The Congress
of Local and Regional Authorities

Chamber of Local Authorities

14th PLENARY SESSION
CPL(14)5REP
21 May 2007

Environmental accounting for responsible local action

Simon James, United Kingdom (L, ILDG)

Explanatory Memorandum
Committee on Sustainable Development

Summary:

Environmental accounting is an information tool that can be used to list, organise, manage and supply data and information on the environment in physical and monetary units. As an information system that is interposed between environmental management systems and dissemination and communication systems, it can assist decision making, monitoring and assessment.

The demands of citizens, consumers and certain representatives of civil society and the private sector for a higher standard of environmentally friendly services are placing increasing pressure on local elected members. They are being asked to account for their strategies and above all to show that their policies are having tangible results and that their activities are sustainable.

As yet, Europe lacks a full environmental information system at the local level which measures the eco-efficiency of policies and encompasses both capital and resource flows and the state of the environment. Nevertheless, environmental accounting tools can serve as a starting point towards incorporating the environment into local management.

The Congress invites the territorial authorities to implement those measures that suit the particular circumstances of the authority and that could be rapidly introduced, for example carbon accounting or environmental asset registers.

R: Chamber of Regions / L: Chamber of Local Authorities
ILDG: Independent and Liberal Democrat Group of the Congress
EPP/CD: Group European People's Party – Christian Democrats of the Congress
SOC: Socialist Group of the Congress
NR: Member not belonging to a Political Group of the Congress

TABLE OF CONTENTS

Foreword

In its Recommendation 1653 (2004), the Council of Europe Parliamentary Assembly defined environmental accounting as "a system that can be used to list, organise, manage and supply data and information on the environment in physical and monetary units". As such, it is an information tool and, in the longer term, can assist decision making, monitoring and assessment. It is an information system that is interposed between environmental management systems and dissemination and communication systems.

Environmental accounting contributes to transparency and better decision making. The data it produces form a basis for participation and helps to secure more effective use of resources. Too often decisions in local and regional government are taken on purely financial grounds due to the lack of available resources. This leads to the environment not being adequately taken into account in the actions of local authorities. Environmental accounting allows issues such as finance and the environment to be considered in similar terms so that they can both be considered on a rational basis. As such, it contributes to sustainable development by allowing the environment to be given an equal footing in decision making processes.

Since the Rio Conference on environment, the United Nations has considered environmental accounting to be an essential tool for the implementation of coherent policies in this field. The World Bank, the Organisation for Economic Cooperation and Development, the European Union and the Parliamentary Assembly of the Council of Europe have also advocated the introduction of such systems.

As yet, Europe lacks a full environmental information system at the local level, that is one that encompasses both capital and resource flows and environmental aspects. Nevertheless, certain environmental accounting tools that are elements of such systems can serve as a starting point. The methods and tools that local authorities have experimented with can be divided into three main categories – information and monitoring tools and aids to decision making. They are based on a range of principles, depending on their objectives and the circumstances for which they were developed.

Although it would be difficult at this stage to apply a single method generally throughout Europe, greater use should be made of these tools. They offer a means of incorporating the environment into local management, with the long-term aim of establishing full environmental information systems to supplement other existing local systems providing economic, financial and social data. As such they should help to make local environmental policies more effective and mutually consistent. Of these tools some will be more applicable to some local or regional authorities than others. All authorities should however be encouraged to adopt those which they can (examples could include carbon accounting or environmental asset registers) as soon as possible.

1. Tools to improve local policies on the environment

Since the 1992 United Nations Conference on the environment and development and the 2002 World Summit in Johannesburg, territorial authorities have become aware of sustainable development issues and of the need to set in place coherent policies in this area in order to link socio-economic development and a better quality of life.

There is a need today to move on from awareness to effective action, particularly in the environmental field. In order to improve local environmental action and devise structured policies, measurement is the starting-point, as with any other policy. It is vital to know and measure at the local level in order to identify the issues, define priorities, allocate resources efficiently and establish the margins within which action can be taken.

In contrast with the economic and social fields, information and measurement tools in the environmental field are not well developed as such policies are recent. This is all the more the case at local level due to the weak institutionalisation of such polices at this level.

The Congress Secretariat should like to thank Ms Marguerite Rigaud, Consultant, *Fondation des Villes*, for the preparation of this report.

However, environmental compatibility tools are means of measuring and producing material and financial information about the environment and organising it. They produce the information that is essential to including the environment in decision-making and public debate. They offer frameworks for analysis that ask questions about changes, results and relevance and afford comparisons. When linked up to systems of environmental management, political approaches and consultation and communication efforts, these tools are structural elements in the environmental dimension of territorial projects

Environmental accounting is thus an essential lever, as an instrument for the implementation of coherent policies in this field, as Agenda 21 adopted by the United Nations Conference on the environment recommended in Rio in 1992 and as is now advocated by the United Nations, the World Bank, the Organisation for Economic Cooperation and Development, the European Union, and recently the Parliamentary Assembly of the Council of Europe[1]. When linked to procedures for formulating policies (environmental management systems, integration with the local political agenda, etc.), these tools are the starting-point for more sustainable environmental policies.

This report begins by clarifying the debate with some definitions then a presentation of the diversity of the tools and their aims. The field covered by these tools is then defined and this is followed by their contribution.

The appendix provides a glossary of the terms used, a table of examples to help territorial authorities choose the tool best suited to them, a brief history of environmental policies and their role in sustainable development. Finally, Appendix 4 describes the tools themselves.

2. Environmental accounting: some clarifications

a) Some definitions

Environmental accounting is a term covering a wide field, one left open by the definition offered by the Parliamentary Assembly of the Council of Europe: “Environmental accounting is a system for indexing, organising, managing and delivering data and information on the environment via physical or monetary indicators[2]”.

Depending on the line adopted, as defined by convention, the environment may be defined at local level as:

- local natural resources or the local ecosystem;
- the overall impact of local and human activities on resources;
- the activities and services linked to the environment (resource management, protection and conservation measures etc.).

There are, broadly speaking, two main approaches: one may consider the environment as a resource (which corresponds to the first definition), or one may define the environment primarily from the standpoint of its impacts on human beings and the problems encountered (which corresponds to the last two definitions).

Behind the definition chosen (the part of the field covered), there lie various tools and methods that have been worked out, their common feature being that they are information systems and systems for measuring “an” environment (“the” environment).

b) An abundance of tools

A variety of tools has been devised to help local authorities improve their environmental action. There are others from the world of business or from national practice that may also be employed. Elected representatives and those running local services are often bemused by this wide choice of tools. Their perplexity is the result of several factors:

[1] Document 10071, 11/02/2004.
[9] Document 10071, 11/02/2004, already cited.

The term environmental accounting includes very different kinds of tools and methods without indicating their characteristics. It is true that the position of the various tools is all the trickier to determine as some of them comprise modules with different functions, referring to several categories of tool. Other tools change considerably in the course of their applications and developments[2]. Lastly, the local situation in Europe varies widely and requires suitable tools, failing which it will remain at a very general level and not address the reality of local action.

- Tools with very different purposes go by the same name:

The term "environmental accounting" is ambiguous and covers a wide field. It is often used imprecisely to describe specific tools, though it is a generic term. The environmental accounting tools and methods developed to date are designed for specific jobs, be they technical or political. This leads to heterogeneity of information, as well as in decision-making and practice.

- The relevance of tools depends on the context:

The relevance of specific tools to produce data on the environment depends on local ability to produce material and financial data on the environment, and this differs from one European country to another. In countries where public administration relies on very precise internal information systems, developing specific tools seems pointless. This is the case in the Netherlands and Germany, for example, where the public accounting system even permits unity of action, with analytical accounting also. By contrast, in authorities where accounting practices are less sophisticated or based on units that are less compatible with environmental analysis, such as services or type of expenditure, there is a real need for tools which make it possible to reconstitute basic environmental data (as in France and Italy).

Similarly, in certain countries authorities that are close to the private sector (cultures and practices) will tend to prefer tools derived from business, with which they can then communicate. Those with traditions involving more specific public management methods will develop specific tools, for practical reasons but also on grounds of principle.

- A tendency for tools to perform several functions:

Sometimes tools serve purposes different from their original function, either because the investment in them can thus be recouped or because, in the absence of directly relevant information, the information thus made available is regarded as sufficient. For example, in some authorities it may happen that a tool originally intended for financial management will be used for monitoring action, decision-making or evaluation. It is true that these functions are related, though different: establishing costs may rely on an instrument for the financial monitoring of environmental expenditure, and decision-making may ultimately be improved. But this type of approach can lead to poorly evaluated bias. There is a risk, where tools are used for several purposes, that none of them is properly achieved.

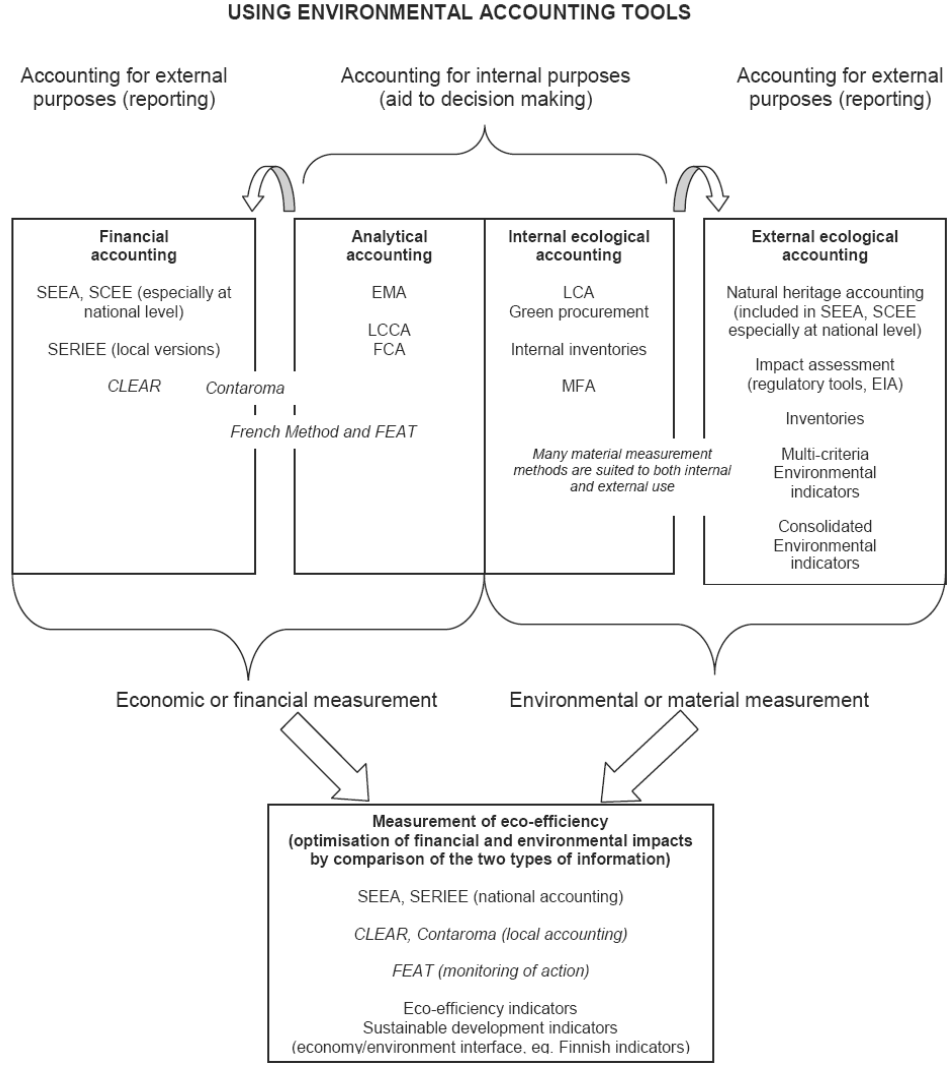
c) Different tools for different aims

A comparison of economic and financial information with environmental information yields information on eco-efficiency, described as integrated economic and environmental information because it includes both dimensions.

The purposes of the tools and methods are also underlain by different principles according as they serve to provide internal information or information for outside partners. The diagram below is an attempt to describe schematically the various information systems used by a local authority in the financial and environmental spheres. Inside it there are the information and measuring tools, positioned in accordance with their main accounting contribution and their entry point[3]. It shows the accounting tools which are control and monitoring tools. They may serve as the basis for (but must be distinguished from) the budget, which is an anticipatory, forecasting document. This explains why it does not include a tool such as Ecobudget, which among other things includes a budget tool.

[2] An example is the CLEAR method, which began as a financial benchmark for the environmental expenditure of local authorities and is now evolving towards a system of environmental management.

[3] This does not preclude these tools providing other information or functions, either inside the diagram or outside, the range of these often being broader that that of a single module, in particular after successive development phases. This explains why some tools may be mentioned several times. The field is sometimes that of sustainable development.



Remarks:
- A glossary is provided in Appendix 1.

- This diagram is a framework showing the tools known to date; it could be expanded or modified as tools evolve. Note that certain tools are not easy to read and are harder to identify, in particular those that have not been the subject of particular projects or of systematic reporting in English;

- European tools and those that are specific to local authorities are shown in italics. But other tools may have versions suited to local authorities.

3. Tools covering a broad spectrum…

The field covered by the information system depends on the definition chosen, the line followed by the authority and what the tool offers. It can vary depending on:

- the entity about which one wants to produce the information - the authority as an organisation (like a company) or as a territory. A “territorial” type of accounting entails an approach which brings together all the partners present on that territory (local authority but also population, companies, institutions, local outposts of central government services, etc.), whereas the authority may embark with just its own services and suppliers on a system covering its own activity;
- the object one seeks to measure and monitor – the resource, the heritage, material flows, activity, impacts, costs, expenditure, environmental action or the whole of an environmental policy;
- the type of data one wishes to use and its ease of access – raw or calculated data, forecasts, estimates, expressed in physical or monetary units, units that can be aggregated or otherwise

(translation of all data into physical units such as surface area for the ecological footprint or CO2 emissions for the carbon balance, or into monetary units which are easy to aggregate and compare with other fields);

- the environment definition chosen – viewed in terms of problems raised by degradation of the environment; in terms of the environment as a resource or as sectors of activity, fields of action.

Many tools are based on a rather negative conception of the environment (problems or constraints to be managed). In Europe, environmental accounting tools based on the environment as a resource for sustainable development are not widespread (it is more often a case of minimising negative effects than of maximising positive effects and return on investment).

Whatever the field defined, it is desirable to give preference to the transverse dimension and the search for a minimum of coherence in the environment field. Some tools offer these approaches from the start and make them unavoidable (the French method, for example), while others propose a partial application (to one field, one type of impact, one particular policy, etc.). Either they offer a choice of logic to be left to the authority, or their function is confined to an approach linked to a sector or a place. The coherence analysis is then bound to be limited.

4. … beyond accounting systems strictly speaking

We propose a distinction between seven main categories of tool applied to the local level, and often mentioned in connection with environmental accounting:

- Environmental management tools (monitoring and control of procedures)
- Strategic tools
- Discussion and consultation tools
- Knowledge-based tools
- Monitoring tools
- Decision-making tools
- Communication and information dissemination tools.

Four of these categories are not strictly speaking environmental information and measurement systems, since their prime purpose is not to produce information. However, they may contain environmental accounting "modules" (modes of production of necessary information, conventions or calculation and dissemination methods, etc.), which sometimes causes them to be classified as such.

The first category includes systems by which an environmental policy can be defined, from diagnosis to implementation. Often referred to as "integrated management systems"[4], they ensure that the environmental policy pursued is coherent. Examples are the ISO 14001, EMAS or EMS for cities systems. Tools such as Ecobudget® or CLEAR offer elements of this kind. However, in order to be sustainable development tools they must be designed for that purpose and so take account of the impact of environmental aspects on other policy areas.

Strategic tools make it possible to formulate the aims of a policy relative to local concerns and priorities (Ecobudget®, for example).

Discussion and consultation tools organise players' views and political arbitration. Their development in every field is closely linked to environmental problems, which entails managing conflicts over use.

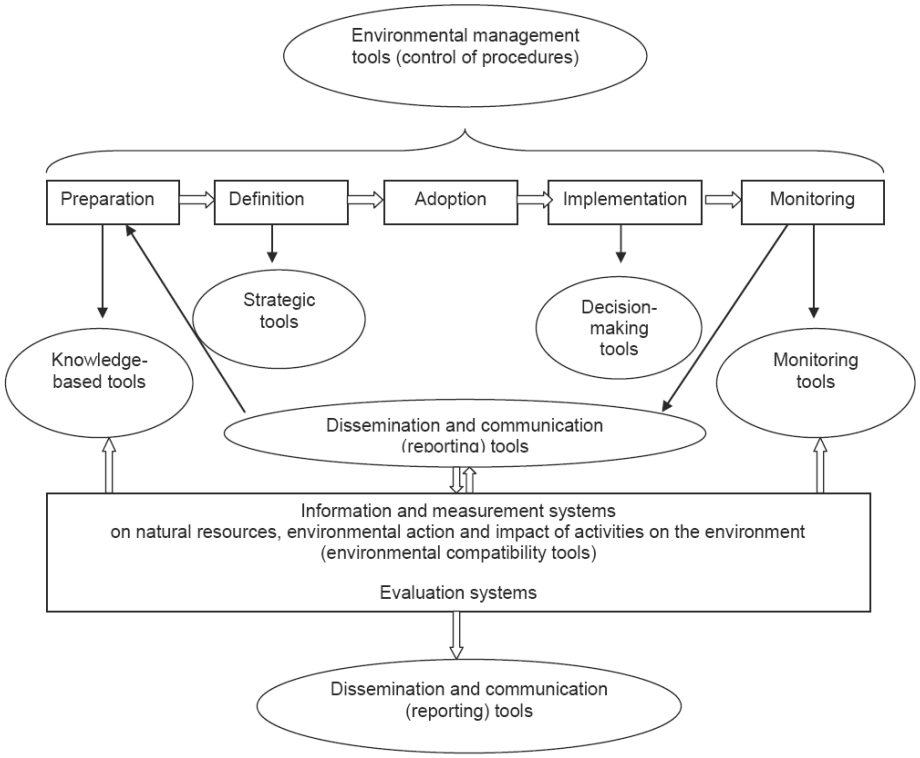
The last category covers tools relating to the use made of the information produced and offering information organisation and communication solutions together with common frameworks and references for purposes of comparison (reporting, GRI, indicators, etc.). This includes "Reporting", which organises information, offers a framework for its analysis and dissemination (GRI, for example), as well as indicators and references which afford comparisons between towns or over time, between themselves or in relation to norms (standards, ideals to be achieved, averages). These two main

[4] We are concerned here with systems for integrated management of the environment. There are also systems for integrated management of "sustainable development" or of a "sustainable territory".

ways of using information, preparatory to analysis, are often employed in environmental accounting tools, each proposing those most suited to the purpose.

The other three categories of tool are environmental accounting systems strictly speaking. Knowledge-based tools (the situation at a given point in time) and monitoring tools (regular observation) are often complementary and developed together. They centre either on natural capital and resources flow or on activities and actions, and their relationship with the environment (environmental action or any action by the organisation in question). As for decision-making tools, they correspond to a more *ad hoc* approach – providing information on every dimension of a project in order to arbitrate at any given moment. These measurement and information production tools may be associated with each other or with those in the first four categories, which lie outside the sphere which concerns us here[5].

The following diagram demonstrates the usefulness of these tools in relation to the stages through which a policy moves. It shows clearly the intermediate position occupied by environmental accounting tools between management tools, which ensure coherence and observance of procedures, and systems which report and communicate.



This diagram positions the tools in relation to policies but it is limited and many other links could be included. Also, it does not show the, sometimes close, relationships between the different types of tool, nor that some methods include several types.

- <u>The difference between indicators and environmental accounting tools</u>

A system of indicators[6] is a tool for reporting and communication. However, they can be a part of an environmental accounting tool. This depends on the indicator and on the field covered by the methodology used for the indicator. Environmental accounting tools often lead to the production of indicators. The specificity of an accounting tool is to provide a framework for data production within an established convention. In contrast, an indicator is based upon accounting information. Also, an indicator provides a snapshot whilst an accounting system produces series and, if set up with complementary modules, can show the relations between financial and asset flows.

[5] This report deals only occasionally with tools derived from business (in particular when they have been adapted or have potential for adaptation to a local authority) and does not deal with sectoral tools, though they may be of use to local authorities.
[6] An indicator is a ratio or a simple and reproducible reference data which indicates a development or a situation without offering detailed analysis. It 'indicates' an opportunity to undertake such analysis.

- The difference between environmental management systems and environmental accounting tools :

A system of environmental management uses accounting tools. It can include an 'element' of environmental accounting with specific conventions, but it is not limited to this. It consists mainly of a procedure to follow through and to improve activities undertaken. Usually it concerns the negative impacts on the environment. It aims to estimate the results achieved by a territorial authority on the environment.

> Example: Ecobudget®
> Ecobudget offers a methodology to evaluate local resources (knowledge-based tool of the resource), indicators on how the local activity puts strain on the environment (impact assessment tool), a procedure for democratic debate (environmental management tool) and a way of including environmental questions at key moments of a territorial authorities' financial budget (strategic tool to address environmental challenges)

5. … but which doesn't yet offer a complete information system on the environment

Analysis of the different tools shows the advantages and shortcomings of the range available. Certain objectives may also be contradictory, requiring the authority to make a choice or compromise.

- Flexibility and comparability: the tool is all the more rigid as it aims at external information which needs common frameworks for comparing or verifying conformity. External tools are therefore more conventional than internal ones. However, every system enhances the authority's ability to meet the demand for environmental data from every quarter, and especially where the basic unit for data collection is refined (many recompositions being possible);
- Integration with national or international accounting systems: this integration is possible only with standard, conventional tools, provided they take account of these standards at the design stage. However, a distinction has to be drawn between the national (macro-economic) accounting approach, which sets out to analyse sectors of activity and economic agents and may be useful at the local level, and the approach that seeks to evaluate and guide local policies (the micro-economic approach). The effort to "consolidate" environmental accounts will not be possible until standards have been adopted for all types of information systems;
- Cost and ease of implementation: the means needed to put such tools in place are heavily dependent on the initial situation of the authority – the level of development of technical and financial information systems, their characteristics[7], transparency and relations with the partners holding data. Implementation also requires skills in environmental questions and accountancy. While outside experts can be called in at times for decision-making, communication or start-up assistance, setting a structured policy in place requires integrating or training competent personnel. Lastly, the initial investment is always substantial. However, it varies in magnitude depending on whether one has to (non-exhaustive list in increasing order):

  a. estimate expenditure or impacts by reference to established norms or expert opinions,

  b. identify the major financial items in an authority's accounts

  c. or conduct local inventories or eco-balance sheets.

  At a later stage it is often difficult to find a compromise between the effort made and the relevance of the results obtained[8];
- Readability and communication: the tools that are most easily readable and most useful for the purposes of discussion with elected representatives or the public are those which yield results that are easy to interpret, by reason of their simple construction (raw or per capita data, for example) or by reference to commonly understood notions (for example, surface areas r monetary units). Financial data have the great advantage of being immediately meaningful to

[7] The ability of these systems to integrate the essentially transverse environmental dimension, presence of analytical accounting, inventories etc.
[8] For example, the effort of keeping the database up to date is considered too great to make in every field, but neither information on the main amounts without details nor partial information are satisfactory, in particular for policy monitoring.

the population. But in order to sustain the debate and argue for local eco-efficiency options, it is necessary to be able to "break down" the results obtained so as to explain the mechanisms at work and look back at the various explanatory variables. Some tools make this return to the source data difficult because they necessitate reverting to (in some cases a series of) complex modes of calculation;

- Resources for downstream analyses: all environmental accounting tools supply resources for other tools or analyses, with the exception of those that produce global analyses with no possibility of returning to the basic data, either because the methods are not accessible to non-specialists (estimates, conversions, hypotheses etc.) or by reason of basic data that are unsuitable for other uses because they lack precision or have different formats;
- Taking the time and space dimensions into account: the time factor is accounted for in different ways depending on the tools: most often, the data is produced annually in an accounting system, but some measurements, in particular physical ones, yield data that is hard to reproduce at that frequency (excessive cost). The long term and the effects of accumulation over time are still poorly understood, but are introduced into such tools as life cycle analysis. Physical analyses are more suitable for introducing the space dimension which is necessary to analyse flows (definition of an ecosystem in relation to the exterior). As for financial tools, they refer to institutional perimeters.

The range of tools suited to local authorities is still incomplete. Those designed for local authorities meet specific concerns, except for complete systems like SEEA, which incorporates all the dimensions (stocks, flows, physical and financial measurements). But this system is not tailored to local situations and its methods are not transferable to the local level unless methodological precautions are taken.

However the potential is huge and can offer real benefits to local and regional authorities in improving their decision making processes to take the environment into account. Often decision making processes are driven purely by financial concerns and it can be difficult to rationalise taking other factors into account but providing a method for giving value to other considerations can help resolve this. While it would be difficult for an authority to immediately implement a fully comprehensive package of measures, that does not mean local and regional authorities should not act. While tools some will be more applicable to some local or regional authorities than others all authorities should be encouraged to adopt those which they can (examples could include carbon accounting or environmental asset registers) as soon as possible.

6. The way forward

Environmental accounting is a technique whose first objective is to support local authorities' efforts towards sustainable development. One way of achieving this is to offer them new tools for incorporating the environment into local policies.

Existing environmental information tools all have imperfections and are incomplete and closely related to the contexts in which they were developed. They can be divided into three main categories (information and monitoring tools and aids to decision making).

It is not currently possible to apply any particular tool more generally:

- The three categories correspond to three separate approaches and are based on differing assumptions, conventions and time frames; they cannot be reduced to a common factor or combined. The categories must therefore coexist.
- Within each category, current methods have been developed to take account of local objectives, existing information systems and specific institutional arrangements. They cannot be generally applied to every country and every tier of authority without significant adaptations, even though some progress has been made in this direction.

The use of these tools should be developed, as a means of incorporating the environment into local management, with the long-term aim of establishing full environmental information systems to supplement other existing local systems providing economic, financial and social data.

Authorities are offered two complementary approaches for achieving this:

- Certain minimum requirements regarding the necessary tools and their underlying principles:

  a) Their purpose and their relationship to other tools should be clearly understood, with a precise statement of the area covered and its limits: information on capital and resource flows and the physical and economic aspects of the environment, as well as information comparing environmental and economic aspects and defining the units of measurement;

  b) A transversal approach should be adopted, covering all environmental areas, problems and activities. It should eventually extend to all local policies and activities;

  c) The tools used should assess environmental policies' interactions and cross-effects and their overall compatibility in different geographical areas and time frames;

  d) They should be capable of evolving to take account of new issues that currently fall outside the environmental field;

  e) They should also be capable of evolving to take account of other local agencies and interests active in the same geographical area;

  f) They should be compatible with other existing information systems in the authorities concerned, for example to offer the possibility of interaction with the financial accounting system or integration with other systems.

  g) They should be a part of departments' daily or regular operations.

If the tools satisfy these requirements, which are consistent with sustainable development principles, they can serve as a basis for Agenda 21, and for implementation of the Aalborg commitments and the Thematic Strategy for the Urban Environment. The forthcoming revision of the European urban environment strategy could be an opportunity to introduce environmental accounting as a means of monitoring its implementation and as one of "the mechanisms ... to require integrated management of the urban environment"[9], in addition to an environmental management system.

- To apply these tools, authorities should:

  a) make it clear why they have embarked on environmental accounting and what the priorities are;

  b) commit themselves to developing the three categories of tools, with a view to establishing, in the long or very long term, full environmental information systems;

  c) adapt their choice of tools to existing information systems: tools have very precise associations that are not always compatible with every situation (for example, the CLEAR method is particularly suited to Italian organisation and accounting rules);

  d) adapt the choice of tool to the stages to be completed by the authority: the starting point may vary according to local practices regarding information and transparency. Depending on the context in which they have been developed, tools do not necessarily have to go through the same stages;

  e) give priority to developing decision making tools that departments and services can easily use and adapt to. These tools may be introduced piecemeal, quite independently of any structured policy, and using a variety of methods. The only requirement is that expert assistance be used, possible from outside. Such tools are particularly suitable for ensuring that decisions are taken rapidly.

  f) also give priority to tools for monitoring local environmental policies, since local authorities are directly responsible for the outcome of these policies and must respond to the need for information on and monitoring and assessment of the results. These should be extended to information tools on local resources;

[9] See the communication of the Commission to the Council and the European Parliament on the Thematic Strategy for the Urban Environment, EC 11/1/2006.

g) ensure from the outset the participation of authorities' partners in local environmental activities to bring together all the locally available information on particular areas, whatever the country's institutional arrangements (for example, water policies are often divided between several tiers, but these differ from country to country. Consistency will only be possible if all the agencies concerned in a particular country work together);

h) make available the necessary resources before introducing these systems. They might also be financed from the profits or savings derived from these tools;

i) provide for the system's evolution, to take account of changing circumstances and the challenges faced.

The foundations need to be laid for a common European system, by means of

- Encouragement and compulsory measures

The long term aim is to make local authorities more aware of the environment, with a view to developing and improving relevant policies. Authorities must also be able to produce certain information for analysing and assessing European policies.

There are two main ways of achieving this:

a) encouragement, by inciting authorities to action and offering them standard tools in such areas as national and local environmental management (identifying problems, objective setting and impact monitoring), environmental accounting, establishing indicators and so on;

b) compulsory measures, relating to planning, project design and compliance with standards, as in other fields such as housing. The measures might include the obligation to carry out an environmental assessment or to supply the results of various approaches to a particular project.

We believe that the systematic use of long term environmental economic assessments should be obligatory for all proposed major capital projects and in the preparation of the main local development plans. The annual reports of all major towns and cities might eventually include environmental expenditure accounts, possibly accompanied by a report on the state of the local natural capital.

- A guide to critical analysis and assessment

Hitherto, European institutions' efforts to assist authorities have focussed mainly on environmental management systems, impact studies and tools for comparison and communication, in addition to and in conjunction with accounting tools. It is now proposed to concentrate on disseminating and securing the general application of environmental information tools. Information and measurement are essential for any environmental management system, based on various indicators and documents. Many such systems have been balked by the lack of locally produced information.

A critical guide to available tools is therefore necessary to enable authorities to decide which are best suited to their needs and to make good use of them[10]. Heterogeneity has positive aspects, but it also leads to complexity. Summary information is required on the available tools, with an assessment of their potential and limitations. Such a guide could be updated to take account of changes.

- Encouraging dialogue between different approaches

The various tools must be able to interact at different levels and in different contexts. Links need to be established between them and there must be the potential for compromise. One current example is the IDEMS project[11], which looks at the overlap between three environmental management systems.

[10] Such an approach has recently been applied to tools linked to the Aalborg commitments (ACTOR project, Aalborg Commitments Tools and References, financed by the European Union)

[11] IDEMS: Integration and Development of Environmental Management Systems. The three systems considered are CLEAR, Ecobudget® and EMAS.

- Strong incentives for authorities to introduce such tools

Encouraging local authorities to produce useful information from environmental accounting tools would be a valuable adjunct to local implementation of Agenda 21, urban environment strategies and the Aalborg undertakings. This could also be an element of other local development policies. Assistance should be available to help authorities and countries adapt existing tools to their particular needs and exchanges should be encouraged as a means of improving internal and/or external systems.

- The emergence of a results-based culture

Such a culture could lead to exchanges of information over and above exchanges of good practices.

Authorities are very willing to compare their good ideas and practices in the interests of more sustainable development, as is shown by the development of environmental management systems. However, the resources available are not sufficient to ensure an improvement on local environmental performance[12]. One means of achieving this is to compare the results obtained. Despite any reservations, local authorities and their policies would benefit considerably from such a process.

- Harmonising performance indicators

Although it is not necessary to use the same methods to secure the basic information required, the relevant local performance indicators do need to be harmonised. Authorities might therefore gradually adapt their tools to common data formats, so that the information could then be used by third parties and consolidated on a wider geographical basis. The indicators would enable them to determine where they stood at a European level.

The European Commission could be responsible for producing agreement on the minimum required eco-efficiency indicators, with a view to developing a common framework for progress reports on the Aalborg undertakings and the Thematic Strategy for the Urban Environment. This is already the subject of the European STATUS project[13].

- Support for dissemination of, free access to and updating of methods and tools

Technical networks and local authority associations play a major role in developing environmental comparison tools. Access to tools and methods must be guaranteed, as a condition for their rapid dissemination and wider application. There must also be a capacity to react to changes in environmental policies and problems by adapting tools, since some of the data produced has a limited lifespan.

[12] As has been acknowledged by the la associations that signed the recommendations on revising the European EMAS on 28 February 2007: CEMR, ICLEI, Union of the Baltic cities and the Bodensee Stiftung.
[13] Sustainability Tools and Targets for the Urban Thematic Strategy

Appendix 1 Glossary and acronyms

English acronym	French acronym	Definition in English	Definition in French
CLEAR	CLEAR	City and local environmental accounting and reporting	Comptabilité et rapports ou « reporting » environnementaux des collectivités locales
EIA SEA EIS	 EES	Environmental impact assessment Strategic Environmental Assessment Environmental Impact Statement	Évaluation des impacts environnementaux Évaluation environnementale stratégique Etat des impacts environnementaux
EMA		Environmental management accounting	Contrôle de gestion environnemental ou comptabilité analytique environnementale
EMAS		(Community) system of environmental management and audit	système (communautaire) de management environnemental et d'audit
EMS	SME	Environmental Management System	Système de management environnemental
FEAT		For an Environmental Accounting Tool	Vers un outil de comptabilité environnementale
GRI		Global reporting initiative	
ISO		International Standard Organisation	
LCA LCCA FCA	ACV	Life Cycle Analysis Life Cycle Costing analysis Full Cost Analysis	Analyse de cycle de vie Analyse des coûts au long du cycle de vie
MFA		Material Flow Analysis	Analyses des flux matériels
NAMEA		National accounting matrix including environmental accounts	Matrice de comptabilité nationale comprenant des comptes environnementaux
SERIEE EPEA	SERIEE CDPE	European system for the collection of economic information on the environment Environmental protection expenditure account (SERIEE module)	Système européen pour le rassemblement des informations économiques sur l'environnement[14] Compte de la dépense de protection de l'environnement (Module du SERIEE)
SEEA	SCEE	System of integrated environmental and economic accounting	Système de comptes économiques et environnementaux intégrés
UNEP	PNUE	United Nations Environmental Program	Programme des Nations Unies pour l'Environnement

[14] SERIEE is not today a complete SCEE.

Appendix 2 What tool for what local objective?

For a local authority, what matters is to be able to choose the tool or tools with which it can meet its priorities, knowing their value and their limits. To afford a clearer understanding of the function of each type of tool, we propose here to set out in schematic form the different objectives of local authorities and describe the categories of tool which will enable appropriate responses to be generated, with examples.

Motivating approaches, policies, general level of information, more global level		
Authority's objectives	**Type of tool**	**Some examples, among others, of tools meeting this objective**
Inform and motivate elected representatives, enable them to arbitrate with the environment integrated	Strategic tools	Ecobudget, CLEAR
Inform and motivate the general public	Communication tools	Consolidated Indicators (ecological footprint, carbon accounting)
Global analysis and analysis of policy coherence	Assessment tools	French method, FEAT
Monitor local environment policies at the level of the action at the level of services	Accounting tools between internal management and financial accounting	French method, FEAT Contaroma
Evaluate main items of expenditure linked to the environment (Situate the economic implications of the environment, measure the environmental share on the basis of the accounting framework) in keeping with national systems of accounting	Financial or conventional accounting tools	CLEAR

Knowledge-based and monitoring approaches, techniques, refined information level, often partial		
Authority's objectives	**Type of tool**	**Some examples, among others, of tools meeting this objective**
Know costs in order to allocate them	Decision-making tools (analytical accounting)	EMA
Integrate external costs in management: on a continuous basis on a more *ad hoc* basis	Decision-making tools (often used)	EMA LCCA
Improve efficiency of environmental action : on the financial level on the material level on the eco-efficiency level	Decision-making and assessment tools	Green procurement, EMA, LCA, etc. MFA Eco-efficiency indicators, also FEAT, Contaroma etc.
Measure the impact of local authority activity on the environment	Tools for assessing impact in internal or external ecological accounting tools	EIS, EIA
Endeavour to reduce the impact of local authority activity on the environment	Environmental management tools	Eco Management Assessment Scheme EMAS ISO quality approaches
Assess the impact of a project or programme on the environment	Impact assessment tools (ecological accounting)	Strategic Environmental Assessment
Assess and reduce impact of local authority procurement	Decision-making tools	Green procurement
Produce economic information on the environment for external partners in accordance with standard formats (comparison and consolidation possible)	Financial accounting or external physical tools	SEEA, NAMEA and SERIEE nomenclatures, European indicators etc.
Know and monitor the local environmental resource	Internal and external ecological accounting tools	Ecobudget, partially, otherwise applications outside Europe
Compare, situate self in relation to other practices or results	Dissemination and communication tools	Benchmarking

Other tools that sometimes give rise to confusion		
Authority's objectives	**Type of tool**	**Some examples, among others, of tools meeting this objective**
Describe interaction between the environment and the national economy	National and satellite accounts	SERIEE, SEEA, NAMEA
Head local production and environmental consumer networks	Environment-based territorial leadership tool	Eco Profit (example: Graz, etc.)
Economic and financial tools (cf. congress report drawn up by ICLEI, resolution 1997, recommendation 1999)	Levers with which to integrate the cost of environmental degradation (taxes etc.)	Rarely a matter for local authorities; an incentive, not a tool for managing one's own activity

Appendix 3 A history of environmental policies and accounting

i. Local sustainable development projects as a vital "tooling up" of environmental issues

Some authorities have embarked on sustainable development approaches – local Agenda 21s – as advocated in the Rio and Johannesburg declarations. In Europe, more and more of them are undertaking a commitment, as the growing number of signatories to the Aalborg Charter shows. These moves entail a cultural change in the decision-making process and in working methods, and *a fortiori* large-scale participation by everyone concerned and a necessarily transverse approach.

It will be remembered that local Agenda 21s must address five main aims: combating climate change, preserving biodiversity, protecting environments and resources, social cohesion and solidarity between territories and between generations, fulfilment for all human beings (as regards essential goods and services – food, health, education, housing, environmental amenities and culture), on the basis of responsible modes of production and consumption.

In order to arrive at a sustainable development project that is relevant to the locality and implement it, authorities today have at their disposal a great many methods for checking that the time and space dimensions, and the various aims of sustainable development, are incorporated. The point is to obtain the participation of all the local players and construct a joint, shared project.

Whatever the method employed, these approaches will call upon much local or external knowledge that makes it possible to identify the local issues, define priorities and objectives and establish proper planning, and then to monitor implementation. Before the different aspects of local policies are combined, it is necessary to know how a policy will interact with others and what impact it will have in terms of sustainable development aims.

In society's social, economic and political spheres, many policies[15] are now clearly marked out: tools have been devised for intervention, analysis or assessment, their impacts on each other are studied or indeed known. Existing information systems are reinforced, despite being always imperfect, notably in the manner in which they take the principles of sustainable development into account.

In environmental matters, on the other hand, information and analytical systems relating to action taken are still in their infancy. The policies are still recent, although local authorities have addressed environmental issues and become more proactive. However, the results are often poorly measured. Despite recent awareness of the issues, the environmental dimension is still not systematically brought into decision-making. Yet identifying, measuring and assessing the environmental factor at the local level are becoming crucial, in particular when assessing the coherence of public policies aimed at sustainable development targets.

ii. Local public environmental policies in Europe: experience to be accumulated

Local authorities carry out tangible environmental activities on their territory for a range of purposes, but they do not implement a coherent environmental policy in the sense of taking overall account of the environment in their territory[16]. Local environmental policies often remain limited, reduced to a sum of actions unrelated to each other and of little relevance to the issues to be tackled. This ranges from coordinating the action of players at other levels to reducing their own impact. While the environment is nowadays included in the issues, by elected representatives and by services, authorities still intervene most often in piecemeal fashion in this field. As is emphasised in the European Commission's paper "Life in the city"[17], action is not taken in a coordinated manner between territorial levels. Initiatives are taken in isolation and spread over services and players as required by each one's area of jurisdiction and interest. Practices are often sector-specific and take no account of potential external effects in other sectors.

[15] For example, policies on education, teaching, employment, justice, solidarity, health, and industrial and cultural policies.
[16] A local public policy may be taken as meaning an autonomous and to some extent coherent set of actions relating to a power exercised, to the resolution of a problem or to an identified subject area. It is worked out in a stage-by-stage process, from diagnosis to implementation of action. According to this definition, only some local environmental policies exist in European local authorities.
[17] Link to website.

The explanation for this state of affairs lies first of all in historical factors. Local environmental policies are recent, at least in structured, publicly announced form. Taking account of the environment is something that has come about gradually, by seeking solutions to environmental problems encountered at the various territorial levels or by working back from effects (impacts) to causes. Environmental policies can be observed in the light of experience, but they have rarely been constructed. The first structured policies dealing with interactions and alert to overall coherence, that is to say the first non-sectoral, integrated policies, appeared with the concept of sustainable development. They often arose from the early environmental plans or charters dating from the late 1980s. They have developed since Rio, often linked to the first local Agenda 21s and participative approaches. So these policies are still in their infancy.

Another factor is the weak institutionalisation of the environment at local level. In other words, there is no competence with regard to the local environment or the management of natural resources at this level, although local authorities perform a great many activities and services. Most often, environment management is in the hands of partnership arrangements, for example in the case of rivers (with contracts between local authorities, government departments, public bodies and agencies and residents' or users' representatives). Moreover, there is rarely an identified local ecosystem corresponding to the institutional level of the authority. Management of the environment is all the less institutionalised as its contours evolve and change. It is a variable geometry object which deals with relations between the natural environment and other policies. In this sphere there cannot be stable areas of responsibility with policies to match. Lastly, the transverse character of the environment does not fit the sectoral schemes of policy formulation.

So the implementation of local environment policies is institutionally complex and hard to circumscribe. Yet there is consensus on the importance of the role of territorial authorities. They are called upon to ensure that action is consistent with the ecosystem and the inhabitants' daily lives. Because of their proximity, even if they do not have the relevant powers, they are legitimised by the population, at least as an interface with central government and the legislature or other players. This role of integrator of the various policies pursued on their territory[18] is recognised as being performed by local authorities. The European Commission, in its statement on the thematic strategy for the urban environment, points out that an integrated approach to management of the urban environment enables local authorities to achieve greater efficiency in their action.

Faced with these environment policies, it is all the more important to measure action in order to ascertain what is being done and give it meaning in the light of experience. The tools for monitoring this action make it possible to see it in perspective and improve it, and also to:

- assess practice and analyse results in order to evaluate their value in terms of sustainable development and apportion the factors of success, even though they are only rarely directly transposable;
- achieve greater transparency in a context where it is increasingly necessary to render account and provide objectivised information in order to generate debate and better governance. Sometimes the tools in themselves offer opportunities for local environment partnerships;

- finally, to refresh the information used for decision-making, introducing environmental aspects into information systems.

[18] Integration, at the level of their territory, of sector policies and the policies of regional, national, European and international tiers of authority.

Appendix 4 Environmental accounting tools

i. Tools for determining and monitoring natural capital and flows

Accounting for the local natural heritage

Objective and means
This method consists in keeping an ongoing or periodic record of "natural resources", i.e. counting the individuals or quantities of each natural species, substance or material. It provides a framework for describing the state of the environment and identifying the issues in a given territory. So it differs from approaches centred on environment policies, which lay more emphasis on pollution flows or the consequences for human beings.

These figures are then compared with the earlier situation (to monitor reproduction of the natural capital or perhaps invasion by a species) and with the situation in other places (to assess biodiversity in particular), and possibly assigned a monetary value so as to indicate rarity or the need to manage and protect this capital. This method is of course also a good way of creating awareness of the quality of the natural environment, particularly in urban areas, which are assumed to be wholly man-made.

Adaptability and comparability
A system that relies on continuous surveys is not readily adaptable, but monitoring methods, for example in the case of species, can evolve fast as ground-based methods (measurement of samples in a test area) give way to remote observation methods (satellite photography) or monitoring by the population. Comparability raises the question of the small number of places where permanent, global surveys are carried out: the majority of measurements involve comparability in time. The prime issue is continuity of observations.

Transversality and coherence analysis
Global, transverse surveys covering every aspect of the environment are few and far between. These tools are often limited to a given resource. Analysis of interactions is therefore rare and so coherence is not guaranteed.

Cost and difficulties of implementation
Surveys are very costly, but can be relayed by a network of voluntary observers ("participatory inventories"), and these are a way of democratising the work and raising awareness of the issues. Consequently, such action is usually initiated in a national framework or through a national or even international network, and focuses on precise targets (forests, water, and endangered species). These surveys were pioneered by low-density countries whose wealth depends on the exploitation of natural resources. At the local level, very few experiments have been conducted: they are usually the work of nature parks or reserves, some regional authorities (Belgium, Spain), and foundations focussing on one area. Local authorities take only an indirect interest in the subject, but we may mention the case of Paris (biodiversity inventories – fauna and flora), Canadian towns, etc.

Internal assessment tool
This accounting is itself an assessment tool, by reason of the pointers it provides to the evolution of resources or species. It can also help the project prevent damaging consequences to human health, in the case of colonisations presenting a risk.

Resource for downstream analyses
A quantified knowledge of the natural heritage is a basic investment that is useful for many analyses, in particular for naturalists, impact studies, the development of land-use policies (for example town plans) or aids to decision-making.

Integration with international accounting systems
This is the strength of this accounting system, which can rely on numerous international reference works (the United Nations SEEA and the work of the "London Group" on environmental accounting, the work of the World Bank and the FAO, the Fundacion Bariloche guide, etc.). It can be integrated with national accounting and connect with international comparative networks.

Visibility, communication
Counts are readily understood by the non-specialist public. Monetarised data have the advantage of integrating with financial choices, but are often highly contingent and tricky to manage, giving rise to much controversy.

Material flow analysis (MFA)

Objective and means
Material flow analysis is an idea that started out in Sweden for the purpose of renewing approaches using over-general indicators and assisting in the making of choices in local environment policies. The aim is to ascertain and monitor the consumption and discharge of natural resources or pollutants throughout the municipality. This method, coupled with monitoring of local natural resources, reveals interactions between the local (and global or regional) environment and municipal activity.

Adaptability and comparability
Flow research can be done at all levels. Comparisons are possible if flows are expressed in the same units. Some approaches result in indicators of municipal activity proper.

Transversality and coherence analysis
These tools produce information on exchanges within municipal activity and with the outside. Thus they provide a coherence analysis if applied to all the local authority's services and manage to express flows in comparable units. For a given resource (water, air etc.), they are perfectly suited to transverse analysis (flow analysis for such resources in all services, impacts on the local resource, etc.). The applications are often partial and, except for monetarisation, always difficult; the choice of unit frequently means looking at a particular set of environmental problems (for example, conversion to tonnes of CO2 is relevant to climate change but not to water as a resource).

Cost and difficulties of implementation
The cost depends on the information systems which already exist in the authority at the technical level. The tool may rapidly become very complex if the quality of flows is monitored in detail (usually there is no happy medium between a qualitative indicator involving an expert opinion and another one proposing dozens of different measurements; see, for example, the definition of water quality). The investment has been made in several (large) Finnish local authorities, whereas in France, for example, these flow analyses are just in their infancy.

Internal assessment tool
The analysis enables the authority to see the relationship between its activity and the environment. The results often lead to transverse local flow management and improved environmental performance by the authority (less pressure on the environment, optimisation of consumption of the resource, recycling, etc.).

Resource for downstream analyses
The information produced may be monetarised or used for action monitoring tools. It may also be usefully linked up to a capital monitoring tool to analyse the role of the authority in the evolution of the local natural capital. This information is the basis of reporting tools (for example, resource consumption indicators) and communication tools such as carbon balance and ecological footprint.

Integration with international accounting systems
The information produced can be used for material flow accounting tools at other levels, with conventions on the definitions and the units in which the results are expressed.

Visibility, communication
The principles are easy to explain. Apart from conversion conventions by which comparable units can be obtained, the data remains raw and thus easy to understand (with the exception of quality analyses). The method covers all relationships between municipal activity and the environment and is not centred on problems only (pollution, degradation). It is a more positive view which stresses the value of "waste" from an activity as a resource for another one (moving towards industrial ecology).

ii. Knowledge-based and action monitoring tools and local policies pursued

Tools for monitoring action may deal with physical and financial aspects, depending on their nature. The point is to report and measure, which necessarily involves agreements between the local authority, data producers and third parties wishing to be informed or to monitor – users, the population or a national or international organisation.

Financial tools have one major drawback: the final results provide overall help in defining and decision-making, but are not sufficiently operational, even if they may be the starting-point for thematic policy analyses – analyses of coherence, of the type of environmental approach, of interaction between fields, of levels of intervention etc. On the other hand, a degree of fine detail in basic data collection affords a more technical analysis. These tools set out to meet two contradictory requirements: to report within standardised frameworks so that they can be understood by third parties and supervisory bodies, and to provide detailed information enabling the effectiveness of action and pricing arrangements to be analysed. Depending on the level chosen for data collection (activity, sector, action), the methods will depend more or less on the internal organisation of services and national, or even local, nomenclatures. A detailed data collection level is therefore useful in two ways: it permits technical analysis on the ground and offers greater flexibility of incorporation into different conventions.

However, their main value lies in their global, transverse approach, made possible by the use of monetary units and systematised in order to embrace all areas of local environmental action.

The French method of measuring expenditure and its development (FEAT)

Objective and means
The French method for measuring expenditure, which is used and supplemented in the framework of the European FEAT programme, is a financial monitoring tool (expenditure and receipts, even assessment) to monitor local environmental policies. Starting with action, it consists in identifying environment-related actions in the activity of the local authority, and then makes it possible to monitor and analyse them by reference to physical data. Authorities can thus answer questions of the following type: An environment policy is being applied; it has a cost. What are its components? Which fields are concerned? How much? Who pays? What purpose does it serve?

The results should yield a comparison between one town and another and clarify the local policy objectives and approaches. The environmental approach is global, in both its positive and its negative aspects. It relies mainly on expert opinion, which makes it easy to apply. But the physical monitoring of the results of the action is not yet fully developed.

Adaptability and comparability
The basic unit being the action, the system is very broadly adaptable. On the other hand, applications to date have been not sustainable or partial. One thing that inhibits application by local authorities is the work of data collection, which is regarded as too onerous by French authorities which do not have a developed culture of producing precise data on action taken in environmental and financial matters. Management levels which differ between services and competences make standardisation, and therefore comparisons, difficult.

Transversality and coherence analysis
The results are useful for the analysis by environmental objective and approach, and provide a basis of financial information with numerous uses. This method offers frameworks which prompt transverse effects to be taken into account and optimised through dialogue between services, as well as analysis of global relevance (preventive as opposed to restorative action). It raises questions about the space and time scales of effects.

Cost and difficulties of implementation
This tool is often considered onerous: it requires a generalist employee to be responsible for the project and allow cooperation between technical and financial services. It demands a heavy investment from a municipality which does not produce this information in its day-to-day management. On the other hand, recourse to expert opinion obviates the need for highly complex technical analyses. Resorting to analysis of the past experience at the outset is very demanding and is not always done, but does enable a sufficiently long series to be obtained from the start. The present problem is the inability of authorities to commit themselves to the long term.

Internal assessment tool
This tool permits assessment of the quality of the policy being pursued and already offers analytical tools (coherence, transversality). But it is not an aid to decision-making, and therefore not directly useful to elected representatives. It is essentially a basis for activity reporting.

Resource for downstream analyses
The tool provides basic financial and physical information on the content of local policies, the means committed, and the effects (in its developments). These data can feed into systems of physical or financial indicators, since the basic unit is the action and is as precise as possible.

Integration with international accounting systems
The weakness of the French system is that it is out of step with SERIEE (notion of action taken as a whole, contradicting the notion of extra cost). So integration with national accounting poses a problem.

Visibility, communication
The results are intended for elected representatives (global results), technicians (results per action), and possibly the public and partners on condition that the information is reprocessed for these targets.

Contaroma

Objective and means
The Contaroma project in the city of Rome took its inspiration from the French method. It then turned to the search for a more systematic method, using (a) Italian accounting heads and (b) talks with services (only for certain categories of expenditure that are harder to circumscribe). The definition of the environmental field is not detailed as far as action and comprises ten environmental areas. The definition of environmental expenditure relies on the DERIEE framework definitions (prevention expenditure, reduction or elimination of pollution or another source of harm to the environment).

The method has been tried out and elaborated in order to obtain a new reading of the expenditure figures and items so as to assess the magnitude of the commitment to giving effect to the policies of the municipality of Rome and the application of the programmes defined by it.

Adaptability and comparability
The system suits Italian authorities and permits comparisons in this context. On the other hand, it is not immediately compatible with accounting systems in other countries. The way in which public services are organised in Italy determines the level of availability of much of the data, which can only be partly re-aggregated in other frameworks. However, it conforms to the SERIEE methodology, making dialogue possible.

Transversality and coherence analysis
The method scans all the authority's fields of action. On the other hand, it does not offer a particular analytical framework to examine the coherence of the policies being pursued (questions about the nature of the action taken and interactions).

Cost and difficulties of implementation
This tool offers the advantage of being easily reproducible, the existing accounting framework being largely used to produce accounting information linked to the environment. Outside advice was resorted to for the test phase.

Internal assessment tool
It permits internal analyses, and remains at the level of the activity or service, corresponding to accounting heads. So it is difficult to assess expenditure in relation to a physical indicator consolidating the entire activity. The analysis cannot be very precise. It does not permit action piloting.

Resource for downstream analyses
This system offers few downstream possibilities because it remains at the level of services, with some exceptions.

Integration with international accounting systems
Yes, via the SERIEE methodology.

Visibility, communication
The tool has visibility for those who have mastered the Italian local public accounting system, i.e. normally for elected representatives and local services.

CLEAR

Objective and means
The CLEAR method, developed in Italy, is a tool for identifying "environmental" accounts and budgets, linked to a system for monitoring physical data. As with the Contaroma project, the information collection level is not the same as for action, but the one defined by Italian public accounting (accounting nomenclature), at the level of services or environmental activity sectors.

It affords a measurement of expenditure in order to situate the economic implications of the environment at local level and compare one local authority with another, using an ongoing framework. It provides basic information for local debate (elected representatives, population) on the main budget items related to the environment. It does not however provide for detailed monitoring of policies pursued. The link between action taken, expenditure and effect is too remote.

Adaptability and comparability
Measurement employs the same conventions as those of public accounting. Thus the system is rigid, but ensures opportunities for comparison.

Transversality and coherence analysis
The method scans all the authority's fields of action. On the other hand, it does not offer a particular analytical framework to examine the coherence of the policies being pursued (questions about the nature of the action taken and interactions).

Cost and difficulties of implementation
Of course it requires investment, but once the correspondences are in place updating is not too costly. The central issue is the permanence of the tool in order to have sufficiently long series. The testing did not always give rise to annual application.

Internal assessment tool
This project emphasises the democratic aspects of the accounting system, since it backs a local environment policy by a procedure worked out under the responsibility of the elected representatives and enabling both the parties and the population to be informed. It is a motivation rather than an assessment tool, and this has led to the development of the strategic or policy management aspects (evolving towards an environmental management system).

Resource for downstream analyses
Few possibilities in view of the rigidity of the information produced. On the other hand, it can be supplied in a more relevant way with the development of more detailed information systems upstream.

Integration with international accounting systems
Good, through the SERIEE methodology.

Visibility, communication
It leads to an annual reporting system linked to a local policy (for example, an Agenda 21) contributing to public debate.

iii. Decision-making tools

These systems, which follow the example of "full cost" approaches (costs incorporating all present and future induced costs), entail taking into account the environmental expenditure of an economic agent and including it in his analytical accounts. In the most advanced cases, it also means integrating the external costs (predicted cost of pollution, social costs, and costs for other players) of an agent's activities. Depending on methods, the environment-related costs are integrated in terms of the company, a site or given product.

The aim is to measure more accurately the cost of the environment in order to decide on the most effective responses in economic and environmental terms.

Life cycle analysis and its physical and monetary variants

Objective and means
Life cycle analysis (also called “eco-balance sheet”) offers an effective and systematic means of assessing the effect on the environment of a product, a service or a process throughout its life. It is an assessment tool which takes account of all the present and future costs expressed, depending on the method employed, in physical units (LCA, LCIA, but consolidation difficult if one looks at several resources or pollution) or monetary units (LCCA – Life Cycle Costing Analysis and Full Cost Accounting). The aim is to reduce a product’s pressure on resources and the environment by looking into alternatives for the functions it performs, at every stage in its life.

Life cycle analysis is both a procedure, i.e. a succession of standardised stages (there are international standards) and a mathematical transformation model by which flows can be converted into potential, and possibly monetarised, environmental impacts. Hypotheses are introduced – cost updating, choice of techniques. They are limited by the availability of data and knowledge (health, resource, etc.). There is heavy reliance on expert opinion.

Adaptability and comparability
This is a very useful tool for making choices, both global (choice of environmental policy such as the desirability of recycling certain products) and local (choice of product design and production system). But the many obstacles mean that life cycle analysis will never be a universal tool. Firstly, it is virtually impossible to obtain all the flows used for a product; consequently, one has to settle for sometimes limited data and resort to generic, and therefore imprecise, data. There is also the problem of geographical representativeness, impacts differing from one region to another. Consequently, an LCA is frequently not transferable. Comparability over time is very poor because policies and their purposes change. They are necessary at a given moment to clarify decision-making, but have to evolve constantly.

Transversality and coherence analysis
Life cycle analysis above all makes it possible to have an overall view of the environmental impact of a production line, to foresee the displacement of pollution, to assess what type of environmental impact predominates in making a product and which stages (production, use, disposal) contribute most in terms of environmental impact. This is achieved by an approach that is as exhaustive as possible and clearly documented. The method makes it possible to see different types of impact in perspective rather than confining oneself to just one type of impact, and introduces the time factor. On the other hand, interactions within municipal activities are rarely taken into account, because applications are partial (LCAs are of value to the broad range of authorities dealing with waste and displacements).

Cost and difficulties of implementation
A great deal of computing and diagnostic software exists, but is costly in terms of time and the quantity of information to be collected. There are simplified tools, but these require perfect adaptation to the problem posed. Several methodological choices remain fairly subjective, such as those concerning charging and the ways in which impacts are classified. When a comparison is made, it is not uncommon to find the classification between products reversed, depending on the assessment method chosen.

Internal assessment tool
Yes, but often limited to the project or service. The sum of impacts of the actions implemented by the local authority is not equal to the impacts of the policy.

Resource for downstream analyses
They represent basic information for monitoring the relationship between an action and the environment, in physical or financial units or both. Even if the tools do not make formal use of them, these analyses feed into tools for monitoring actions or procedures and strategic tools.

Integration with international accounting systems
No. No interaction possible.

Visibility, communication
The results may always be questionable depending on the methodological choices made. Consequently, the values obtained are difficult for the general public to use and need detailed scrutiny. On the other hand, the method is easy to explain and the results depend on generally accepted data.

Green procurement

Objective and means
Green procurement is an old idea (20 years) which involves diagnostic tools for incoming products in order to encourage a procurement policy favouring protection of the environment within an organisation. It can lead to systems of indicators and databases enabling alternatives to be compared.

These transverse analyses can be done using other tools such as Life Cycle Analysis (LCA or ACV, which is often used at the level of a product or service), environmental impact studies (EIA, Environmental Impact Assessment), risk assessment or environmental audits.

Adaptability and comparability
Adaptable to all organisations and activities, but the results are contingent (cf. the comments made on life cycle analysis).

Transversality and coherence analysis
This method makes it possible to see the different types of impact in perspective rather than limiting oneself to just one particular type of impact, and introduces the time factor. Starting with procurement and induced flows may result in a transverse analysis. But the methods do not guarantee this.

Cost and difficulties of implementation
Depend on the detail required and the field covered. Some products have the advantage of complete databases, others have hardly been looked at.

Internal assessment tool
Yes, but only for the procurement side; this does not apply to the environmental policy pursued.

Resource for downstream analyses
Yes, also partially.

Integration with international accounting systems
No.

Visibility, communication
Many networks ensure readability of the results obtained – Ecoprocura (OECD), Eco-labels, EMAS certification, TCO, and the “European Green Purchasing Network in Europe” network headed by ICLEI. The method is relatively simple and methodological guides are plentiful, including those for public administrations.

Environmental management accounting (EMA)

Objective and means
This system measures the full, true and total cost, including the environment in company expenditures. But, rather than a particular method, this is a methodological corpus that is still evolving. It is a lever for the more thorough management of environmental projects and to give environmental services budgetary information, usually the monopoly of financial services, which are unable to distinguish environmental questions from the rest. The aim is to communicate with the outside on respect for the environment and environmental policy and to help with internal decision-making (securing profits in the long term). Such a tool makes it possible to improve the environmental performance of public and private organisations.

For the public authorities, it is a means of obtaining company support on the environment which is not directly transferable to local authorities, since their interest in making future savings is less immediate and competes with other objectives (social aims, employment etc.).

Adaptability and comparability
Environmental analytical accounting methods are adaptable to the organisation's requirements, but produce results that are difficult to take out of their context, as with any internal system. Standardisation efforts are however in progress so that common definitions may allow comparisons.

Transversality and coherence analysis
Implementation of these tools lowers barriers between regulations and sectors, brings savings, reduces environmental expenditure and gives managers an overall view.

Cost and difficulties of implementation
For local authorities, this means introducing a management culture (analytical accounting tools) which is not customary in many public administrations, where the administration relies on compliance with procedures and frameworks for controlling public expenditure.

Internal assessment tool
Yes, this is a system of thematic analytical accounting intended for internal managers, with possible consolidations for global choices.

Resource for downstream analyses
Yes; a system of analytical accounting is the basis for other outward-looking information systems, less specific to the company or authority,

Integration with international accounting systems
This is a system of analytical accounting whose main objective is internal. However, a consensus is emerging on certain concepts so that the results can be comparable and useable for communication purposes (UNEP working party).

Visibility, communication
Support networks (EMAN, ACCA etc.) give these methods good visibility. The rules, adapted to each organisation, still remain hard to interpret unless all the calculations are re-examined. The results and potential savings are, on the other hand, motivating to decision-makers.

Appendix 5 Associated tools

The tools associated with environmental accounting are described below.
The description is less precise.

i. Strategic tools

Eco-budget©

Objective and means
The Eco-budget tool is a strategic tool which relies on monitoring of the environmental heritage (natural capital or resources). It is centred on the budgetary debate approach and sets out principally to redirect the information available internally so as to integrate it with the authority's political life cycles. It does not rely on an inventory of environmental sites or on procedures, which links it to local heritage monitoring tools on the one hand and to those for controlling procedures. As its name indicates, this is a budget method, that is to say a tool for forecasting expenditure and receipts, whereas the other methods are based on analysis of previous experience.

The authority lays down an environmental quality target using physical indicators. It does not include financial elements but uses the same procedure as the authority's financial budget.

Adaptability and comparability
The results depend heavily on the local context: targets are dependent on local priorities and available data. So this tool is very easy to adapt, but results are rarely comparable.

Transversality and coherence analysis
Eco-budget proposes an approach to the environment which scans each type of resource systematically. But it does not include an analysis of interactions between the actions implemented. Global coherence is not guaranteed.

Cost and difficulties of implementation
The original principle is to start from a basis of internally available data so that the cost is moderate. However, Eco-budget can be enhanced with more detailed data enabling the development of resources and actions pursued locally to be correlated. The investment can therefore be made gradually.

Internal assessment tool
While it is an instrument for motivation and consciousness-raising about the degradation of the resource, it does not permit monitoring, except in a global way, of the authority's actions. It is not possible to correlate the physical effects observed with an authority's action, nor therefore with local public expenditure. The risk with such a tool is that environmental areas lacking political topicality will be overlooked.

Resource for downstream analyses
Not as far as the starting principle is concerned. However, the framework provided for monitoring selected objectives may give rise to a previously non-existent survey in some local authorities. The transparency afforded by Eco-budget can, on the other hand, generate data production upstream and the establishment of environmental accounting systems.

Integration with international accounting systems
No.

Visibility, communication
Yes. One great advantage of Eco-budget is that elected representatives and third parties can read it. This takes us back to the comments made about physical environmental accounting, because Eco-budget offers (among other things) a prototype accounting tool for local natural resources.

ii. Monitoring and procedure control tools

Environmental management systems

Environmental management systems were first developed for companies, and are now largely standardised (Environmental management system – EMS, around ISO standards 14xxx; EMAS is a European version). Some systems have been adapted to towns or public administration – EMAS, EMS for city projects (UNEP). Simplified systems such as Ecocartes or "dashboards" exist.

Environmental management systems aim to diagnose and monitor an activity's environmental effects. Like cost-based approaches, these management systems are often relayed by dissemination and communication tools such as "Environmental reporting", Ecolabels, environmental statements or benchmarking.

Objective and means
An environmental management system is a system of management which seeks to take into account the environmental impact of the authority's activities, to assess that impact and to reduce it year by year. They are based on obligatory dissemination and publication of results and mainly measure the efforts made and compliance with undertakings. On the other hand, they do not demand an additional financial effort. Data on costs related to activities and environmental effects is often very approximate. There are several good reasons to employ such a system: compliance with regulations, improving the organisation's image, improving relations with neighbours (in the case of polluting companies), achieving savings, obtaining environmental certification or an Ecolabel, etc. It is primarily intended for administrative and technical managers.

The environmental management system applies to the fields chosen by the authority: all its activities, from formulation of objectives to their achievement and assessment, eco-design of products and services, or just part of them. It may deal with these fields comprehensively (eco-balance-sheet) or look at just one dimension of the environment (e.g. prevention of pollution, reduction of consumption of natural resources, waste reduction).

Finally, environmental management consists in coordinating all available tools in order to alleviate environmental problems, ensuring that procedures are observed in accordance with standards in a process of continuous improvement.

Transversality and coherence analysis
To the extent that applications are usually partial (one municipal service, for example), coherence is not guaranteed. They are specific to a place or an administration, and so not very transverse.

Adaptability and comparability
The application of norms in many fields makes this a rigid tool, but one which permits comparisons for a given field (e.g. waste or an administrative department) or a given type of structure. So this tool makes it possible to compare processes, including democratic processes, and the ongoing effort to reduce environmental impacts, but does not offer any guarantees as to the results obtained.

Cost and difficulties of implementation
These systems are often described as cumbersome, especially by authorities wanting slimmed-down versions.

Internal assessment tool
Yes, because this tool measures the performance of services in relation to a given objective. Its main contribution externally is a certain transparency which may open up debate on methods of action. It becomes a more general assessment tool with recourse to result norms by sector. These norms are expressed in physical (rarely financial) units.

Resource for downstream analyses
No. Conversely, these tools use monitoring tools for action taken, eco-balance-sheets and inventories.

Integration with international accounting systems
No. At best these tools make it possible to supply results for feeding into these systems, if they have been designed for that purpose.

Visibility, communication
Visibility is generally judged poor by local authorities and these certifications often remain a matter for technicians. These systems are readable only by people who are very familiar with the service in question and able to interpret the value of the objectives set in relation to the environment (ordinary effort, consequent effort etc.). The breakdown into several targets makes consolidation difficult.

iii. Reporting and communication tools

Indicators are systems that we have considered separately, being above all a mode of expression downstream from the production of information and measurements. Indicators can be found in other tools. On the other hand, if the indicators are produced at regular intervals, according to identical formats and covering every dimension of an action (physical and financial aspects, effects) comprehensively, they may enable policy to be monitored in a relevant manner. Systems of indicators can fall within the different categories suggested. Here we shall describe two particular practices: consolidated indicators and benchmarking.

The frameworks constructed to organise and disseminate data (reporting) follow the same logic as indicators. They explain, following international or national work to find a consensus, how the available data should be presented. This holds true in particular of common European indicators of local sustainability, but they remain deliberately very restricted. They can thus provide details of indicators to be produced and the manner of their production, by laying down conventions and offering a method, which can then be equated with environmental accounting tools.

Consolidated indicators (ecological footprint, carbon balance)

The aim is to produce a picture of consumption of natural resources at local authority level, either in spatial terms (ecological footprint) or in terms of CO2 emissions (carbon balance). In the case of the ecological footprint, the purpose is to motivate in order to develop compensation systems at a closer level and open up to cooperation and negotiation with the territories in which one acts. The carbon balance also leads to negotiations resulting in the purchase of polluting rights.

These tools are relatively flexible and permit comparisons. They employ very subtle technical means which local authorities do not manage internally. Their main shortcomings are their margins of error, which may be large, and the impossibility of using them as internal assessment tools, given the number of technical stages needed to link an action to its impact on the overall result. Their visibility and capacity to communicate are excellent and that is the reason for their use.

Systems of indicators and benchmarking

Benchmarking methods are suitable for all local accounting or predetermined services. They involve setting up systems of measurement and ratios that are comparable from place to place with data which constitute indicators for the most part describing the objective environment (to which opinion indicators are sometimes added) and related expenditure. The choice of indicators is often linked to compliance with regulations or an agreed ideal. For proper use, these tools must always be standardised. On the other hand, the methods used may be different, involving various degrees of subjectivity – peer review[19], audit or production by the authorities themselves, inhabitants' feelings, etc.

Adaptability and comparability
Comparison is possible, but on the other hand the method is very rigid and the indicators often reflect only part of the local context. Thus interpretation of comparisons is often limited.

Cost and difficulties of implementation
While such indicators as satisfaction indicators are very expensive to establish, some of this data is already produced in the course of the activity, for example pollutant levels. So this depends on the information already produced on a continuous basis at local level, which is not necessarily the same from one country to another.

[19] The PRESUD method uses peer review to establish the environmental report and analyse the action programme implemented.

Internal analysis and assessment tool
Use for internal piloting depends on the type of indicators deployed. Where they are sector indicators, internal use is possible. On the other hand, systems of indicators do not function like global analysis indicators. These analytical and assessment tools function well when they are already present in sectoral systems, because they can then be integrated with the various administrative and geographical levels.

Resources for different analyses
No, on the contrary: they are supplied with data by existing monitoring systems.

Capacity for integration with a national or international system
This is normally their principal advantage, the indicators being standardised, at least in some cases. But the various calculations done to arrive at the result are sometimes misleading. For example, water quality is measured as a percentage of areas where the proportion of satisfactory analyses exceeds a threshold. So the analysis will depend on the size of the areas, which may vary greatly, their population, etc. But it is impossible to get back to the variables that might explain the result. In fact, comparison is possible only in similar situations with the same characteristics.

Visibility, communication
No, because one has always to return to the definition, which is often too complex. Systems which offer numerous indicators are hard for the public to interpret (need for references and difficulties of consolidation).

Environmental reporting by Finnish local authorities

Environmental reporting by Finnish local authorities includes financial elements. These are produced by the application of the environmental accounting rules and conventions laid down by the Finnish government, which fit with international rules on environmental expenditure. There are no other specific methods, as Finnish authorities have more transparent local public accounting practices. On the other hand, the results do lead to eco-efficiency measures.

Other reporting methods are proposed at international level: see in particular the work of GRI.