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**CONCERTED ACTION: COORDINATION OF
REGIONAL AND NATIONAL MATERIAL FLOW
ACCOUNTING FOR ENVIRONMENTAL
SUSTAINABILITY (CONACCOUNT)**

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SUMMARY FINAL REPORT

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I. OBJECTIVES

The concerted action ConAccount provided an international platform for information exchange on Material Flow Accounting (MFA).

Since MFA on a regional and national scale is a fast growing field of research with increasing policy relevance, there has been an increasing demand for information exchange between the researchers involved in MFA projects and the actual and possible users of the results. This concerted action aimed to initialize, foster, and structure that information exchange.

In particular, the major objectives of the concerted action were:

- to provide an inventory of the institutions working on regional or national MFA in Europe,
- to initiate, foster, and structure the information exchange between these institutions in order to facilitate coordination,
- to support information exchange between the scientists developing MFA and the users of the results,
- to coordinate ongoing and future work on MFA (with respect to targeting questions, scope, methodology etc.),
- to provide the basis for the development of a coherent framework of MFA methodology,
- to define the future needs for research and development for policy relevant MFA tools that support decision making towards sustainability.

II. METHODOLOGY

ConAccount was a structured process of interaction between different parties.

1. Steering Committee

The Steering Committee chaired by the coordinator prepared and decided on the programme for the several interaction processes of the concerted action.

2. Evaluation Board

An Evaluation Board with members of senior expertise was installed as an advisory board.

3. Coordinator

The organization and performance of the Concerted Action and the information transfer between all involved parties was managed by the Wuppertal Institute for Climate, Environment and Energy, Division for Material Flows and Structural Change.

4. Participants

Participants were institutions with a high interest in MFA as a tool for operationalizing environmental sustainability. The participating institutions were distinguished into "contributors" providing information on MFA projects and "observers" who showed their interest in the concerted action.

The information exchange between institutions involved with MFA initiated by ConAccount was based on the following information tools:

- newsletters,
- an inventory of MFA activities based on a survey,
- an internet homepage (<http://www.wupperinst.org/WI/Projekte/ConAccount/index.html>),
- networking by the scientific secretary,
- personal meetings (workshop, conference) and
- publications.

III. MAIN RESULTS

III.1 Information Exchange

The information exchange between the institutions dealing with MFA on a regional and national scale has been initiated successfully and set in progress. Within the network the scientific secretary of ConAccount managed a general information pool. A mailing list with about 500 addresses was established and numerous inquiries concerning addresses, publications, general information on MFA etc. were answered throughout the reporting period. The e-mail address "conaccount@wupperinst.org" still functions as an international information pool for scientific exchange in the field of MFA.

III.2 Inventory of MFA Activities

The information on ongoing work has been structured and disseminated to the scientific community through the so-called "Inventory of MFA Activities". This Inventory provides an overview of the ongoing activities of regional and national MFA mainly in Europe and beyond. The inventory may also serve as a reference list for institutions like the European Commission.

The "Inventory of MFA Activities" comprises information on about 160 MFA projects based on a survey. Furthermore, it shows the essential information (address, contact persons etc.) of approximately 100 institutions.

Since November 1997 the revised inventory has been available on the internet.

At the end of 1997 the ConAccount inventory comprised 99 institutions from 20 countries. The participating institutions can be distinguished into 44 contributors and 55 observers.

III.3 ConAccount Workshop

The ConAccount Workshop in January 1997 in Leiden was an essential step towards an improved information exchange between the MFA conducting institutions. It was also the first step towards the harmonization of several MFA approaches in order to develop a coherent framework of a MFA methodology.

At the Workshop about 100 participants were involved in different ways:

In the plenary sessions a couple of invited lecturers provided an introduction to the ConAccount process, the history and policy relevance of MFA research, and exemplified the possible range of conceptual approaches between the analyses of substance and bulk material flows. These plenary sessions stimulated discussion and provided the basis for the focus topics to be worked out.

In the parallel sessions about 40 project presentations were used to disseminate the essentials of recent, ongoing and future MFA work. The presentations were oriented towards three main topics:

- A. Concepts and Methods
- B. Integrated Environmental and Economic Accounting
- C. Applications (Case Studies)

In the so-called focus groups the main questions of common interest were discussed

The MFA work presented at the Workshop provided some overview and insights to the variety of different concepts and methods. However, a general framework of MFA methodology is still lacking. In the workshop it became clear that the two main streams of different approaches, substance flow analysis on the one hand and bulk material flow analysis on the other hand, start with different problems (pollution versus unsustainable throughput). These different approaches are complementary like different elements in a tool box, each designed for a specific problem. Nevertheless, the different methods use some common methodological components which could be the basis for a more general framework and a code of conduct. The effectiveness of MFA could be improved, if the whole "tool box" can generally be made available, and not just the single tools.

The proceedings of the ConAccount workshop published in August 1997 are the first successful attempt to document the wide range of current MFA research in a representative as well as condensed manner.

III.4 ConAccount Conference

The ConAccount Conference held in Wuppertal in September 1997 promoted the use of MFA for policy support. Whereas the ConAccount Workshop in Leiden was primarily addressed to the 'scientific community' of MFA, the Conference focused on the potential users of MFA.

During the morning of the first day the plenary presentations of invited lecturers highlighted the essential aspects of MFA instruments which are used to support sustainability oriented policy:

- The emphasis of environmental policy has shifted from concern about local, acute pollution problems towards long term global and regional issues, characterized by high socio-economic stakes. The scope of policy has also changed beyond purely environmental concerns, to a commitment for sustainable development. MFA seems to offer considerable potential with respect to this change in environmental policies.
- MFA clearly offers a very useful measure for the sustainable utilization of natural resources, at various levels from global to local and in respect of various "actors" e.g. companies, municipalities, etc.
- The possible role of MFA within a European Environmental Reporting System is to monitor the reduction of discharges and resource consumption which are the general aims of environmental policy. This may be done by monitoring the reduction of bulk material flows on the input side substantially and by monitoring the "fine tuning" of remaining environmental problems (e.g. by Substance Flow Analysis – SFA).
- Thus, a regular up to date and consistent reporting system on material flows providing comparable data should be established. The German concept of Environmental Economic Accounting is an example for such an information system including material flows.
- Several SFA's (for Mercury, Chlorine, Cadmium) conducted in The Netherlands exemplified the usefulness of MFA for policy making. Consensus on policy is easier when there is consensus on the data. SFA/MFA helps to obtain consensus on data. Using SFA/MFA can lead to new insights and to changes in policy. It also can lead to discover new solutions.

Success and failure stories of the use of MFA were presented in parallel sessions in the afternoon of the Conference. These demonstrated the problems and perspectives of MFA as an instrument for planning and monitoring effective policy measures. In the Conference sessions the discussion outlined the requirements of decision makers with regard to the further application of MFA. The sessions further focussed on questions according to the following subjects:

A) MFA and the Political Targeting Process

- How can MFA be used to support environmental policy?
- Can MFA help to define political goals?

B) MFA and the Provision of Policy Relevant Information

- Which MFA based information should be provided by environmental reports?
- Which problems and perspectives arise for the implementation of MFA results?

C) MFA for Regional and Local Materials Management

- What is and could be the use of MFA for regions and cities?
- Which are the benefits of MFA on the firm level?

The second day was used to focus on and discuss the future research agenda for MFA (finally called the "Research & Development Agenda for MFA", see next section III.5).

The proceedings of the conference were published in early 1998.

III.5 "Research & Development Agenda for MFA"

Future needs and priorities of MFA research have been defined and agreed upon through an interactive process. The "Research & Development Agenda for MFA" was one major outcome of ConAccount.

A first draft was developed by the coordinator in the early Summer of 1997. It was sent to about 400 experts for comments. Based on these comments the coordinator prepared the second draft in August 1997. This version served as a basis for discussion on the ConAccount conference in September 1997 in Wuppertal. The results of this discussion, including the ranking of the agenda issues lead to a third draft. In a last round the members of the Evaluation Board and the Steering Committee were asked to assess this third draft. These comments were integrated in the final version.

At the ConAccount Conference (held in Wuppertal from 10 - 12 September 1997) the participants were asked to address the priority issues of the draft research agenda. The following issues were ranked first:

- Analyses of the interlinkages of material flows and economic development
- Development of a general framework of MFA methodology
- Review and further studies on the assessment of the environmental impacts of material flows
- Improving the use of MFA for the political process
- Further development and establishment of material flow indicators
- Further development of MFA in national, European and international statistics

III.6 Future Activities

- The ConAccount Steering Committee continues its activities beyond the end of the current project supported by the European Commission.
- The Steering Committee takes responsibility for guiding future activities in the fields of MFA and is exploring future events which bring the keyplayers together (yearly meetings of the MFA community).
- The established MFA network (the name ConAccount is still used) is maintained in order to support information exchange. For this purpose, the mailing list and the ConAccount homepage are maintained by the former coordinator. In addition, a "MFA market place" (discussion group) is installed on the internet in order to facilitate information exchange between participants.
- According to the priority issues of the R&D agenda, joint project proposals will be launched using the synergisms provided by ConAccount.
- An exploration has been started regarding the future institutional organization of the MFA community.

IV. SCIENTIFIC INTEREST AND NOVELTY

MFA on a regional and national scale is a fast growing field of research, with increasing policy relevance. There is an increasing demand for information exchange between the researchers involved in MFA projects and the actual and possible users of the results.

In general MFA serves to analyse the industrial or societal "metabolism" of regions or national economies by accounts in physical units (usually in terms of tonnes) comprising the extraction, production, transformation, consumption, recycling, and disposal of materials (e.g. substances, raw materials, base materials, products, manufactures, wastes, emissions to air or water).

However, in particular the applied methods and approaches differ with regard to target questions, system boundaries, substance/material of investigation, etc. According to different subjects and various methods, MFA - and thus ConAccount - covered approaches such as substance flow analysis, product flow accounts, material balancing, and bulk material flow accounts. The different approaches were brought together by the concerted action. First steps were achieved to develop a common framework of methodology.

The Concerted Action did not only emphasize the supply-side of information, i.e. the scientific development of MFA methods. An attempt was also started to include the demand side in the concertation process (e.g. by the ConAccount Conference). The general aim of such an attempt is to combine requirements of decision makers on the one hand and certain MFA approaches on the other hand. The future development of MFA instruments should be oriented towards the actual needs of decision makers.

The further development of MFA in national, European and international statistics will be an essential prerequisite for reporting progress towards sustainability. MFA's provide information that go beyond single

indicators by monitoring the interlinkages of different flows and their interdependencies with human activities. The integrated environmental and economic accounting especially will profit from the further establishment of MFA. The value of these statistics for policy and industry would also be increased, because those integrated accounts could be used for the design and control of an effective material flow management in order to increase the environmental performance of economic activities. The demand for those policies and statistics will rise with the increasing impacts of human induced material flows, as their volume, structure and quality are currently being far from sustainable.

V. POLICY RELEVANCE

The ultimate task of MFA research is to support policy. In fact, MFA may serve to support several issues of environmental concern and assist the different institutions involved in promoting sustainable development. For instance, MFA can be used to monitor environmental pressures, to measure eco-efficiency, to define quantitative targets, to contribute to integrated environmental and economic accounting, and to plan and evaluate policies for sustainability. The information provided through MFA can be used by statistical offices, governmental and non-governmental organizations, as well as by industry.

However, the use of MFA is still in the "experts corner". Whereas the usefulness of MFA - to support a comprehensive perspective, integrated solutions and pre-cautionary actions - is increasingly being proven and advocated, a wide spread application for policy support is not yet within sight. The ConAccount Workshop in Leiden gave recommendations to improve the policy relevance of MFA. The ConAccount Conference in Wuppertal exemplified and promoted the use of MFA for policy support. The main potential of MFA is to picture the complex resource use in society. Thus, the main task is to evaluate and condense this information in order to sufficiently support decision makers. Improving the use of MFA for the political process will therefore critically depend on the further development and establishment of material flow indicators. Those indicators should be derived from regular up-dated data bases of material flow accounts. The increasing efforts of statistical offices and environmental agencies to integrate MFA relevant information into their reporting scheme should therefore be supported.

MFA is an essential link between the paradigm(s) and the practice(s) of sustainability. ConAccount contributed to make the methodological ties between the concepts and the results more transparent, and to clarify the reasons for the similarities and differences of the various MFA approaches. Future research should relate the different MFA approaches to specific policies.

VI. LIST OF PUBLICATIONS

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