worked closely with Duana Yonder in fashioning the city's concept of citywide recycling. As a lifelong conservationist, you were particularly enthusiastic by the council's decision to offer energy grants to homeowners. You see these efforts as a promising beginning to more extensive programmes that will result in achieving sustainable growth in Verdeville after the year 2000.

Max Mayhem

You have lived in Verdeville for over ten years since your appointment as chief executive officer of a large, local chemical plant. The sudden interest of the town council in the notion of sustainability, you believe, is a dangerous distraction. You believe strongly that the council should be committing most public resources to programmes aimed at bolstering Verdeville's sagging economy. Philosophically, you believe that all public programmes should be measured by criteria of cost benefit. Programmes that cost more than they produce should be discontinued. No exceptions! And the city's current recycling programme is a prime candidate for annihilation. This is the worst possible time, you think, to start up programmes that impose unjustified costs on local businesses. [Mayhem's own plant has been hurt by the added expense of recycling, and his corporate headquarters has been threatening to close the plant or relocate elsewhere unless the council develops a more "business friendly" attitude.]

Duana Yonder

A first term council member, you were elected last year by the socially and environmentally conscious citizens of Verdeville. You had the good fortune in college to study under a well-know futurist who influenced your thinking and contributed to your long-range orientation to community problem solving. You are, therefore, easily annoyed by the

short-range viewpoints of people like Max Mayhem. However, you know that his views carry a lot of weight with most business leaders and many local voters. Offending him will do little good. In fact, it could slow the progress being made toward sustainability. The best strategy, you believe, is to listen patiently to Mayhem’s comments at the meeting and then make the case once again for the Forum and the council’s vision for Verdeville, achievable only through the efforts of all its citizens working together.

Mayor Roberta Edo

Your task, when instructed by the trainer, is to call the meeting to order, explain the purpose of the meeting, and ask Max Mayhem to come forward to address the council for a period not to exceed five minutes. After ten minutes, end the meeting and announce that the council will now take about ten minutes to “deliberate.” Initiate the discussion with other councillors and be prepared to close the session when instructed by the trainer.

Councillor John Janka

You have for several years worked under the supervision of Max Mayhem. Like Mayhem, you would be forced to relocate your family should your company decide to move.

Councillor Mary Newberry

You are new on the council and inexperienced in the technical and political complexities of sustainability. You are undecided but prepared to make a decision on the basis of the most persuasive arguments put forward by your council colleagues.

OBSERVER’S WORKSHEET

Watch closely what takes place during the meeting of Verdeville’s town council with Max Mayhem and during the following private council meeting. Answer the following questions about the interaction that takes place using the space provided below.

1. What did Mayor Edo do or not do to get the meeting with Mayhem off to a good start?

2. What issues were raised by Max Mayhem and how were they answered by members of the council?

3. What role did Councillor Hemmings play in the meeting, how effective was she, and why?

4. Was Councillor Yonder’s participation in the meeting effective? In what way?

5. How did the council respond to Mayhem’s criticisms after he left the council room?

6. Did the meeting achieve its purpose(s)? Explain.

7. Was the decision appropriate given the council’s deliberations and the nature of the situation? Explain.

8. What could the council have done, if anything, to bring the meeting to a more decisive conclusion?

Two Case Studies: Learning from the experience of others (13.19 – Workshop – Trainers Notes)

Time required: 90 Minutes

Objective

These two case studies are to help participants interpret the implications of starkly contrasted results from the implementation of public-inspired policy in two situations, each with high potential for improvement of the local urban environment.

Process

Divide participants into several small groups. Provide half of the small groups with copies of the first case called *Integrated Planning for a Sustainable Curitiba*, one copy per participant. Provide the other small groups with copies of the second case, *Lost Opportunity in Los Belvederes*. Ask participants to read their respective cases. After reading their cases, tell each group to discuss as a group and answer the questions that follow the cases.

After small groups have answered the questions at the end of the cases and printed their answers on newsprint, have them reassemble to report and discuss their results. First, have each of the groups assigned the Curitiba to report and discuss their answers to the case questions. Follow this with reports from each group assigned the *Los Belvederes* case.

When all groups have reported, encourage reflection and discussion of the lessons learned from the two cases with another question: *What lessons from the Curitiba case might have been used to good advantage by the government of Mexico City in the Los Belvederes case?* Ask participants, in answering the question, to think about the implications of public policy implementation, pro and con, for the achievement of sustainability in urban areas. What should local governments do and not do? Provide ample opportunity for discussion and sharing of points of view.

CASE NO. 1 INTEGRATED PLANNING FOR A SUSTAINABLE CURITIBA ⁽²⁸⁾

The situation

In twenty years, Curitiba has become not only one of Brazil’s most livable cities but also a model of how simple methods can be used to resolve or prevent seemingly overwhelming problems.

Curitiba is the capital of the farm-belt state of Paran· in the South of Brazil. Experiencing the rapid urbanization characteristic of Brazil in the seventies, Curitiba, Brazil’s tenth largest city, nearly doubled in population from 900,000 in 1970 to 1.6 million in 1980. The growth is attributed largely to the migration of people from rural areas and other regions in search of work in Curitiba’s industries. Curitiba had the highest growth rate among metropolitan regions in Brazil during this period resulting in a population density increase from 1,343 to 2,380 people per square km.

The challenge to city government during this growth period has been to guide population and economic growth so that social, physical, economic, and environmental characteristics of the city are not compromised. The management of urban growth began in the mid-sixties with the preparation of Curitiba's master plan. The plan called for the integration of traffic management, transportation and land-use planning to support the plan's strategic objectives. These objectives were intended to:

1. Relieve traffic and congestion and downtown streets by decentralizing the location of employment providers;
2. Encourage social interaction by providing leisure areas and pedestrian zones in the center of the city; and
3. Encourage the use of public transport and cycling to achieve an environmentally healthy city.

Curitiba's lofty urban objectives have been supported by planning and policies structured so that land-use planners and transportation planners are working and developing plans together. The result has been an extraordinary example of plans being translated into programmes that work. A major emphasis of land-use development has been the concentration of new development in existing urban space instead of sprawling outward as it does in most cities. Planners encourage higher densities around major transport corridors and ensure that each area includes a mix of homes, jobs, and services. For example, "structural axes" crossing the city were laid out with adjacent areas designated for high-density, mixed-use development to achieve densities capable of supporting the operation of public transit systems on these axes. The structural axes have become the foundation for an extensive citywide bus transportation system.

According to Curitiba's popular mayor, Jaime Lerner, "the trick of transit is to integrate the various forms of transportation, from buses to boats to subway to bicycle." Curitiba has successfully done what many other cities want to imitate, harmonize the differing routes and vehicles of mass transportation. The city recently modernized its express bus system, creating attractive and comfortable transfer stations. Passengers can travel from one structural axes of the city to another without the need to travel into the city center. Interdistrict routes carry passengers to integration terminals on the structural axes to permit full integration of feeder and express bus lines. High ridership has permitted closing downtown streets to automobile use and the creation of large pedestrian areas and the revival of historic districts. The downtown area is laced with city parks, and a 90-mile bicycle path has been constructed to accommodate both leisure and commuting. Consistent with Mayor Lerner's philosophy that the bicycle is a vital part of "urban transportation," the city has an extensive bicycle path network. Pedestrians have priority in the down-town area, public squares have been improved, and regularly scheduled open air markets provide work opportunities for street vendors and cottage industries. The markets have become an affordable alternative source of merchandise for many Curitiba residents who can't afford shopping center prices.

The integration of land-use policy with transit services supports a level of ridership that makes the transit system profitable. Profitability has made it possible for Curitiba to operate the transit system in partnership with private bus owners. Today, there are nine private operators in Curitiba covering 256 routes. The city has established a quasi-public transit corporation which establishes routes, sets fares, maintains terminals, and monitors performance. The bus system, which operates with no direct subsidy from city government, serves more than 1.3 million passengers daily, 50 times more people than 20 years ago.

Questions

1. What important elements of environmental sustainability are illustrated by the Curitiba case?
2. How has achievement of the three planning objectives outlined in the case contributed to environmental sustainability?
3. How did government planning and action contribute to the achievement of these objectives?

CASE NO. 2 LOST OPPORTUNITY IN LOS BELVEDERES ⁽²⁹⁾

The situation

This case is an example of the failure of a government's approach to land allocation and management and the capacity for creativity of people in the urban milieu when faced with the enormous task of satisfying their basic needs for food, energy, housing and meaningful employment.

Los Belvederes is a group of thirteen contiguous, low-income settlements, illegally formed in Ajusco, a mountainous and wooded area on Mexico City's southwestern fringe. Ajusco lies within an ecological reserve which was planned by

the Mexican government as a buffer against urban expansion. The Los Belvederes settlements, home to several thousand families, are an outgrowth of Mexico City's rural-urban migration which continues despite extremely difficult physical and social conditions. The thirteen settlements are classified as "irregular" by the Mexican government since none of the residents actually holds title to the lands on which they are living.

Early in the 1980s, the government planned to eradicate the thirteen irregular settlements of Los Belvederes. This action was to be taken pursuant to the government's "politics of containment" that spells out explicitly the boundaries of the conservation area and the various measures to be taken by the government to enforce them. The magnitude of the situation made it practically impossible. Several thousand families were involved and there emerged a strong, organized, and innovative community group resistance movement.

The Mexican government's approach to land allocation and management was the result of several conditions. Millions of Mexico City inhabitants are forced to live under very difficult physical and social conditions. The city continues to attract investors and migrant workers despite efforts by the central government to decentralize development away from the capital city. Located in the Central Mexican Basin, Mexico City's contained ecosystem has become seriously degraded by urban growth, toxic emissions from industry and vehicles, extensive deforestation, and desiccation of its lakes. To make matters worse, the city is prone to thermal inversions and a dangerous lowering of the water table resulting in the sinking of central areas. After a generation of hyper-urban growth, unbuilt land in Mexico City is scarce and, as a result, actively contested among potential users. The government's response has been to subject property development to increasing state control to the point of eventually exercising control over everything within the Federal District.

The prospect of eviction mobilized the inhabitants of Los Belvederes to challenge government plans for the Ajusco. Several popular groups (collectively called the Front), with help from outside the zone, began to innovate social ecology projects as alternative strategies for urban development. The intent was to repudiate government plans to eradicate their settlements. Members of the Front proposed an integrated approach to urban development based on production that is "socially necessary, ecologically sound, and economically viable." This, they argued, was in sharp contrast to the government's centralized approach to planning which treated housing, economic and ecological problems as separate issues.

Further steps for developing the settlement were taken in 1984 with the presentation of a proposal to the government for the transformation of one of the settlements (Bosques del Pedregal) into a productive ecological settlement, or *colonia ecológica productiva* (CEP). The CEP was an ambitious attempt to integrate within the territorial framework of the local community the need for residential space, employment, food production, and cultural and political self-determination.

As the intensity of grassroots ecopolitics reached a peak in late 1984, the government announced that the provisions of the Ajusco Conservation Programme calling for massive relocation of households would be revoked. In other words, all of Los Belvederes would be included in the legally designated urban area, and every family would be given security of tenure on an individual basis. This sudden shift in state policy changed the terms of the struggle dramatically. Having the settlements incorporated into the legally designated urban area reduced the settler's insecurity and sense of urgency. With the "war" won, there was little energy among the settlers for lesser battles (e.g., continuance of the CEP campaign, other ecological initiatives, social experimentation and the multi-class and multi-sector alliances which had been forged locally and all over central Mexico by the movement). And with the energy gone from the movement, the state has lost a valuable learning opportunity about local initiatives to create sustainable livelihoods at a time when its approach to land allocation and management have proven clearly inadequate.

Questions

1. What should the government of Mexico City have learned from the Los Belvederes case about the shortcomings of the politics of containment?
2. What could have been done by the state to sustain or even accelerate the momentum that was lost?

Exercise: Results through Action Planning (13.20 – Trainers – Notes)

Time required: 90 minutes

Objective

To set the stage for committed implementation and systematic evaluation of potentially sustainable solutions to environmental problems including the development and adoption of promising new technologies as appropriate.

Process

In their small groups, ask participants to take about an hour to complete an action plan for implementation using the worksheet shown on the next page. Advise participants to work independently on the worksheet for a few minutes and then to consolidate their ideas into a single action plan related to the problem that has been the object of the group's attention throughout the workshop.

Ask participants to be concise with their answers and to give special attention to the final questions concerning specific action steps and evaluation. Point out that momentum begins with small steps, preferably steps that will not snare the project in bureaucratic or legal complications that could discourage moving ahead. Also point out that deciding in advance what is acceptable evidence of success is good preparation for monitoring progress. It is important to get an early warning knowledge of implementation difficulties so that course corrections can be made before these difficulties grow large enough to derail the project.

When small groups have completed the task and come back together, ask for reports from each group.

ACTION PLANNING WORKSHEET

Instructions. Complete the worksheet by answering each of the questions working independently. When you have completed the worksheet, share your answers with other participants in developing a consolidated action plan.

1. What problem is being addressed by this action plan?

2. What are the important criteria to consider (economic, social, political, technological) in fashioning a sustainable solution to this problem?

3. Who are the vital stakeholders including any necessary partnerships and coalitions being counted on to support a sustainable solution?

4. What is the nature (people, equipment, materials, money) and the origin (government, business, community) of the resources that must be assembled to achieve a sustainable solution?

5. What step might you take as the principal interested party immediately on return to your workplace to symbolize the urgency of action and to begin building a base for committed action?

6. What are you willing to accept as evidence that progress is being made toward the sustainable solution described above?

Closing Exercise: Learning Experience Transfer (13.21 – Workshop – Trainers Notes)

Time required: 30-45 minutes

Objective

This exercise is to help participants transfer the learning experiences of the workshop into their real-world activities as elected officials. The focus of this exercise is on raising expectations, engaging in realistic planning and making personal commitments. Most of the work is done on a personal basis with some interpersonal sharing.

Between knowing and doing there is a wide chasm

Preparation

It is generally agreed that the purpose of training is to improve the way people do things by showing them a better way. In fact, the success of a training experience can be measured by the amount of personal growth and change that takes place both during training and after the training is over.

Training rarely has the impact on workshop participants that trainers hope it will have, particularly after an exposure of only a few days. The exhilaration of the moment fades quickly when the trainee is confronted with old work habits and the resistance of work associates who have not shared the training experience.

On the other hand, commitments to learning and change made at the close of a workshop can help participants overcome learning resistance in themselves and in the work environment. A trainer can help learners make a successful transition from the world of learning to the world of doing through a few simple planning exercises. Think about it this way. The time taken to encourage learning transfer could be the difference between a brief exposure to some interesting ideas and a life-changing experience.

Process

Spend at least half an hour at the end of the workshop to focus the attention of participants on important learnings and encourage them to continue experimenting with these learnings in their council activities. Begin by giving participants about fifteen minutes to work independently on a simple learning transfer questionnaire.

When participants have completed the questionnaire, ask them to share quickly with the group two or three things they intend to do differently in their council roles as **Guardians of the Environment** to close the workshop. ⁽³⁰⁾

A LEARNING TRANSFER QUESTIONNAIRE

Take a few minutes to reflect on the role of **Guardian of the Environment**, the new ideas you encountered in this workshop, and how you feel about them. Then, in the space below, write a sentence or two to describe something interesting you have learned about yourself during this workshop.

Based on what you have learned about yourself and the many possibilities for change presented by this workshop, what two or three things do you intend to do differently in your council role as **Guardian of the Environment**?

1. _____

2. _____

3. _____

Finally, what obstacles in yourself or in your work environment do you expect to experience during your efforts to implement these changes? What will you do to remove or minimize these obstacles?

EXPECTED OBSTACLE	ACTION TO REMOVE IT
1.	1.
2.	
3.	

Alternative design

Groups of participants who have been working together and will return to the same local authority to implement the learnings from this workshop as a team or in close association with one another should be encouraged to share their transfer commitments and assist one another in fulfilling them.

IF YOU CAN LEARN IT, YOU CAN DO IT!

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⁽²⁴⁾ Adapted from a list of typical weaknesses in traditional bureaucratic systems of local administration, Sustainable Cities, op. cit., p. 28. The authors have increased the original list of eight weaknesses to nine for use in this handbook.

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⁽³⁰⁾ In addition to this exercise for planning learning transfer, the Training & Capacity Building Section of UNCHS (Habitat) will soon publish a companion to the other handbooks in the Training for Elected Leadership series with a similar purpose. The companion publication is a comprehensive guide for workshop participants in applying what they have learned to their "real-world" duties and responsibilities as councillors. The guide includes detailed trainer notes and begins the process of learning transfer for participants before they complete the workshop.