Improving the Role of Governments in Promoting Environmental Management Accounting

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The United Nations Division for Sustainable Development is supporting a number of initiatives looking at the development of corporate Environmental Management Accounting systems and the role of government. Three initial workbooks addressed:

Workbook 1: Environmental Management Accounting Metrics: Procedures and Principles

This workbook was prepared by Ms. Christine Jasch and sponsored by the Austrian Ministry of Transport, Innovation and Technology. The draft report explains the concept of EMA and its application using standard corporate cost accounting procedures.

Workbook 2: Links between EMA and other Management and Accounting Systems

This workbook was prepared by Professor Dr. Stephan Schaltegger, Mr. Tobias Hahn and Mr. Roger Burritt and is summarised in this article. The draft report was funded by the German Federal Ministry of Education and Research and Environment Australia.

Workbook 3: Policy Pathways for Promoting EMA

This draft workbook was prepared by Ms. Deborah E. Savage and Mr. Paul Lingun of the Tellus Institute, Boston, and Mr. Johann Lomsek of the Joanneum Research Institute, Vienna. It was funded by The Austrian Ministry of Transport, Innovation, and Technology, the Joanneum Research Institute of Sustainable Techniques and Systems (JOINTS) and Environment Canada.

EMA Links

The *second* workbook, by Schaltegger, Burritt and Hahn, examines EMA links and is considered further below. One of the major reasons for government initiatives to promote EMA is to achieve pollution reduction at minimal cost to government and with minimal political resistance (UNDSD 2000, 15). The costs of promoting EMA and the likely resistance against government initiatives are – apart from other factors – influenced by the interaction – or links – between government agencies and EMA users. The investigation of the suitability of different links is therefore important for the examination of the costs and benefits of government initiatives to promote EMA.

The purpose of the UN-workbook "Improving Governments' Role in Promoting Environmental Management Accounting (EMA) – EMA–Links: Government, Management & Stakeholders (UN-Workbook 2)" is therefore to provide a decision making tool for government to *choose adequate links between government and corporations for the promotion of EMA* – or, in other words, to help government decision makers to examine the paths by which government can best promote the application of EMA in corporations.

The workbook is divided into two major parts. Chapter 2 introduces the tool for choosing appropriate EMA-links as well as the tool used to analyze the suitability of

links. Chapters 3 to 5 apply this decision making tool at a generic level, providing a detailed analysis of direct and indirect links. The application of the tool in Chapters 3 to 5 serves two purposes. First, it illustrates at a generic level how the tool for analyzing the suitability of links can be applied, and second, the results of the generic analysis may serve as a reference for government agencies to adapt the results to their own specific decision context.

Tool to assess the suitability of links

This workbook provides a systematic approach to examine linkages. This is done with a *two track, structural analysis* which, *firstly,* covers *direct links* between different government agencies and EMA users (see Figure A) of specific EMA tools, and secondly, indirect links via other accounting and management systems and stakeholders.
According to the UN expert group, *EMA includes monetary environmental management accounting (MEMA*), with tools such as investment appraisal and cost accounting, *and physical environmental accounting (PEMA),* with tools such as material and energy flow accounting and environmental budgeting in physical measures. Using direct links, government agencies encourage management directly to introduce and establish EMA. For direct links other accounting or management systems, and stakeholders other than government and management, play no significant role. Direct links establish a direct relation between specific government agencies and specific management departments, including top management in corporate headquarters. Furthermore, direct links can address EMA in general or specific EMA tools.

Secondly, analysis of indirect links requires the consideration of intermediate stakeholders and elements positioned between government and EMA. Intermediate elements examined in the generic analysis include:

- *Other accounting methods apart from EMA* such as conventional management accounting, conventional financial accounting and reporting, and external physical environmental accounting.
- *Corporate management systems* such as financial management systems, quality management systems including human resource management systems, and environmental management systems including health and safety management systems.
- *National accounting systems including* national environmental accounting and national economic accounting.

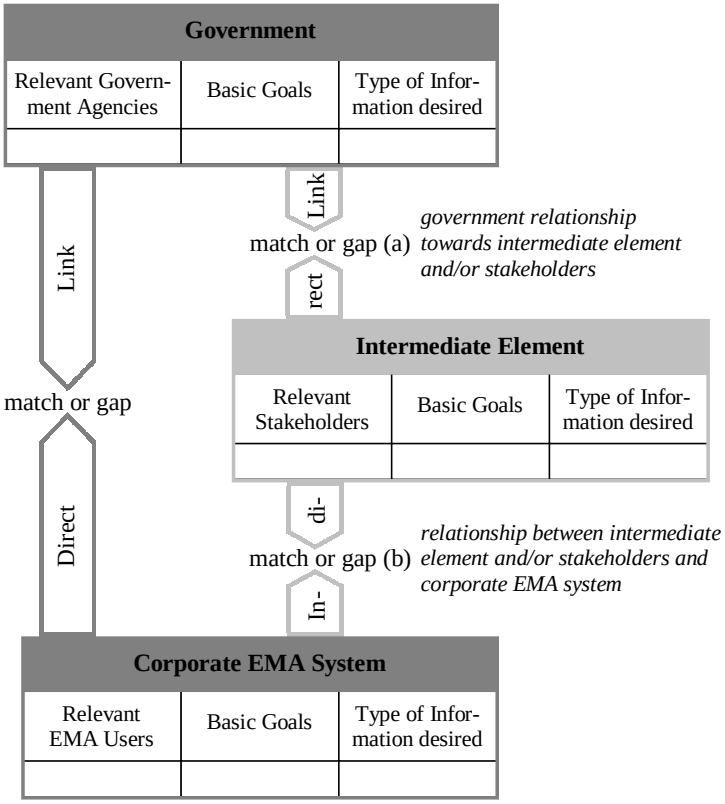

Figure A. Two track analysis of links between government and EMA

The investigation of indirect links requires two analytical steps (Figure A):

- the analysis of partial link (a) between government and the main stakeholders involved with the intermediate element; and
- the examination of partial link (b) between the intermediate element and management.

Decision making tool to analyze and choose adequate EMA-links

The core purpose of this workbook is to provide government decision makers with a systematic tool that demonstrates how to choose the best links for promotion of corporate EMA. The decision making tool distinguishes between different steps of analysis in order to choose the most suitable EMA-links. As illustrated in Figure B, the tool is divided into two major steps:

- *Step 1* requires analysis of the two focal points. This analysis, being fundamental for both direct and indirect links, includes the identification and characterization of the government agencies and corporate management departments involved in the promotion of EMA. For this purpose the workbook provides comprehensive master lists of potentially relevant stakeholders as well as criteria to characterize them.
- *Step 2* includes the analysis of direct links and indirect links. The analysis of direct links refers to the direct relationship of the focal point stakeholders, government and management, in relation to EMA and includes assessment of the suitability of general and specific direct links. The analysis of indirect links also considers intermediate elements such as other accounting and management systems and stakeholders involved with these systems.

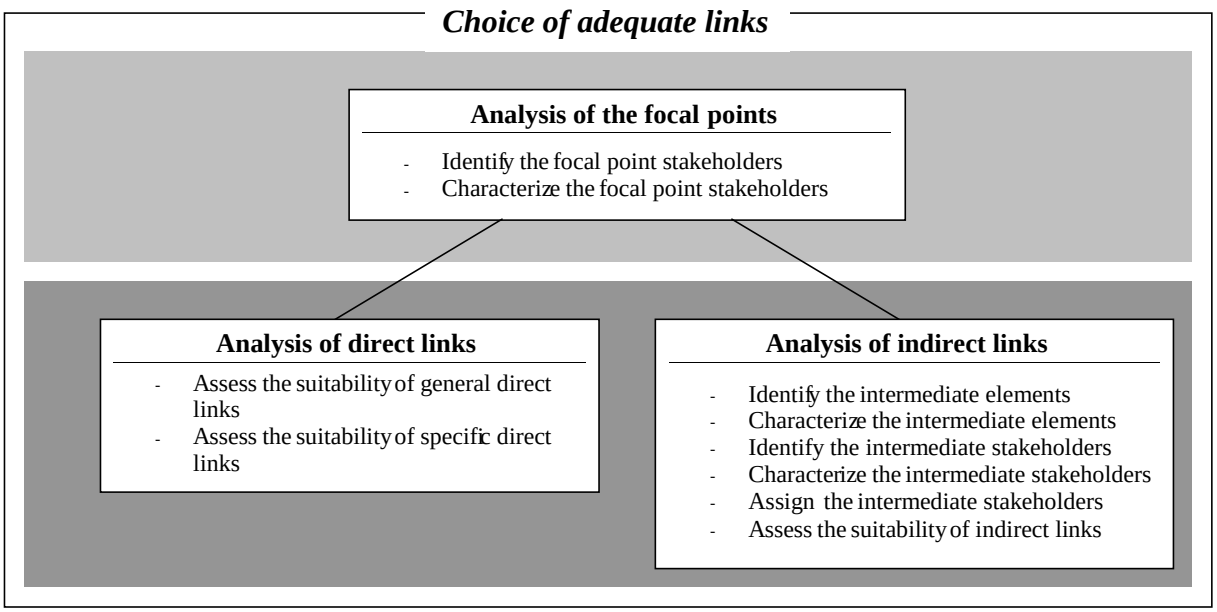

Figure B. Systematic decision support tool to analyze and choose adequate EMA-links.

For both of these two steps of analysis the decision making tool offers criteria to assess the suitability of links. The main criteria include the match of interests and goals, match of information needs, and the anchorage. In addition, the workbook suggests how the results may be visualized. The analysis of indirect links includes a larger number of sub-steps than for direct links. First, the potentially suitable intermediate elements for government influence on corporate EMA have to be identified and characterized. The tool supports these two steps by providing a comprehensive master list from which the relevant intermediate elements in the specific decision making context can be chosen.

Choice of intermediate elements determines the scope of the analysis of indirect links as every intermediate element constitutes an indirect link. In a next step, those stakeholders who are involved as third parties between government agencies and corporate management departments have to be identified and characterized. Also here, the workbook provides a comprehensive master list to serve as a pool from which specific single tool users can identify the relevant groups. In addition, it delivers the criteria by which the characteristics of these intermediate stakeholders can be identified. In order to facilitate and structure analysis of the different indirect links, the intermediate stakeholders have to be assigned to the intermediate elements. For assessment of the indirect links, the decision making tool suggests criteria such as the match of interests and goals, match of information needs, anchorage, and method proximity should be used. The tool shows how to arrive at an overall assessment for every link and how to visualize the results.

Analytical criteria

To examine which stakeholders and intermediate elements have the largest potential for government promotion of EMA the following analytical criteria are used for both direct and indirect paths:

- *Match of interests and goals:* how well are *the interests and goals* of the stakeholders involved matched?
- *Match of information needs:* how well are the *information needs* of the stakeholders involved matched?
- *Anchorage*: how broad is the range of different stakeholders at each focal point (government and management) and for each intermediate element?

For the analysis of *indirect links, method proximity* is considered as an additional criterion, i.e. how much the intermediate element has in common with EMA.
The analytical criteria help to structure the assessment of the suitability of possible direct and indirect links between government and corporate EMA. Furthermore, they facilitate the *identification of relevant stakeholders on which the suitability of a link is founded.* Other analytical criteria include the *operative status* and the *usefulness of EMA information to government agencies*. The criterion of ‘operativeness’ indicates if the link has been used for EMA promotion so far (if it has, then the link is operative) and the second aspect deals with the question of whether EMA information could be useful in different government agencies’ decision making.

Decision levels: focal points and stakeholders

Links are established between people or organizations. The potential for cooperation and mutual influence is higher when there is

a better match between the interests and information needs of the stakeholders involved. This is the reason why characteristics of the two focal points and the intermediate stakeholders are identified. The tool provides a full range of agencies, departments and other potentially relevant stakeholders, depending on the specific decision making context and link being analyzed:

- *Government agencies:* Environmental agencies (including all kinds of agencies which are primarily responsible for environmental issues, such as natural resource agencies, waste agencies, water agencies, environmental protection agencies, costal protection agencies, maritime agencies, and (space use) planning agencies), commerce agencies (including all agencies who primarily deal with economic issues, such as commerce, industry, trade, etc.), tax agencies (comprising all agencies that are concerned with public budgets), education agencies (concerned with research and educational issues), etc.
- *Management departments:* top management, accounting and finance, environment, health and safety, quality, human resources, legal, R&D and design, corporate marketing and PR, information management/control, data warehouse management, sales, production and logistics, purchasing, disposal and recycling, etc.
- *Intermediate stakeholders:* shareholders and financial analysts, creditors (banks), insurance companies, industry associations, professional accounting associations, tax agents, professional accounting companies, neighbour communities, suppliers and purchasers, environmental NGOs, international organizations, and employees other than management, employees (other than management), consultants, researchers and academia, general public, indigenous communities, media, etc.

Generic results for the suitability of direct links

In its second part, the workbook applies the decision making tool at a generic level in order to illustrate the use of the tool and to create a generic reference against which the results of every specific single application of the tool can be crosschecked. However, it may be that these results will not hold true in every specific decision context. In such a situation the reference provided by the generic analysis may explicitly help to illustrate the particular, specific decision making context. At the generic level, in addition to the general direct link that has been found suitable but insufficient for successful promotion of EMA, seven direct links addressing specific EMA tools (specific direct links) have been analyzed. The results of this analysis are summarized in Table A.

At the generic level, one specific direct link demonstrates high suitability, and four demonstrate medium suitability for government promotion of corporate EMA. Only the specific links through the two budgeting tools show a low suitability for promotion purposes.

The *most suitable* direct link turned out to be the *specific link to monetary environmental investment appraisal.* This was followed by environmental cost accounting, accounting for environmental benefits, material flow accounting, and physical environmental investment appraisal.

EMA tools / Criteria	MEMA tools				PEMA tools		
	Environmental cost accounting	Accounting for environmental benefits	Monetary environmental budgeting	Monetary environmental investment appraisal	Material and energy flow accounting	Physical environmental budgeting	Physical environmental investment appraisal
Match of interests and goals							
Match of information needs							
Anchorage							
Suitability	medium	medium	low	high	medium	low	medium
Use of information for government	medium	medium	low	high	high	low	high
Operative status *	operative	operative	inoperative	operative	operative	operative	inoperative

* "Operative" means that at least one example could be found. The link may not be operative in all countries.

Table A. Summary of the results of the structural analysis of specific direct links.

Table B lists those stakeholders for each focal point, i.e. government agencies and management departments, who are involved with each suitable direct link. This overview summarizes the results of the analysis of which links are suitable for direct government programs designed to promote corporate EMA. On the basis of these findings such government programs should address the stakeholder groups most involved with each suitable tool.

When looking at the operative status of the specific direct links it is surprising that not all links judged to be suitable have, as yet, been included in government programs to promote EMA. In particular, the *poor representation of programs involving the link towards accounting for environmental benefits is disappointing:* only a very preliminary project could be found here. Besides its considerable suitability, this link offers a high potential for win-win situations and positive communication of the benefits of environmental protection measures.

Generic results for the suitability of indirect links

Table C summarizes the analytical findings for all indirect links that have been considered for the generic application of the linkage decision tool in relation to their overall suitability, their most attractive intermediate stakeholders and their operative status.

The two intermediate elements with the highest suitability for linking government with EMA on the generic level are *conventional financial accounting and reporting* and *external physical environmental accounting and reporting*.

Specific direct links (ranked in order of suitability)	Government agencies involved	Management departments involved
Monetary environmental investment appraisal	• Environmental protection agencies • Commerce agencies	• Accounting and finance department • Production management • R&D and design department • Logistics department • Top management • Environmental management department • Corporate marketing and PR • Legal department
Environmental cost accounting	• Environmental protection agencies • Commerce agencies	• Accounting and finance department • Production management • R&D and design department • Logistics department • Top management • Environmental management department
Accounting for environ-mental benefits	• Environmental protection agencies • Commerce agencies	• Accounting and finance department • Production management • R&D and design department • Logistics department • Top management • Environmental management department
Material and energy flow accounting	• Environmental protection agencies • Tax agencies	• Environmental management department • Corporate marketing and PR • Legal department • Logistics department • Waste and recycling management
Physical environmental investment appraisal	• Environmental protection agencies • Tax agencies	• Environmental management department • R&D department • Accounting and finance department • Corporate marketing and PR • Legal department

Table B. Stakeholder groups involved in the suitable specific direct links

Firstly, the method proximity between EMA and the intermediate elements shows that conventional financial accounting and reporting is strongly connected with monetary environmental management accounting (MEMA), whereas external physical environmental accounting and reporting is strongly linked with physical

environmental management accounting (PEMA). *Secondly*, promotion of EMA is likely to be more fruitful where there is a high match between interests and goals and information needs. The relatively high match between interests and goals, and the moderate to high match between information needs of the different stakeholders involved with the two intermediate elements identified as being highly suitable, gives added support to this result about the strong method proximity of the two intermediate elements. *Thirdly*, promotion of EMA through an intermediate element seems most promising for government if a broad anchorage is present. The effect of an initiative or policy is weakened if government has to rely on only one stakeholder, or on a few stakeholders who have to work together in order to be successful. The broad anchorage between government departments, intermediate stakeholders and management departments for *conventional financial accounting and reporting* and *external physical environmental accounting and reporting* has the advantage that multi-interest, multi-stakeholder promotion is more likely to succeed if one stakeholder is unable, or does not choose, to collaborate.

Intermediate Element	**Overall Suitability**	**Most attractive intermediate stakeholders for indirect EMA promotion**	**Operative Status*** partial link a	partial link b
Conventional Management Accounting	medium	• Professional accounting associations	inoperative	inoperative
Conventional Financial Accounting and Reporting	high	• Shareholders / financial analysts • Industry associations • Professional accounting associations	inoperative inoperative operative	operative inoperative operative
External Physical Environmental Accounting and Reporting	high	• Industry associations • Creditors / insurance companies • Professional accounting associations • Neighbour groups	inoperative inoperative inoperative operative	operative inoperative operative operative
Financial Management Systems	low	• Creditors / insurance companies	inoperative	inoperative
Environmental Management Systems	medium	• Standardization organizations • Industry associations	operative inoperative	operative inoperative
Quality Management Systems	low	• Standardization organizations	inoperative	operative
National Environmental Accounting	medium to high	• NGOs • Neighbour groups	operative inoperative	operative operative
National Economic Accounting	low	• International organizations	operative	operative

* "Operative" means that at least one example was found. The partial link may not be operative in every country.

Table C. Summary of the results of the structural analysis of indirect links

External accounting and reporting methods show a broad anchorage, as many external and internal corporate stakeholders are involved in this accounting process with its close similarities with EMA. According to the generic analysis the most suitable indirect links are therefore via:

- *Conventional financial accounting and reporting* by involving *shareholders, financial analysts, industry associations and professional accounting associations. The partial link between government and shareholders/financial analysts and the indirect links between government and industry associations and management have not been used for EMA promotion so far; and*
- *External physical environmental accounting and reporting* by involving *industry associations, creditors, insurance companies, professional accounting associations, and neighbour groups. Most links between government and the most attractive intermediate stakeholders, as well as the partial link between creditors / insurance companies and management, are inoperative so far.*

Taking the generic analysis of the indirect links of both of these intermediate elements together, *industry associations and professional accounting associations* seem to be intermediate stakeholders that governments find it worthwhile to engage in the promotion of EMA.

Overall results

The analysis of direct and indirect links taken together from a generic point of view leads to the following paths being considered most suitable for EMA promotion. However, it has to be remembered that specific decision making contexts (e.g. in different countries) can lead to different results, thus leading to other links being most suitable for the promotion of EMA:

- The *direct link to monetary environmental investment appraisal* involving environmental protection agencies and commerce agencies as most relevant stakeholders at the government focal point and involving top management and the management departments of accounting and finance, production and logistics, R&D and design, environmental management, corporate marketing and PR, and legal affairs;
- The *indirect link using conventional financial accounting and reporting* as an intermediate element involving shareholders, financial analysts, industry associations, and professional accounting associations; and
- The *indirect link* with the intermediate element *external physical environmental accounting and reporting* involving the intermediate stakeholders industry associations, creditors, insurance companies, professional accounting associations, NGOs, and neighbour groups.

Medium suitability results from the examination of *direct links* with environmental cost accounting, accounting for environmental benefits, material and energy flow accounting and physical environmental investment appraisal.

With its strong similarities to external physical environmental accounting the *indirect link with national environmental accounting* has been assessed as having *medium to high overall suitability*.

Medium suitability is identified for the *indirect links* with conventional management accounting and for environmental management systems.

Two conclusions, stemming from this comparison of direct and indirect links, need to be stressed. *Firstly*, if a link is operative this does not mean that nothing remains to be done to promote corporate use of EMA. In many cases only a few examples of EMA promotion exist in some countries. The message provided by this conclusion is, in fact, that a government which has not previously been involved with the particular link has the opportunity to consult with other governments and can learn from their experiences. *Secondly*, assessment of the overall suitability of links does not propose that certain direct or indirect links are preferred, nor does it suggest that some links should be excluded. Instead, the analysis directs attention towards new links and provides an indication of which links may be placed high on the government priority list. In any case, the variety of different kinds of goals and information needs at the management and government levels, as well as the variety of stakeholders involved with different links, intermediate elements and EMA tools, suggests that it may be necessary to use a well crafted *mix of links* for EMA promotion in order to encourage widespread appreciation of the value of corporate EMA.

The three workbooks are being made available on the UN DSD web site at http://www.un.org/esa/sustdev/estema1.htm.

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CORPORATE SUSTAINABLE REPORTING IN CANADA

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Increasingly, and for a variety of reasons other than simple legislative compulsion, companies are reporting on their social and environmental activities. Corporate environmental reports are a relatively recent innovation, and corporate sustainability reports are even more recent. Voluntary codes and standards are frequently the basis for such reporting initiatives. Canadian companies are about "middle of the pack" in terms of environmental, social and economic reporting, with 10% of companies listed on the Toronto Stock Exchange (TSE 300) publishing environmental, social or sustainability reporting in 2000. A full two thirds do not include significant environmental or sustainability information in their published reports. (Germany, Sweden, and U.K. are the leading countries for environmental and environmental health and safety reports).

A new report prepared by Ottawa's Stratos Inc. entitled "Stepping Forward: Corporate Sustainability Reporting in Canada" presents the results of the first in-depth analysis of corporate sustainability reporting in Canada based on criteria that reflect emerging