

# Chemical Reuse, Recycling and Recovery in the textile value chain

Promotion of Sustainability in the Textile and Garment Industry in Asia-FABRIC

## **2. Introduction to Material Flow Cost Accounting**

### **11.15– 12:00**

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**on behalf of GIZ FABRICS and Espire Consult**

# Agenda

- **ISO 14051, MFCA**
- **Eco mapping,**
- **EMAS Easy**

# Introduction

The following environmental management tools are presented in the presentation:

ISO 14051, MFCA

Eco mapping,

EMAS Easy

## SP tools & the Management Pyramid



# Introduction



# ISO 14051 Environmental management — Material flow cost accounting

MFCA is a management tool (International Standard) that can assist organizations to better understand the potential environmental and financial consequences of their material and energy use practices and seek opportunities to achieve both environmental and financial improvements via changes in those practices.

MFCA promotes increased transparency of material and energy use practices via development of a material flow model that traces and quantifies the flows and stocks of materials in both physical and monetary units

MFCA, one of the major tools of Environmental management accounting (EMA), also focuses on information for internal decision-making, and is intended to complement existing environmental management and management accounting practices.

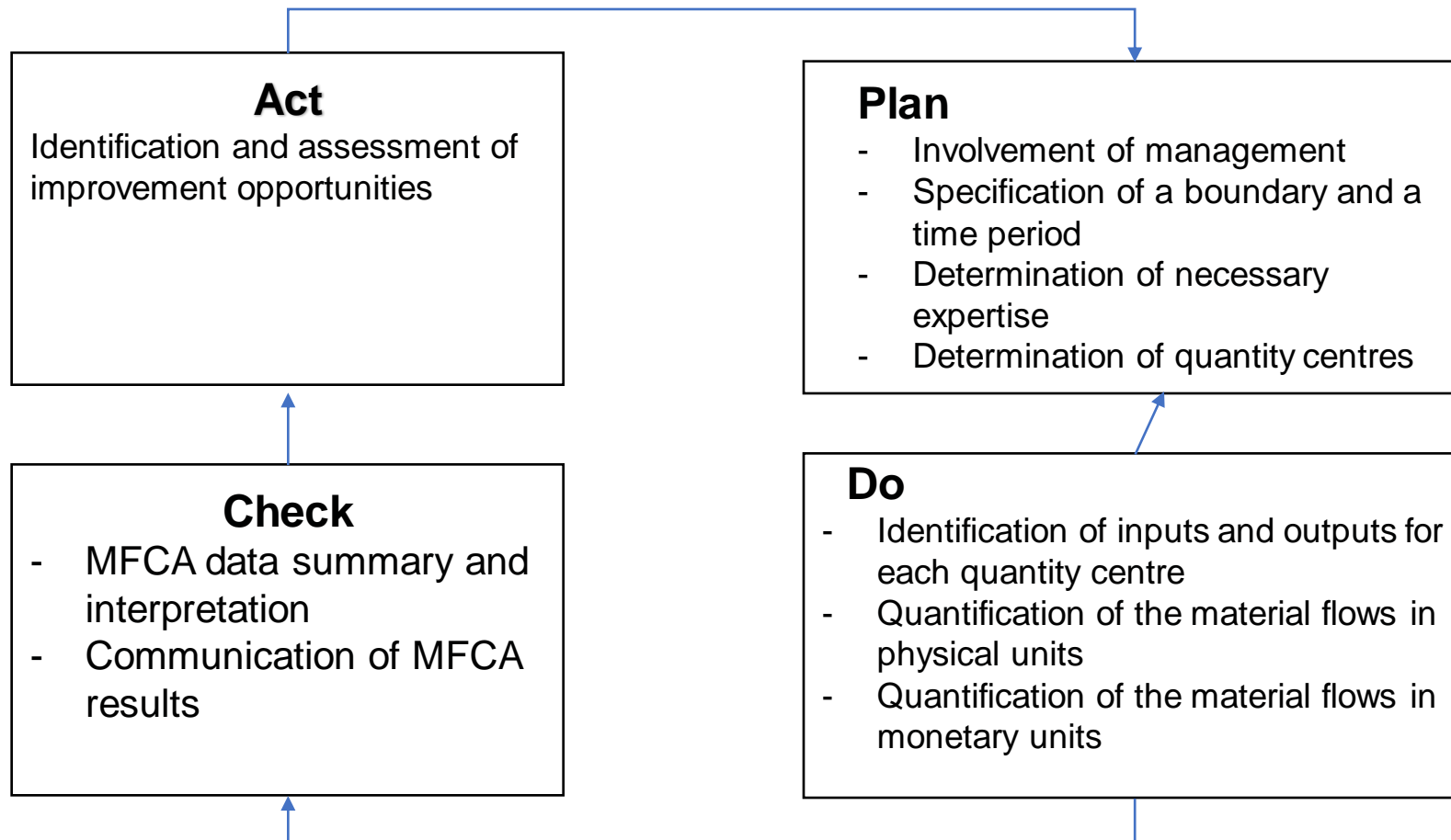
# MFCA

Material flow cost accounting (MFCA), focuses on tracing waste, emissions, and nonproducts and can help boost an organization's economic and environmental performance. It is one of the major tools of environmental management accounting (EMA). EMA is a set of procedures used within enterprises for linking environmental considerations with economic objectives.

MFCA is a management tool that promotes the efficient use of materials more effectively, contributing to reductions in waste, emissions, and nonproducts. MFCA increases the transparency of material flow, which is a key to successful problem-solving and improvement. By solving problems, organizations can increase their resource productivity and reduce costs at the same time. This is in line with the Green Productivity (GP) concept and can be used to implement GP in organizations and factories.

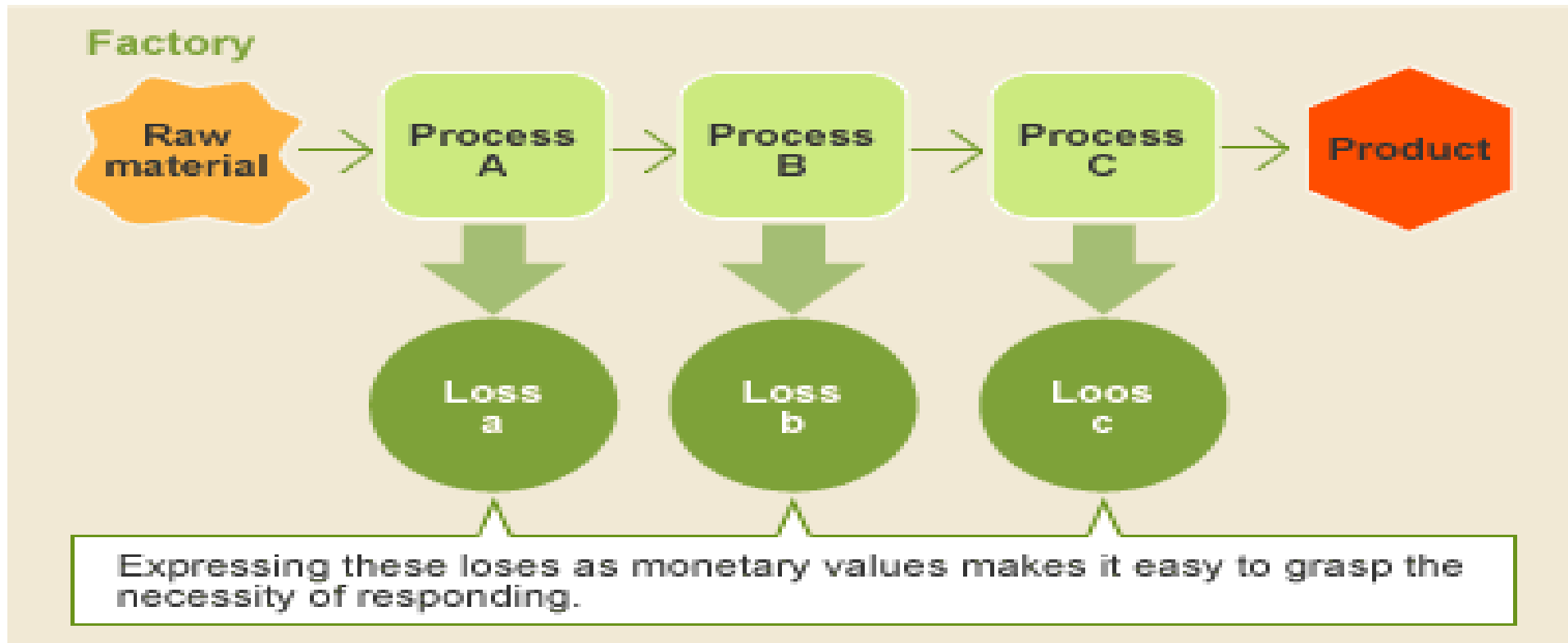
To standardize MFCA practices, a working group of the ISO Technical Committee ISO/TC 207, Environmental Management, developed ISO 14051, which complements the ISO 14000 family of environmental management system standards, including lifecycle assessment (ISO 14040, ISO 14044) and environmental performance evaluation (ISO 14031). The standard was published in the second half of 2011.

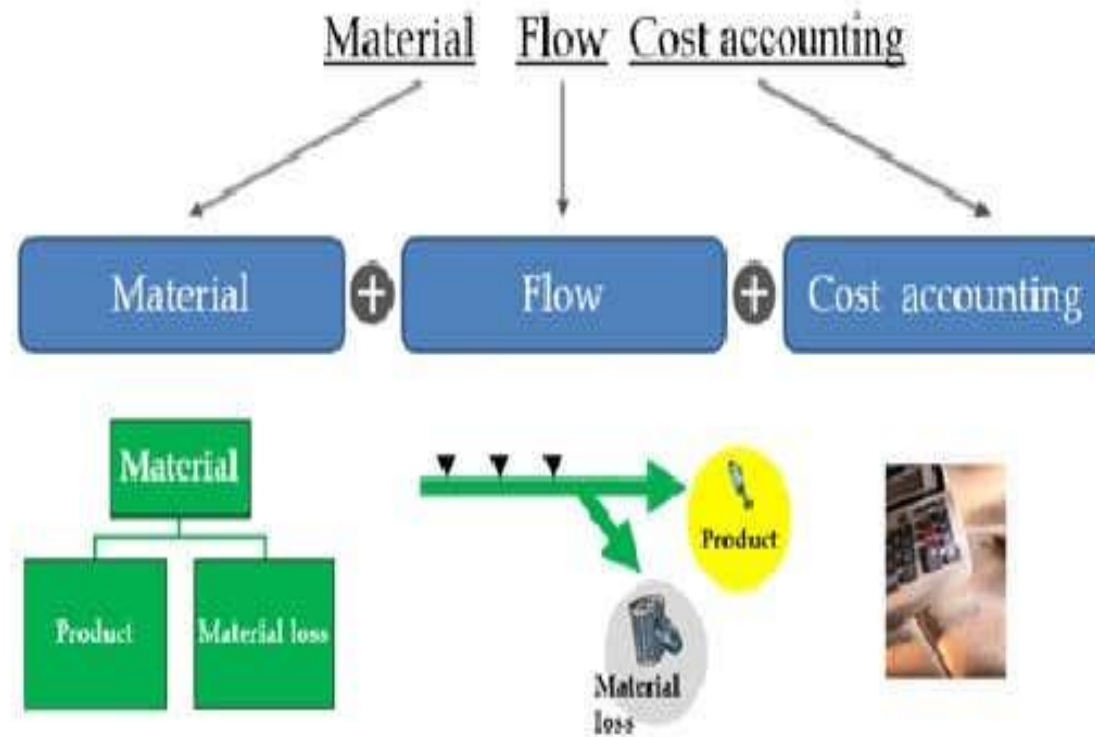
MFCA implementation steps constructed in accordance with a PDCA cycle.



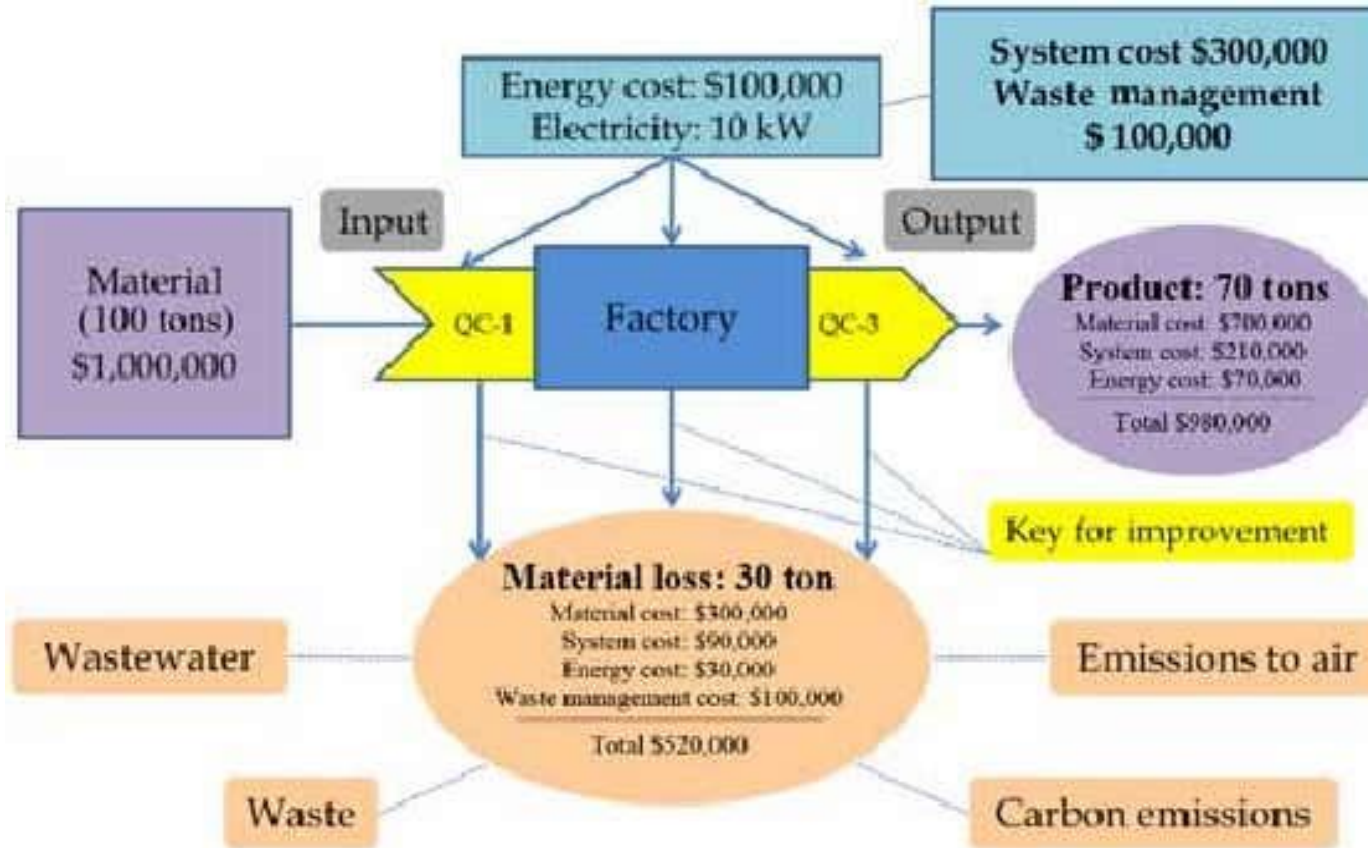


## ■ Concept chart of MFCA





# MFCA



# Eco Mapping

- Ecomapping is a simple, practical tool, designed in a visual format to be used as a starter kit in environmental management.
- Ecomapping is about scanning environmental impacts, problems and practice in SME's in a participatory learning process. As such, it can be used in the initial environment review as required by EMAS.
- Useful environmental information is gathered systematically observation of everyday practice and procedures as well as through reference to legislative requirements and good practice.
- It is a systematic method that builds up a picture of key environmental information by using symbols on a simple plan of the site.
- The visual approach makes ecomapping very easy to understand and a useful support tool for raising the awareness of employees and stakeholders of the environmental impacts of an organization's activities.
- It also enables you to get more people involved at an early stage without needing a huge amount of specialist understanding.

# Eco Mapping

- Ecomapping uses several ECOmaps in order to facilitate and visualize environmental problems (“hot spots”) within a company. The different maps (water, energy, air, wastes) create a useful multi layer set of graphical information and lead immediately to environmental action programs.
- As 80 % of environmental information is location based, the Ecomaps show what is happening and where.
- Ecomapping is the ideal starter kit for EMS. In 10 steps, it helps you to understand the environmental problems, materials flows and records, opinions and the perception of workers and work process.

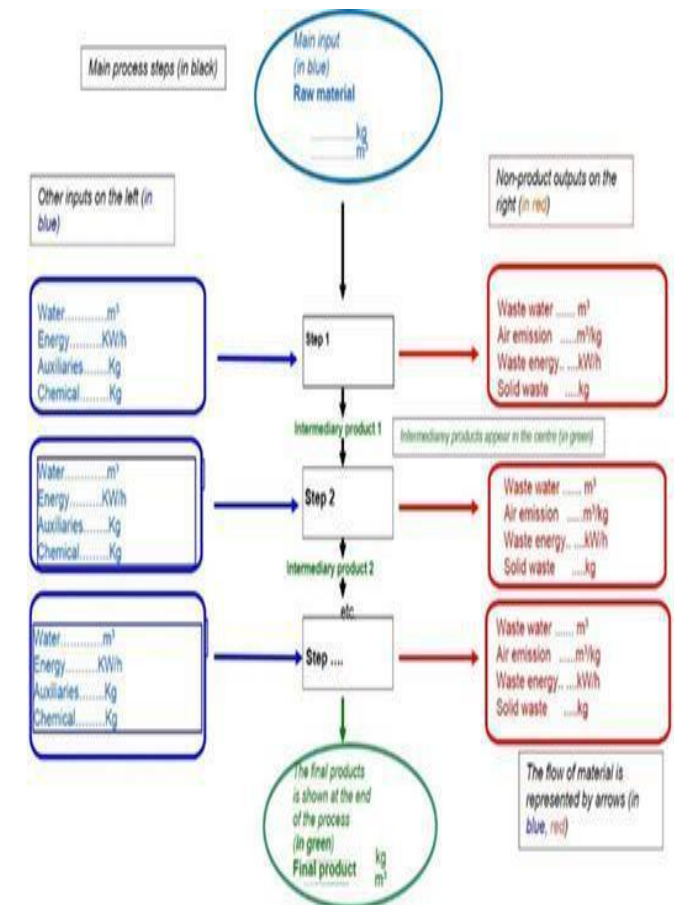
# Process Flow Diagram

**The process flow diagram represents a schematic of the:**

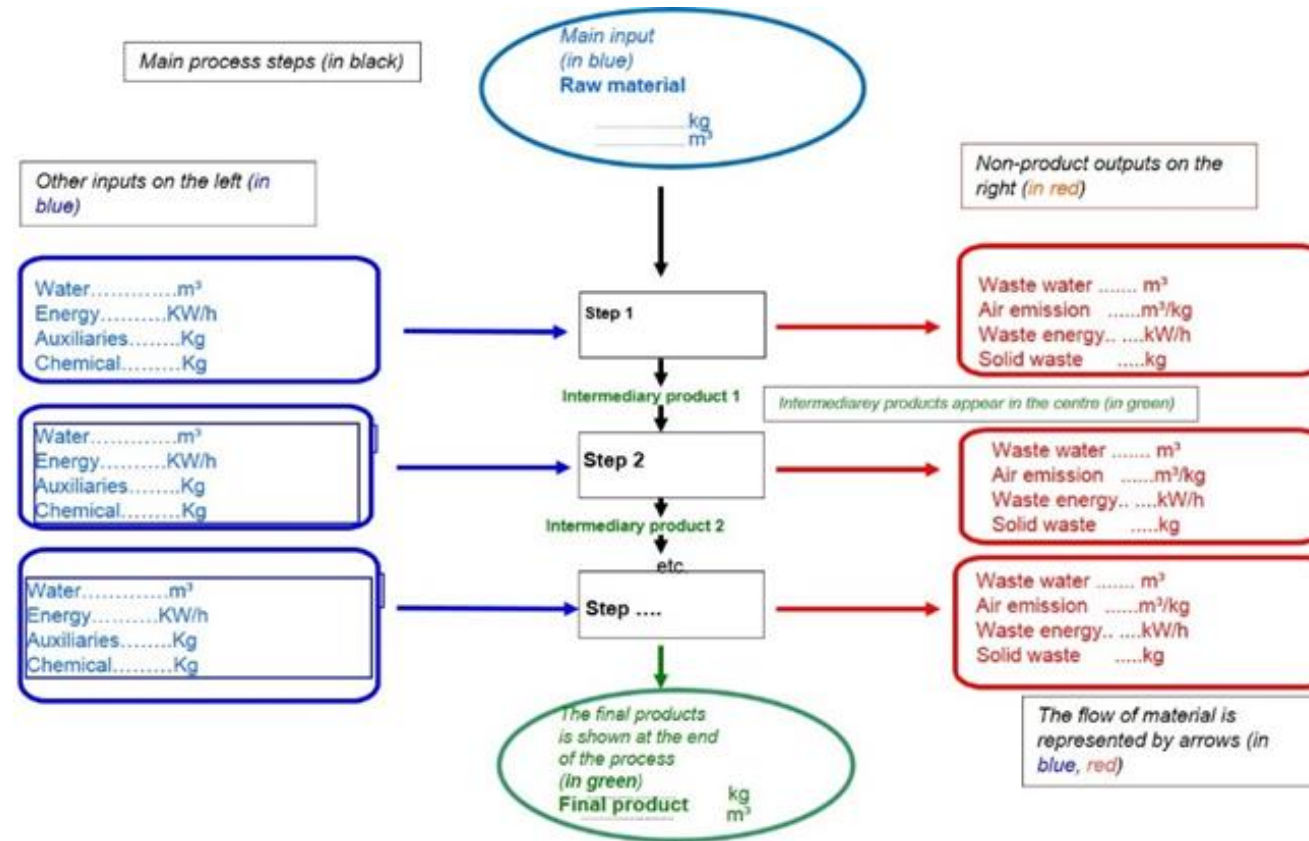
- production/process steps
- different inputs
- intermediary products
- final product
- non-product outputs (defines as materials which do not end up in the final product)

**It will allow you to prepare mass balance and/or cost analysis as well as identify where you can encounter opportunities for cost savings.**

- Draw a general outline of the production process
- Include inputs, outputs and non-product outputs
- Indicate quantities and/or value of inputs, outputs, non-product outputs as far as already known

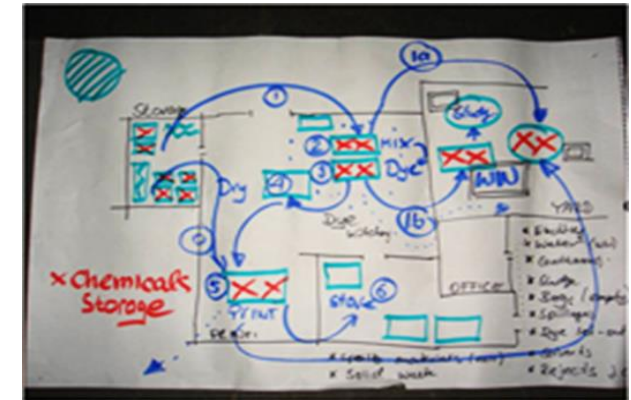


# Example: Process Flow Diagram



# How to prepare an Eco-Map

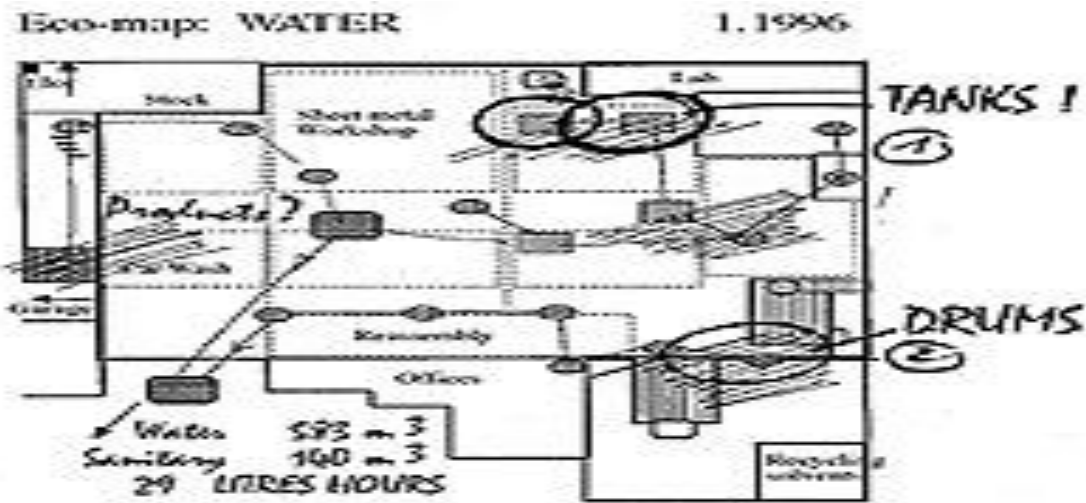
- Start with creating a facility plan that details the physical areas of the property involved in chemical storage and usage. The simplest way is to use existing plans.
- Indicate and individually label all areas where chemicals are stored, handled, used as well as released (to air, water,...). It is recommended that your facility plan clearly points out:
  - ✓ Purchasing and delivery areas
  - ✓ product storage areas (main stores, sub stores, temporary storage areas),
  - ✓ product preparation/dosing areas,
  - ✓ areas with presence of chemical containing air emissions, solid waste and effluent).



In order to increase the understanding of the situation at hand and possible issues to be addressed, the eco-map can also indicate where and how chemicals are transported (see example on the bottom).



# Example: Eco-Mapping



## TO DO:

1. Pierre A.: Empty, optic tank  
Well sedimentation tank → 6.96
2. Enrico M.: Close drums  
Move hydraulic oil immediately!!

OK ✓

# EMAS Easy

- EMAS easy is a way to implement EMAS which is proportional to the size,
- financial capacity and organisational culture of small business.
- It assists, using a number of new features, with compliance with ISO 14001
- and EMAS but still focusing on what matters – environmental protection
- on the shop floor.
- If a company has already done some preparatory environmental
- work, the work required with Ecomapping, to comply with EMAS or ISO
- 14001, can be concluded within a week.
- External document audits and site audits can easily be done within a day.
- The shared documentation and procedures allow cluster approaches in a very cost-effective way.
- The environmental declaration is compact and delivers essential information in a simple way.
- The entire process has already been successfully audited against the EMAS regulation and ISO 14001 by industrial auditors in 3 companies by certification bodies.
- Emass easy is delivering EMAS in ten days, with ten people on ten pages. The work process from, Start to End, takes 30 steps.

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