

6

INDICATOR DEVELOPMENT AND THE PLANNING CYCLE

In this chapter, procedural issues related to the development of indicators in the planning cycle are discussed. Examples are given of how indicators have been used in identifying and analyzing issues, in action planning and in the implementation, monitoring and evaluation of intersectoral plans.

6.1 INVOLVEMENT OF STAKEHOLDERS

Stakeholders should be engaged at an early stage of planning in order to promote wider ownership of indicators that are important at all stages of policy-making. The process of indicator development has itself proved to be an effective way of ensuring public participation in sustainable development planning. Communities and non-governmental organizations often have a major stake in developing indicators, not only for their own activities but also for ensuring that policies are implemented and that governments and other partners meet their obligations and remain accountable. This is normally most productive where communities and governments do their planning in partnership.

Many community-based organizations and non-governmental organizations have used indicators in funding applications, for example in establishing their bona fides, demonstrating their capacity to monitor and analyze, and showing their organizational success, responsiveness and accountability (32). In Canada, a sustainable community indicators programme was developed to assist communities in developing and using indicators to measure their progress towards sustainability. Software has been developed to help communities select, create and use indicators for monitoring and reporting on local sustainability, to promote the use of comparable indicators, both locally and at the national level, and to exchange indicators and related data with other communities (46).

In the development of indicators, various levels of participation may be achieved in the approaches chosen by the authority or community. These may include:

- a large working group to consider all the chosen indicators, with additional expertise in data gathering from the most appropriate sector
- choosing specific issue-based indicators and working in issue/sector working groups
- examining linkages between indicators across broad groupings and

encouraging different sectors to work together, and

- working with various community groups and individuals to tackle different issues independently, canvassing responses from constituents, pooling results to form an overall picture and reporting back to the authority. (47).

The nature of the issues addressed and the types of indicators required will determine how the partnership model highlighted in Chapter 5 could best be adapted or used for developing indicators.

6.2 ISSUE IDENTIFICATION AND ANALYSIS

As discussed earlier, adequate information is often not available to support decision-making and action based on the systematic identification of problems and assessment of priorities. Much experience has been gained from the national environment and health action planning process referred to in the previous chapter. The assessments of needs that serve as a basis for the plans, while far from perfect, have led to a better understanding of the nature and causes of environment and health problems in specific countries. Nevertheless, a number of weaknesses have been revealed, for example:

- Gaps in data availability and quality
- Difficulty in detecting trends (geographical and temporal)
- Difficulty in disaggregating data
- Poor linkages of health and environmental data and sectoral data
- Emphasis on symptoms rather than on causes of problems
- Little focus on analysis of management structures and capacity
- Lack of clarity in priority-setting processes

These apply to developing countries as well as to industrialized countries. Identification of issues and problems, assessment of needs and setting of priorities for the development of action plans are important areas in which indicators have a key role to play. Problems and issues should be defined in both qualitative and quantitative terms, and sectoral responsibilities should be highlighted. Sometimes a data-driven approach is used, in which prime consideration is given to issues that are measurable by existing means, while in other cases a more integrated approach is adopted, combining data and measurements with an intuitive process based on what people consider to be important (55).

The analysis of needs and the priority-setting process thus involves both the views of the communities involved (which fully express the local perception of the problems and issues) and a technical assessment based, for example, on available health statistics and known epidemiological links between health status and environmental and social conditions. A variety of methods and techniques can be used to engage partners in the identification of issues, development of indicators and data collection for indicators.

PUBLIC PERCEPTIONS OF SUSTAINABLE DEVELOPMENT IN LANCASHIRE, UNITED KINGDOM

Lancashire County Council commissioned the Lancaster University Centre for the Study of Environmental Change to carry out a carefully targeted consultation on its behalf. After some background research, eight focus groups were selected to represent widely varying sections of the community which were not already active in the consultative process. These were young men on training schemes, Asian women, mothers with young children, unemployed men, retired people, rural professionals, middle-aged working-class women and young professionals. The groups were selected from different parts of the county and met twice for 2-hour sessions, which were facilitated and recorded for later analysis.

The discussions focused on the following issues:

- identification with place
- current concerns and anxieties
- perceptions of the quality of life and identification of those responsible for it
- feelings about sustainability, the environment and indicators.

The results revealed anxieties about employment, crime, social cohesion and pollution and a widespread feeling of powerlessness in the face of these problems. Many of the personal concerns expressed were not quantifiable and thus not easily amenable to an indicators approach. Only two individuals in all eight groups were familiar with the term 'sustainable development', but the concept received support when it was explained to the groups.

There appeared to be strong identification with place in most of the groups, and environmental concerns were expressed, mainly in relation to local problems such as the state of local beaches or traffic and industrial pollution. Action to address these problems was impeded by a widespread cynicism and mistrust of public institutions (including local government). In addition, many members of the focus groups doubted the willingness of their local authority to bring about real improvements in the quality of people's lives. This in itself is likely to have important implications for future approaches to public participation in Lancashire, and indeed elsewhere. On this basis, however, the indicators process itself could help to restore trust on an open-ended basis.

Source: Local Government Management Board, United Kingdom (47)

These include community meetings, fora, focus group discussions and mappings.

Priority health and environmental issues for which indicators are needed naturally differ from one place to another and depend partly on the priorities and on the capacity for data collection and analysis in a country or community. Priorities may also change over time, particularly as different stakeholders with changing perceptions of problems become involved in the process, necessitating a certain amount of flexibility in the selection of indicators.

DEVELOPMENT OF A SET OF COMMON INDICATORS OF LOCAL ENVIRONMENTAL HEALTH CONDITIONS IN LUCKNOW AND CALCUTTA, INDIA

A project to develop local environmental and health indicators in the cities of Lucknow and Calcutta, India, incorporated the use of innovative techniques such as photography, mapping and drawing as well as community discussions in the selection of local health and environmental indicators. The indicators were developed by members of several communities who used various qualitative methods adapted to suit each setting. The common methods included discussions at household level, mainly with women, comprising questions about how they would like to see their environment improved, followed by discussion of the factors that would help or hinder their improvement. In Lucknow, photography was used by members of the communities to document existing problems and to show desired environments. Many of the concerns raised at this stage related to environmental services and especially to water, sanitation and solid-waste management. The photographs, maps and drawings were then used to stimulate discussion in larger group meetings, where the idea of indicators was introduced.

In Lucknow, residents were asked to imagine the position of service planners and to decide what factors should be monitored, while in Calcutta, residents were asked to decide what environmental factors should be measured. Perhaps as a result of this difference, the range of indicators developed in Calcutta was much broader than that developed in Lucknow. Although the indicators generally varied by settlement, age category, sex and socioeconomic group, a common set of indicators emerged across six neighbourhoods in the two cities.

In addition to the common indicators, a wide range of site-specific indicators was selected in each of the study sites. These reflected concerns about street lighting, indoor air pollution, pests and the social environment of the neighbourhood. Whereas outdoor air pollution was not a significant concern in any of the neighbourhoods, indoor air pollution, mainly related to cooking stoves, was a source of anxiety. Many of the community indicators involved behaviour, such as the way in which residents disposed of their solid waste, as well as service coverage (78).

These patterns of selection of common and site-specific environmental and health indicators across neighbourhoods and cities have implications for the large-scale use of indicators internationally and regionally. The study confirmed that residents' priorities can be ascertained and expressed as a set of indicators, and the residents felt that they were playing a useful role by identifying and advocating action to improve the environment.

Indicators Identified

- Percentage of households with individual piped water connections
- Percentage of households with access to sanitary latrines (temporary or permanent)

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- Percentage of households with sewerage connections
- Percentage of households with connection to drainage systems
- Episodes of flooding inside dwellings
- Percentage of households using bins to dispose of solid waste
- Percentage of households disposing of waste indiscriminately
- Regularity of sweeping in clearing solid waste
- Existence of a park or playing area in a neighbourhood
- Existence of community organization/facilities such as community halls
- Percentage of households cleaning the drain in front of their home
- Percentage of households participating in repairing tubewells, and
- Percentage of households using preventive measures against pests (mainly mosquitoes)

Source: Hunt *et al.* (78)

GREAT LAKES, CANADA

In a project to develop environment and health indicators in the Great Lakes region of Canada, consultative workshops held in four communities focused on the association between health and environmental issues related specifically to air quality. Throughout the planning process, every effort was made to involve local community groups in the design and content of the workshops, so that participants could clarify their interests, the most useful consultation methods and their own commitment to the process. Although this approach required more time and energy than simply holding workshops, it generated considerable community support and goodwill.

Through the advance provision of materials and resources, participants arrived at the workshops with a general understanding of, and familiarity with, indicators and air quality issues. The pre-registration materials enabled the principal investigators to learn about the specific community and participant interests that would be useful later in the workshop. In addition, the exchange of materials demonstrated to communities the commitment to an all-inclusive process and an intention to integrate the project in local experience and expectations.

The four stages of identifying local air quality indicators, applying them to health effects, analyzing their usefulness to the community and selecting the best indicators gave both participants and investigators an opportunity to explore a range of issues associated with health-based air quality indicators. The encouragement given to participants in listing their own indicators based on personal experiences, values and knowledge showed how well communities already understand the significance of environmental health issues.

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Regional air quality indicators had less relevance to the communities than local indicators. In developing community health-based indicators, a need was determined to correlate regional indicators with local indicators and clarify reporting and public response. In order for the public to understand information and to respond constructively, an index was suggested to measure impacts and changes in local terms.

Analysis of the questionnaires revealed that participants generally had a good understanding of the links between the environment and health and of indicators, with measurements before and after the workshop showing little difference. In contrast, both the participants' self-reported evaluations and statistical tests of an effect of the intervention showed a slight improvement in the communities' ability to assess the usefulness of indicators and a significant increase in their ability to use indicators to take action to improve air quality locally. The participants offered practical solutions for problems which in many cases remain only vague concepts for government and health agencies.

Source: Cole *et al.* (79)

Assessments based on technical and popular knowledge must be combined in developing indicators and can be used to reach consensus about local problems, to set priorities and ultimately to establish policies and plans. Once the initial issues are identified and their scope is ascertained, they must be assessed in greater detail in order to serve as a basis for action planning. Many tools are available to facilitate this process, including rapid environmental assessments, rapid epidemiological assessments, comparative risk analysis and other techniques. Information for indicators should be based not only on the state of the environment and human health (symptoms of the problem), but also on the systems that gave rise to the problems, with due regard for the long-term sustainability of actions and strategies. This implies taking economic, environment and social factors into account (see Chapters 7 and 8 for discussion of frameworks for examining links between health, environment and development issues).

A case in which existing data and community surveys were successfully used to reach a consensus on both the problems and the priority to be given them is the Healthy Cities project in Indiana, USA (80). Data available in the State were broken down by age, race and sex, and information on major trends in level of education, infant mortality, leading causes of death, crude birth and death rates and housing was presented to Healthy City committee members. This was supplemented by information from special community surveys and by information obtained through opinion surveys at health fairs, vision workshops and other mechanisms. The information laid the basis for prioritizing problems and for subsequently developing action plans.

In Barcelona, Spain, a health information system based on indicators was created to document the population's health problems and the effectiveness of the health services, through a combination of information on mortality and morbidity rates, hospital discharge diagnoses, air pollution levels, and subjective information on

community perceptions of health (81). Health statistics for Barcelona were used to draw attention to one of the poorest districts in which the infant mortality rate was the highest and life expectancy lowest, and programmes were targeted accordingly.

COTONOU, BENIN

Under the umbrella of the multi-country Health and Environment Analysis for Decision-making initiative, a field study on environment and health indicators was undertaken in Cotonou, Benin, by the Centre Régional pour le Développement et la Santé. In order to select environment and health indicators, routine statistical and epidemiological data from the health services were assessed, and patients' records were reviewed to determine the morbidity and mortality rates of common diseases. In addition, previous studies of environment and health were reviewed, and interviews were held with politicians and officials of the Ministry of the Environment. The population of Cotonou and the local authorities were invited to comment. The results of preliminary investigations indicated inequity in the distribution of the five most common diseases across Cotonou. For example, the rates of malaria and diarrhoeal disease were 12 times higher in one zone than in another.

Indicators selected:

- Percentage of the population with access to a sufficient quantity of safe drinking-water
- Percentage of people covered by public garbage removal services
- Percentage of people exposed to high concentrations of health-damaging air pollution (indoor and outdoor separately)
- Percentage of people covered by primary health care
- Percentage of the eligible population who are fully immunized according to the national immunization policy
- Prevalence of malaria
- Prevalence of intestinal helminths among children aged 2-15 years
- Percentage of people who obtain drinking-water only from unprotected, contaminated wells
- Percentage of people affected by constant flooding at home
- Percentage of people with adequate lighting at home.

Experience in Cotonou showed that a number of factors affected the selection and use of indicators.

These included:

- The high degree of environmental health inequity in Cotonou
- The need to improve the quality of routine data
- The need for cross-sectoral consultation and collaboration to improve the health and environmental information management system

(cont'd)

- The existence of an opportunity to increase community participation in the definition and assessment of environment and health indicators in Cotonou.

Source: Soton *et al.* (82)

6.3 ACTION PLANNING

The identification and analysis of priority issues form the basis for the subsequent development of policies and strategic plans of action, which might be multi-stakeholder agreements. In order to facilitate broad action, it is important to identify the action strategies and the commitments of the partners, so that they can work together in achieving the goals, objectives and targets of the action plan, which should be measurable commitments to be met in a specific time frame.

If stakeholders have not been properly involved in the development of the policy or plan, it may not be implemented, competing plans may be developed, and the whole process of implementation may be undermined. There is an abundance of cases in which community problems have been studied with great thoroughness but the stakeholders have not been involved in policy formulation (80). Stakeholders are not only able to define and identify problems but also contribute to finding workable solutions, adequate funding and techniques for implementation.

A plan might contain the community vision (see Section 5.4), including a consensus on problems and opportunities, strategic goals, targets, indicators, implementation strategies and the partners to be involved. As already stated, indicators can be used not only for gathering baseline information (against which to measure progress towards achieving goals and targets), but also for setting goals and targets based on identified problems. Additional ranking of goals and targets may be required in order to decide on the priorities to which resources should be directed first. A framework for evaluation should also be included.

Experience acquired in the development of national environment and health action plans has shown that indicators which are necessary for measuring performance in achieving goals and targets, have often not always been used or identified. Nevertheless, ways have been found of bringing various sectors and partners together (see Chapter 5) in order to develop a shared vision and understanding of what is needed, and a set of goals and measurable benchmarks or indicators which reflect community values, goals and aspirations.

Specific targets and indicators are usually developed after the goals have been set. Thus, for example, the target might be to achieve a certain percentage of children who are immunized against diseases such as measles or polio, or to increase by a certain amount per year the percentage of the population living in areas with air quality within international safety limits. Targets can be aspirational, reflecting popular will, or achievable, based on formal calculations of the size of the problem, the cost-

effectiveness of the solution and the availability of resources. Examples of targets in the renewed WHO Health for All policy (1, 83) are given in the box below. Regional targets have also been developed (84, 85).

Box 11

TARGETS OF THE HEALTH-FOR-ALL INITIATIVE

By 2005, health equity indices will be used within and between countries as a basis for promoting and monitoring equity in health. Initially, equity will be assessed on the basis of a measure of child growth.

By 2020, the targets agreed at world conferences for maternal mortality rates, under-five or child mortality rates and life expectancy will be attained.

By 2020, the worldwide burden of disease will be substantially decreased. This will be achieved by implementing sound disease control programmes aimed at reversing the current trends of increasing incidence and disability caused by tuberculosis, HIV/AIDS, malaria, tobacco-related diseases and trauma due to violence.

Measles will be eradicated by 2020, lymphatic filariasis will be eliminated by the year 2020, transmission of Chagas disease will be interrupted by 2010, leprosy will be eliminated by 2010 and trachoma will be eradicated by 2020. In addition, vitamin A and iodine deficiencies will be eliminated before 2020.

By 2020, all countries, through intersectoral action, will have made major progress in making safe drinking-water, adequate sanitation, food and shelter available in sufficient quantity and quality.

By 2020, all countries will have introduced and will be actively managing and monitoring strategies that strengthen health-enhancing lifestyles and weaken health-damaging ones, through a combination of regulatory, economic, educational, organizational and community-based programmes.

By 2005, all Member States will have operational mechanisms for developing, implementing and monitoring policies that are consistent with the Health for All policy.

By 2010, all people will have access throughout their lives to comprehensive, essential, quality health care, supported by essential public health functions.

By 2010, appropriate global and national health information, surveillance and alert systems will have been established.

By 2010, research policies and institutional mechanisms will be operational at the global, regional and country levels.

Source: WHO (1)

A MEGACITY'S APPROACH: TOKYO HEALTHY CITY PLAN

In its fundamental long-term plan, Tokyo's Metropolitan Government, serving a population of 12 million, recognized health promotion as an essential means of achieving a healthy society. The Tokyo Citizens' Council for Health Promotion was established in 1991 to make Tokyo a Healthy City by developing a health promotion movement in close cooperation with the public and private sectors, in order that every citizen of Tokyo could live a healthy, active life. Tripartite teams comprising citizens, administrators and academics developed cross-sectoral programmes and policies based on a scientific understanding of human health and the megacity environment. The action plan, entitled "Towards Healthy City Tokyo-Our Action Plan for Health Promotion", was first adopted by the Council in 1993. It defined priorities for action and the roles of citizens and the private and public sectors and also proposed some key strategies. It thus encouraged studies of health promotion as a strategy in the effective development of community-based plans and implementation of health promotion programmes.

Graphical representations of health and its determining indicators were used to evaluate public health and the urban environment. The action plan encouraged the use of mapping for both metropolitan and municipal governments and other sectors. By evaluating the effect of the urban environment on public health, this analysis helped people from various sectors to share information and also helped decision-makers to formulate a policy beneficial to public health. Symposia, fora, health fairs and other opportunities were used to disseminate information. Publications introduced examples of activities and programmes actually under way in Tokyo, and were widely used by various communities to improve the development of their own programmes.

Source: Nakamura & Takano (86)

6.4 IMPLEMENTATION, MONITORING, EVALUATION AND FEEDBACK

Failure to implement plans is a common problem and one of the biggest stumbling blocks to achieving the desired goals. The plan stands a better chance of success if the practical requirements of implementation are addressed: people often know what to do, but not how to do it. Plans should include commitments to the programme by all the stakeholders concerned and agreements to undertake the relevant work. This is part of an ongoing process and entails the responsibility of the stakeholders to involve residents, organizations and various sectors on a continuous basis. There is evidence to suggest that plans developed in this way promote collaboration between sectors and serve to generate awareness of health and environmental problems by government authorities, non-governmental agencies and communities. They may also be useful for mobilizing resources to deal with problems. The plan should not, however, be regarded as a "one-off" exercise that will generate all the actions needed to solve

all the problems once and for all, but should rather be seen as a process of consultation, data gathering and analysis and mobilization of resources for priority actions.

The next step is to monitor the implementation of the plan. Ideally, monitoring should begin before and should continue during and after implementation. Evaluation is important for maintaining accountability among the stakeholders, providing feedback to communities and supplying information to service users and providers. Systems are needed to allow the stakeholders to report to each other on progress, and methods and tools such as indicators are needed to measure the achievement of goals and targets. Two aspects of the use of indicators for reporting on performance should be evaluated: the partnership's ability to achieve the goals and targets of the plan and progress in actually improving health and environment conditions. The latter would require a comprehensive audit every few years (87).

THE CASE OF SANTA MONICA, USA

In Santa Monica, USA, a number of policy goals and related targets were established within the Sustainable City programme. Indicators were then developed to monitor the City's annual progress towards meeting each target (88). Examples of selected goals, targets and indicators are given below:

Policy Area: Resource conservation

- Goals:**
- Promote the use of conservation techniques and practices and reduce the use of non-renewable resources
 - Develop local, non-polluting, renewable energy, water and material resources and expand recycling techniques in these areas

- Targets:**
- Reduce energy consumption by 16%
 - Reduce potable water consumption by 20%
 - Reduce the solid waste volume by at least 50%
 - Convert 75% of the city vehicle fleet to reduced emission fuels
 - Reduce waste-water flows by 15%

Indicators:	1990	1993	2000
Energy consumption (non-mobile sources)	4.0 million Btu/year	4.0 million Btu/year	3.36 million Btu/year
Water consumption	14.3 million gallons/year	12.0 million gallons/year	11.4 million gallons/year
Waste-water flow	10.4 million gallons/day	8.5 million gallons/day	8.8 million gallons/day
City fleet vehicles using reduced emission fuels	Unknown	10%	75%

Source: International Council for Local Environmental Initiatives (88)

THE SUSTAINABLE SEATTLE PROJECT

The Sustainable Seattle Project (89), started in Seattle, USA, in 1990, has been recognized world-wide for its participatory and empowering approach. The project was organized by Sustainable Seattle, a volunteer network and civil forum comprising individuals from such bodies as the City Government, environment, religious and business groups and labour and community organizations. The primary objective of the project was to engage stakeholders in defining what constitutes a sustainable community and in providing measurements of sustainability that could be used to guide local decision-making. With a view to developing a long-term strategy to improve the health and vitality of the region, a group of 25 trustees drawn from community leaders was appointed, and they in turn appointed a task team to generate draft indicators. The approach thus combined public participation with research carried out by an indicator task team.

The indicators were specifically selected to measure the City's progress towards sustainability, to identify key problems and priorities and to help understand the changes needed to ensure community well-being over time. Through a process of extensive consultation and review with the general public, community leaders, the business sector, government and academic and non-profit organizations, an initial list of 150 indicators was used to develop a final selection of 40 indicators grouped into five key areas.

The indicator data were drawn from a wide range of sources and sectors, including local hospitals, the departments of transport, health, housing, agriculture, solid waste, planning, waste water and power utilities, the air pollution control agency, schools and special surveys.

Indicators used in the Sustainable Seattle Project included the following:

- | | |
|---------------------------------|--|
| Environment | <ul style="list-style-type: none">• Counts of wild salmon in local rivers and streams• The number of "good" air quality days in the calendar year• Population size• Soil erosion (turbidity levels at selected sites) |
| Population and resources | <ul style="list-style-type: none">• Per capita water consumption• Solid waste generated and recycled• Number of people in King County |
| Economy | <ul style="list-style-type: none">• Distribution of personal income |
| Youth and education | <ul style="list-style-type: none">• Adult literacy |
| Health and community | <ul style="list-style-type: none">• Proportion of low-birth-weight babies• Rate of hospitalization of children for asthma• Proportion of people who are satisfied with their quality of life |

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Evaluation and action

During the first few years of the project, data on 14 of the 40 indicators showed a need for action with regard to the environment, development and health in Seattle, and action plans on the issues highlighted were developed and implemented.

The indicators nevertheless failed to meet all of the objectives, as they were unrelated to the general planning process (87). The City subsequently set up a separate task force to develop a municipal strategic plan with long-term goals for Seattle, as well as a performance management system for which special indicators were developed on the basis of the nearly 500 goals and policies in the City plan. The core indicators were based on the following criteria:

- a direct and understandable relationship to one or more of the plan's goals or policies or to its vision
- the availability of reliable and regular information in order to track the indicator in a cost-effective manner
- relationship of the list of selected indicators to progress towards the core values underlying the plan.

Source: Brugmann (87), International Council for Local Environmental Initiatives (90)

INDICATORS FOR SUSTAINABLE DEVELOPMENT IN THE UNITED KINGDOM

A consultation document entitled Opportunities for Change, issued in 1998, set out the Government's vision of sustainable development and what needed to be done to put it into practice. In May 1999, the Government published the document "A Better Quality of Life: A Strategy for Sustainable Development in the United Kingdom". The strategy outlined four main aims:

- social progress that recognizes the needs of everyone
- effective protection of the environment
- prudent use of natural resources
- maintenance of high and stable levels of economic growth and employment.

To help measure progress, the strategy included a series of 150 indicators, (25), which will be at the core of future reports on progress. A subset of 14 «headline» indicators was selected to focus public attention on what sustainable development means and to give a broad overview of progress in achieving a better quality of life for everyone, including future generations.

The national set of core indicators was intended:

- to describe overall whether sustainable development at the national level is being achieved

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- to highlight national policy initiatives relevant to sustainable development and to monitor whether the targets and commitments are being achieved in those areas
- to educate the public about what sustainable development means
- to raise the awareness of the public and businesses of the actions they must take to achieve sustainable development
- to report progress to international audiences
- to make the trade-offs and synergies between sustainable development objectives transparent.

In addition to technical criteria, indicators were included in the national core set if:

- the indicator was an overriding “state of nation” indicator describing a key objective
- it reflected a key international or national commitment or target
- it supported a key message for individuals or business especially in relation to key actions needed, for example energy efficiency, health and safety at work and ethical trading
- it was recommended for use in national reporting.

A sample of sustainable development indicators with the key objectives to which they relate are given below.

Table 14

**THE HEADLINE INDICATORS IN THE UNITED KINGDOM
SUSTAINABLE DEVELOPMENT STRATEGY**

Themes, issues and objectives (strategy reference)	Headline Indicators
<p>Maintaining high and stable levels of economic growth and employment:</p> <ul style="list-style-type: none"> • Our economy must continue to grow • Investment (in modern plant and machinery as well as research and development) is vital to our future prosperity • Maintain high and stable levels of employment so everyone can share greater job opportunities 	<ul style="list-style-type: none"> • Total output of the economy (GDP and GDP per head) • Total and social investment as a percentage of GDP • Proportion of people of working age who are in work
<p>Social progress which recognizes the needs of every one</p> <ul style="list-style-type: none"> • Equip people with the skills to fulfil their potential • Improve the health of the population overall • Reduce the proportion of unfit (housing) stock • Reduce both crime and fear of crime 	<ul style="list-style-type: none"> • Qualifications at age 19 • Expected years of healthy life • Homes judged unfit to live in • Level of crime

Themes, issues and objectives (strategy reference)	Headline Indicators
<p>Effective protection of the environment</p> <ul style="list-style-type: none"> • Continue to reduce our emissions of greenhouse gases now, and plan for greater reductions in longer term • Reduce air pollution and ensure air quality continues to improve through the longer term • Improve choice in transport; improve access to education, jobs, leisure and services; and reduce the need to travel • Improving river quality • Reverse the long-term decline in populations of farmland and woodland birds • Re-using previously developed land, in order to protect the countryside and encourage urban regeneration 	<ul style="list-style-type: none"> • Emissions of greenhouse gases • Days when air pollution is moderate or higher • Road traffic • Rivers of good or fair quality • Populations of wild birds • New homes built on previously developed land
<p>Prudent use of natural resources</p> <ul style="list-style-type: none"> • Moving away from disposal of waste towards minimization, reuse, recycling and recovery 	<ul style="list-style-type: none"> • Waste arisings and management

Source: U.K. Department of Environment, Transport and Regions (25, 91)

INDICATORS OF SUSTAINABLE DEVELOPMENT IN FINLAND

Work on sustainable development indicators in Finland began in 1996, with the commitment to test indicators developed by the United Nations Commission on Sustainable Development. The testing phase took one year. In 1998, Finland developed a national set of sustainable development indicators to meet the needs identified in the Government Programme for Sustainable Development during 1998. This set was developed during 1998-1999. The programme was developed under the auspices of the Finnish Ministry of the Environment, supported by the Finnish Commission on Sustainable Development and research conducted by the Finnish Environment Institute. The overall work programme was supported by a task force called Indicator Net, consisting of individuals from several key ministries and institutes.

The Government's programme is designed to promote ecological sustainability, and the economic and social preconditions for achieving it.

With the aim of establishing the social and cultural preconditions for ecological sustainability, the Finnish Government will:

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- Strengthen the joint learning and innovative processes of different social actors, thereby augmenting Finland's capacity for meeting the challenge of sustainable development
- Promote public initiative and participation and the opportunity for the public to influence issues and support local projects for sustainable development
- Promote general welfare, with special attention to employment, prevention of social exclusion and the living conditions of the elderly
- Strengthen the knowledge base, expertise and skills needed for sustainability
- Improve the health, amenity and social viability of occupational, residential and living environments and advance the health and physical fitness of the general population
- Safeguard cultural diversity, cultural heritage and cultural identity.

The choice of indicators for national use started with the identification of important issues and themes. The issues chosen were more problem-oriented than sectoral. They were discussed with experts and non-governmental organizations in special workshops. The criteria developed to select indicators placed emphasis on factors such as reliability and "user-friendliness", i.e. whether the indicator was required by the user, if it was simple and easy to interpret, responsive to changes, allowed forecasting, whether a target or a recommendation was available, whether it allowed comparison, or whether data were available at reasonable costs. A list of some 85 national sustainable development indicators was developed, a sample of which is given below.

Table 15

PROPOSED SUSTAINABLE DEVELOPMENT INDICATORS

ECOLOGICAL ISSUES	INDICATORS
Climate change	<ul style="list-style-type: none"> • Greenhouse gas emissions • Summer and winter mean temperatures in Finland • Icebreaking date of Tornio River
Ozone layer depletion	<ul style="list-style-type: none"> • Import of ozone depleting substances (same as use of ODS) • Stratospheric ozone above Finland
Acidification	<ul style="list-style-type: none"> • Emissions of acidifying substances • Critical loads of sulphur
Eutrophication	<ul style="list-style-type: none"> • Discharges of nutrients to waters • Nutrient balance in agriculture • Algal concentration in coastal waters • Quality of lakes and rivers
Biodiversity	<ul style="list-style-type: none"> • Threatened species • Number of seals in the Baltic Sea • Decline of bird populations in forestry and agricultural areas • Protected areas • Implementation of nature conservation programme

ECOLOGICAL ISSUES	INDICATORS
Toxic contamination	<ul style="list-style-type: none"> • VOC emissions to air • Mercury emissions • Pesticide use • PCBs in Baltic Herring in the Baltic Sea • Dioxins in breast milk
ECONOMIC ISSUES	INDICATORS
Economic development	<ul style="list-style-type: none"> • Gross domestic product • Current account • Government debt inflation
Administrative and economic instruments	<ul style="list-style-type: none"> • Percentage of environmental taxes and payments in total tax income • Industrial expenditure on environmental protection • Tax rate of fuels in relation to coal content • EMAS-registered enterprises and environmental certificates
Natural resources	<ul style="list-style-type: none"> • Age structure of forests • Annual increment and total drain of forest resources • Area of cultivated land and fallow • Number of reindeer • Commercial fisheries • Fish production • Proven mineral reserves
Urban structure and transport	<ul style="list-style-type: none"> • Growth of urban population and urban areas • Population density in urban areas • Average distance travelled to work • Number of cars and their output • Use of public transport and private cars • Air quality in cities
Production and consumption	<ul style="list-style-type: none"> • Consumption of energy • End use of energy • Total use of natural resources • Consumption of water • Air traffic • Household consumption • Accumulation of waste • Waste deposited in landfill • Recovery of packaging materials
SOCIO-CULTURAL ISSUES	INDICATORS
Factors affecting population	<ul style="list-style-type: none"> • Population change • Dependency ratio • Life expectancy • Net migration in rural areas

SOCIO-CULTURAL ISSUES	INDICATORS
Health	<ul style="list-style-type: none"> • Number of people who smoke daily • Proportion of overweight people • Diseases caused by alcohol and drugs • Reported HIV cases • Suicides
Employment	<ul style="list-style-type: none"> • Unemployment rate • Work-related illnesses • Long-term unemployed as a percentage of all unemployed • Retirement age
Social problems and equality	<ul style="list-style-type: none"> • Head Count Index • Income differentials • Homeless people • Proportion of women's salary of men's salary • Children and young persons placed outside their own homes • Violent crimes
Education, research and participation	<ul style="list-style-type: none"> • Level of education • Qualifications achieved • Research and development expenditures • Young people left outside education and working life • Voting in parliamentary elections
Access to information	<ul style="list-style-type: none"> • Public libraries, loans per inhabitant • Circulation of newspapers • Weekly users of the Internet
Cultural heritage	<ul style="list-style-type: none"> • Visitors to museums • Age structure of buildings • Natural meadows and pastures
Ethnic minorities	<ul style="list-style-type: none"> • Sami students who receive teaching in their mother tongue • Unemployment rate of immigrants
Development cooperation	<ul style="list-style-type: none"> • Official development aid • Development aid to regions near Finland

Source: Finnish Environment Institute (92)

From the previous discussion it is evident that examples may be found throughout the world of the use of indicators to inform the development of policy and plans and to evaluate their implementation. Nevertheless, it is also true that analysis of the effectiveness of the indicators developed and used today is at an early stage. It is

anticipated that much valuable information will be made available in the next few years from which lessons may be learnt. In reality, it is often the case that insufficient resources are allocated to the development of indicators and data collection, indicators are frequently developed independently of broader policy-making and planning, and problems continue to be experienced in basic data collection in many countries.

