



Environmental Management Accounting (EMA)

What is EMA? EMA can be defined as the identification, collection, estimation, analysis, internal reporting, and use of materials and energy flow information, environmental cost information, and other cost information for both conventional and environmental decision-making within an organization. Key points to note are:

EMA focuses on costs internal to the company; EMA does not include external costs to individuals, society, or the environment for which a company is not legally held responsible.

EMA places particular emphasis on accounting for environmental costs.

EMA encompasses not only environmental and other cost information, but also explicit information on physical flows and fates of materials and energy.

EMA information can be used for most types of management activity or decision-making within an organization, but is particularly useful for environmental decision-making

Thus EMA incorporates and integrates two of the three building blocks of sustainable development – environment and economics – as they relate to an organization's internal decision-making.

Uses & Benefits of EMA

An organization's decision-makers can use the physical flow information and cost information provided by EMA to make decisions that impact both the environmental and financial performance of the organization. Both private business and government organizations can benefit.

Benefits of EMA to Industry:

- The ability to more accurately track and manage the use and flows of energy and materials, including pollution/waste volumes, types, and fate
- The ability to more accurately identify, estimate, allocate, and manage/reduce costs, particularly environmental types of costs
- More accurate and comprehensive information for the measurement and reporting of environmental performance, thus improving company image with stakeholders such as customers, local communities, employees, government, and finance providers

Benefits to Government of EMA Implementation by Industry:

- The more that industry is able to justify environmental programs on the basis of financial self-interest, the lower the financial, political, and other burdens of environmental protection on government.
- Implementation of EMA by industry should strengthen the effectiveness of existing government policies/regulations by revealing to companies the true

environmental costs and benefits resulting from those policies/regulations

- Government can use industry EMA data to estimate and report financial and environmental performance metrics for government stakeholders such as regulated industries or the industry partners in voluntary programs.
- Industry EMA data can be used to inform government program/policy design.
- Industry EMA data can be used for regional or national-level accounting purposes.

Benefits of Government Implementation of EMA

- Government EMA data can be used for environmental and other decisions within government operations, e.g., purchasing, capital budgeting, and federal facility environmental management systems.
- Government EMA data can be used to estimate and report financial and environmental performance metrics for government operations.

Relationship of EMA to Other Environmental Management Initiatives

From our perspective, EMA is not merely one environmental management tool among many – rather, EMA is a broad set of principles and approaches that provides the materials/energy flow and cost data needed many other environmental management activities and programs. While EMA data can be used for most types of routine decision-making within an organization, the data are particularly valuable for management initiatives with a specific environmental focus. Examples of the many environmental initiatives that can benefit from EMA include

- Pollution Prevention and Cleaner Production
- Design for Environment
- Environmental Life Cycle Assessment/Costing/Design
- Environmental Supply Chain Management
- Environmentally Preferable Purchasing
- Extended Producer/Product Responsibility
- Environmental Management Systems
- Environmental Performance Evaluation & Benchmarking
- Environmental Performance Reporting

EMA Experience and Activities of Tellus Institute

EMA Policy & Planning

Tellus conducts EMA policy assessments and planning studies in both the US and overseas. In the US, Tellus has been a long-term partner of the US Environmental Protection Agency's Environmental Accounting Project, and is currently assisting EPA to develop a strategic plan for promoting EMA in the US over the next five years. In the international arena, Tellus is an active partner of the International EMA Working Group convened by the United Nations Division for Sustainable Development, and recently authored a paper on international EMA policy options for this group. Tellus is also helping to coordinate EMA policy activities in the Philippines.

EMA Research

Tellus has conducted a number of research projects designed to investigate current EMA practices and to develop and test new methodologies that incorporate EMA principles.

Tellus was an early pioneer in examining the role of EMA in capital budgeting for projects with significant environmental impacts and/or costs. A series of US industry case studies illustrated the potential inadequacies of conventional capital budgeting practices for assessing the true profitability of environmental projects. A subsequent survey of US management accountants, sponsored by the US EPA and the Institute of Management Accountants, confirmed the case study findings. In response, Tellus developed a "Total Cost Assessment" approach to capital budgeting that promotes a more comprehensive and accurate assessment of project profitability, and has implemented this methodology via industry implementation and technical assistance projects, software development, and training.

The role of EMA in improving environmental performance throughout the supply chain is another focus of our research. For example, Tellus puts EMA into practice in evaluating the relationships within chemical supply chains and waste supply chains in the automotive and electronics manufacturing sectors. In a collaborative project between the U.S.EPA and American Hospital Association, Tellus examined current EMA practices employed by hospitals and explored whether EMA would be useful for influencing upstream procurement practices and other supply chain issues.

EMA Technical Assistance & Implementation

Tellus has provided technical assistance on EMA to numerous organizations. For example, the state of New Jersey commissioned Tellus to provide financial assessment technical assistance to fifteen firms that collaborated with the state in assessing approaches to facility-wide permitting. For the United States Postal Service, Tellus performed financial analyses of waste minimization and pollution prevention projects at a vehicle maintenance facility that serves as an environmental model for other USPS facilities in the US.

Individual firms have also commissioned Tellus to work with them on EMA-related projects. For example, Tellus assessed the performance of a multinational corporation's innovative materials tracking program, which the company uses to assess its pollution prevention progress. For the same firm Tellus analyzed the costs

and benefits of completing an on-site, hard-piped batch still solvent recovery system, outlining financial analysis scenarios of the major variables that could influence the final project decision.

Another major international manufacturing firm was assessing whether to recommend accelerated PCB phase-out for all transformers and capacitors in its North American facilities. Tellus assisted this firm in estimating the potential liability costs associated with the "business as usual" scenario of simply replacing PCB transformers on an as-needed basis. Tellus' work was pivotal in influencing upper management's decision to accelerate PCB transformer phase-out.

More recently, Tellus has worked extensively in the automotive manufacturing industry on a variety of EMA projects. For example, Tellus used EMA data collection and assessment approaches to determine the total costs of zinc emissions from several steel foundries, and assist the facilities to determine the most cost-effective pollution prevention options to reduce emissions. Another project studied the feasibility of replacing lead containing ELPO with lead-free alternatives. A third project has used EMA to design and make the business case for a closed-loop waste oil program that has been adopted at numerous automotive plants.

EMA Curriculum Development & Training

Tellus has designed and delivered training courses on Environmental Management Accounting (EMA), Environmental Cost Assessment (ECA), and Project Profitability Assessment for a variety of audiences both in the US and overseas. Course participants have included industry environmental managers, government technical assistance staff, accountants, and members of the financial community.

US states sponsoring the course have included Maine, Illinois, South Carolina, Washington State, and Colorado. Other US course sponsors have included the U.S. Environmental Protection Agency, the National Institute of Standards and Technology and the National Association of Community Development Loan Funds. Courses overseas have been funded by the United Nations Environment Programme (Zimbabwe, Tanzania, Vietnam), the US-Asia Environmental Partnership (Philippines), and Lund University (Sweden).

EMA Software Development

Tellus has developed a series of software packages, called P2/FINANCE and E2/FINANCE, for the profitability assessment of pollution prevention, cleaner production, energy efficiency, and other environmental and energy investment projects. Versions that use US tax and depreciation conventions include generic versions for any industry sector, as well as versions designed for specific sectors: screen printing, lithographic printing, flexographic printing, metal finishing, printed wiring board manufacture, and dry cleaning. The generic US version has also been tailored to create versions for use in Canada, the Philippines, and Zimbabwe.

Funding for these efforts has been provided by numerous organizations including the US Environmental Protection Agency; the National Institute for Standards and Technology; the US Department of Energy; the US-Asia Environmental Partnership; the British Columbia Ministry of Environment, Lands, and Parks; and the United Nations Environment Programme. Many of these software packages are available at low or no cost. See the Tellus website for more information.

For more information on the EMA activities of Tellus Institute, please contact:

Dr. Deborah Savage (dsavage@tellus.org) or Ms. Karen Shapiro (kshapiro@tellus.org)
Tellus Institute, 11 Arlington St., Boston, MA 02116-3411 USA Tel: 617-266-5400 Fax: 617-266-8303 www.tellus.org