TEST Step 2- IMPLEMENTATION

	Step	Purpose
DO	**2. SUPPORT AND OPERATION**	**Implementation of the TEST action plan including improvement measures and monitoring to increase performance in resource use.**
CHECK	**3. PERFORMANCE EVALUATION**	Measuring and evaluating performance of important material and energy flows.
ACT	**4.** IMPROVEMENT	Reflection on experience gained and integration of TEST into business strategies and operations.
FOLLOW-UP AND CONTINUOUS IMPROVEMENT		

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2. Support and operation (Implementation)

How to support a company in implementing the TEST action plan?

UNITED NATIONS
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Overview of Step 2

Inputs	Activities	Outputs
TEST action plan Human and financial resources External experts/service providers/suppliers Existing documentation of management and information system	Finalize documentation and information system, including purchase and installation of sub-meters (specifications, procurement, installation, etc.) Train company staff Establish and communicate responsibilities and set up incentives for employees responsible for implementing the action plan.	Information system for RECP implemented Resource efficiency measures implemented Supporting documentation in place (e.g. internal procedures for good housekeeping, operational work instructions,,) Training plan for employees TEST Action plan communicated internally

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Implementing the Action Plan

1. Start with resource efficiency measures, both GHK and low-medium cost measures that can be implemented with company resources
2. Develop basic procedures to support TEST (e.g. significant env. Aspects)
3. Develop operational control procedures and working instructions linked to GHK measures
4. Develop information system procedures including installation of sub-meters
5. Training and communication

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Operational procedures & working instructions

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Examples of procedures for operational control

- Instruction for optimization of CIP cycle (timing, dosing, recuperation of caustic Soda and water);
- Instruction for regular inspection rounds for spills detection;
- Procedure for on-time sorting of returned goods (soft drink bottles) from clients that contributed to product recovery of 0.4% and reduced the volume of non-conforming products sent to drain by 95%.
- A procedure for on-site segregation and a storage system were also included in the EMS to valorise expired/damaged products as animal feed.

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Communication

- Communication is a two-way process, in and out of the organization.
- It contains information relevant to its environmental management system, including information related to its significant environmental aspects, environmental performance, compliance obligations and recommendations for continual improvement.
- It should be transparent, appropriate, truthful , factual and understandable to interested parties.

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Barriers

Despite good Action Plan in place, implementation rate can be low.

WHY?

How TEST consultant can assist?

Barriers during implementation:

- Lack of motivation of the responsible staff
- Neglected importance of GHK measures
- Lack of skills
- Unexpected changes in company priorities

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Your role as TEST consultant

- Regular communication with TEST team leader
- Periodical visits to company to review and measure progress on implementation of action plan
- Ad hoc technical assistance (e.g. facilitate contacts with suppliers, review technical offers/specs, model for procedures, etc.)
- Involve top management

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Highlights

- Work instructions for implementation of operating criteria related to RECP as well as preventive maintenance are implemented at this stage.
- The communication of work instructions and operational criteria internally as well as to suppliers of products and services is essential.
- The information system on data collection and processing is an integral part of the action plan's implementation.
- Company purchasing processes may also be consolidated by integrating new criteria and procedures for a life cycle perspective of products and services.
- Additional resource efficiency training may be required for the staff in charge of the action plan's implementation
- External experts can play a role in linking the company to existing financing organization that provide grants or blended financial instruments for investments for RECP and end-of-pipe technologies.
- GHK measures should be implemented first, but deserve as much attention as equipment upgrades. The effects of GHK measures can be sustained by making the people who influence operations accountable.
- Step by step implementation of the TEST action plan and monitoring of real savings of related measures, generates trust and resources for full implementation

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Case study-1

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Case study

Ad hoc technical assistance

while implementing TEST action plan in **plastic manufacturing company in Egypt**

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Case study – starting points

The company had 16 inefficient injection molding machines with 8 cavity and cold runner moulds

The approved TEST action plan included a measure to replace and upgrade those machines, which shall reduce the energy specific consumption

The measure included modification of the molds to hot runners technology instead of cold runners to save on material loss and upgrade the cavity from 8 to 16.

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Case study – problem

As the payback from the measure was almost 4 years, the company decided to replace only one machine with upgrading its cavity mould and installing hot runner.

The high investment needed for the replacement was another barrier to full implementation.

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Case study – intervention of TEST team

The project team kept an eye on replacing the first machine with upgrading its cavity and installing hot runner moulds.

Savings from that replacement were validated, pay back decreased to 2 years, due to increased productivity.

The consultants linked the company with an existing financing mechanism to encourage them to replace other machines.

A meeting was arranged with the Top Management, TEST consultants and the financing facility representative

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Case study – results

Company started to replace another 4 injection moulding machines with 16 cavity and hot runner mould.

Productivity of the company was doubled, providing opportunities for export and lower energy consumption was reached.

Solar energy measure, which was discarded initially, is now retained for study after securing the finance and the company starting to receive guiding offers.

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Case study – lessons learnt

Action plan is a dynamic document. It can change over time based on changes in company expectations and experience.

TEST consultant is urged to follow-up on implementation with companies. This increases the mutual trust, and opens channels to maximize the gains.

Verification and validating the savings from implemented measures could come up with results different from the expected, especially when different flows are affected.

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Case study-2

Overcoming barriers

while implementing TEST action plan in a **beverage company in Tunisia**

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Case study – starting points

An old plan to build a wastewater treatment plant (WWTP)

The approved TEST action plan included a number of good housekeeping and low cost measures to reduce organic pollution load to drain and volumetric load by one third

These measures should be implemented before designing the WWTP

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Case study – problem

Production manager was reluctant to change routine procedures as the company was certified for quality and food security. Good housekeeping was perceived as ‘soft’ measures of low importance rather than ‘real’ measures to be prioritized

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Case study – intervention of TEST team

The project team had to seek management support

Linked the TEST program to the company's ISO 14001 under preparation

The result was a strengthened EMS program with a strong focus on resource efficiency and pollution prevention

Other procedures were also developed to support good housekeeping and process optimization measures

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Case study – results

Implemented good housekeeping actions brought (eg. reduction of the volume of non-conforming products sent to drain by 95%)

As a result, COD and BOD_5 loads were reduced by 27 t/y and 21 t/y respectively

The WWTP could operate with 1/3 less electricity used by the aeration system due to reduction of organic load

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Case study – lessons learnt

The company also received ISO 14001 certification in 2012

Top management appreciated and supported the TEST team, which was also manifested in rewards

The company now enjoys the best resource consumption rates in the group and the project team provides regular technical assistance to increase productivity of all the group production sites

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Linkages with EMS/ENMS

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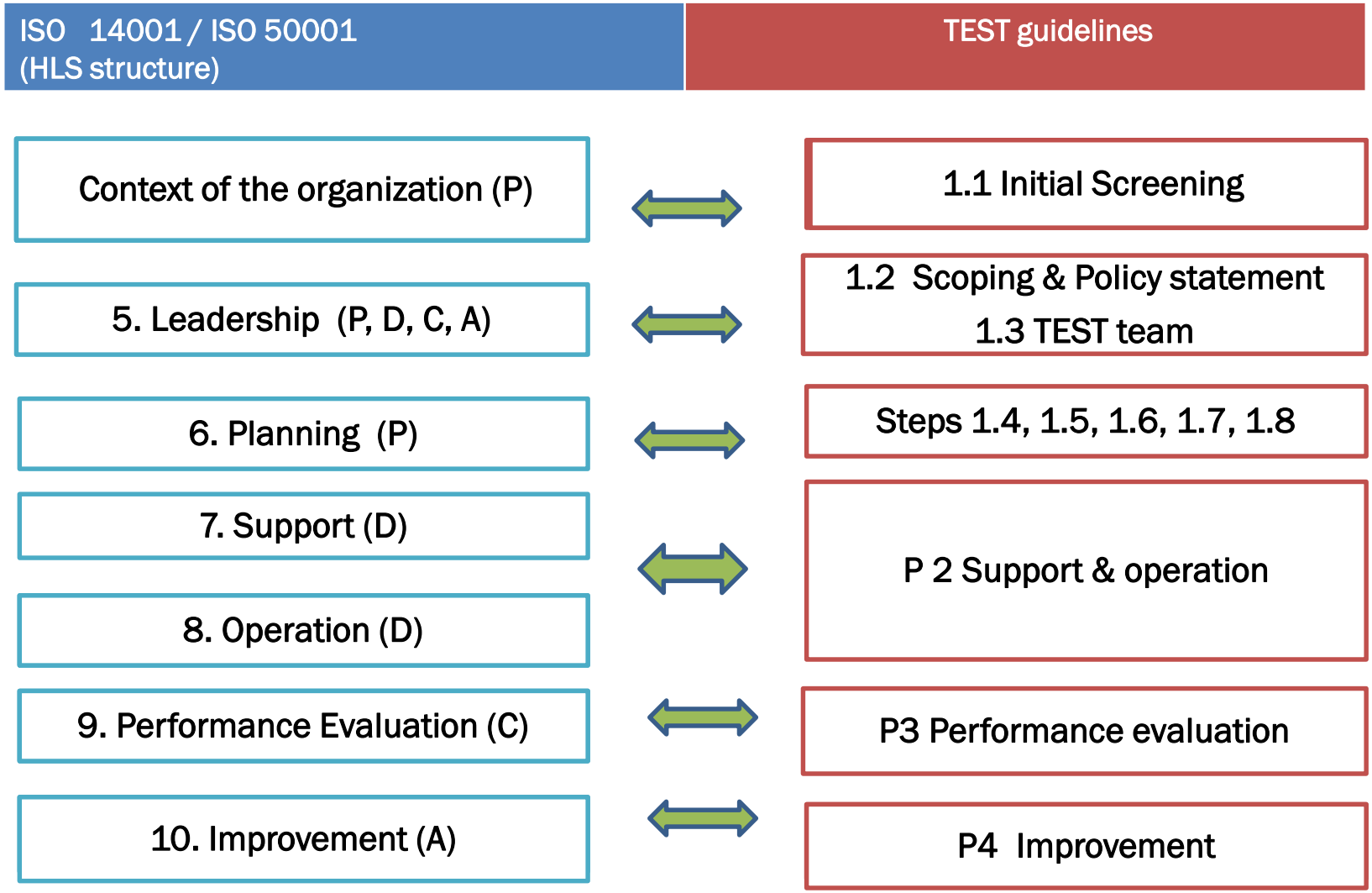
EMS/EnMS elements and TEST steps



EMS integration (example of Jordan)

A Jordan company with an existing EMS system certified ISO14001, used the experience gained within TEST to upgrade their system to ISO 14001:2015 version and be ready for new certification**.**

They upgraded the EMS by:

- A table that describes how to utilize TEST report and how to integrate RECP with EMS; it contains the required procedures and amendments on current system for its upgrade (strategic planning, management review, env. Aspects assessments, waste management, communication, env. manual).

- Appendix 1 containing SWOT Analysis, List of Interested Parties and Communication Plan.

- Appendix 2 containing all NEW environmental aspects **(water and energy consumption)**, identified through implementation of TEST, including the measures to control them and the way for their implementation.

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Procedures and information system

- New resource efficiency procedures were integrated into the company's EMS adding new aspects, objectives, measures and action plans.

  - For example several new water meters were planned to be installed in addition to the existing ones to provide data for calculating the OPIs and KPIs at the level of the company.

  - Where and how to collect and process these data is specified in a new water conservation procedure with guidelines describing among others how to process and document information, what must employees do to develop, implement and maintain water conservation measures including for example development of a leak prevention program.

- The company would like to add the verification audit by the service provider team to the steps of TEST to verify the real savings of implementing the RECP measures by a third party mainly for energy saving measures.

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EnMS integration (example of Egypt)

In parallel to adopting the **TEST** methodology, a couple of companies in Egypt were in the process of developing an EnMS in accordance to **ISO 50001:2011 version. At the start of the TEST,** those companies were in the process of **preparing list of energy saving opportunities, following their energy review**.

As energy was a priority flow for those companies, the TEST benefited from EnMS partially in place in:

- Company system boundary baseline (KPI) for energy confirmed with the baseline developed in the EnMS.
- Information system for energy use was readily available, where the company installed submeters on main users. This facilitated identification of focus areas, and OPIs.
- Long list of opportunities to optimize on utilities were already identified. Companies lacked knowledge to identify measures related to process equipment.

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Value added from TEST

- New process related energy saving measures were identified, with the input from the sectorial expert, and root cause analysis procedures of TEST.

  - For example optimizing the pasteurization temperature within a dairy company was one of the untapped areas for improvement, which was identified by the TEST sectorial Expert

  - Revealing inefficiencies based on mass/energy balances and technology benchmarks offered room for waste heat recovery measures. That approach identified possible upgrade an evaporator, with huge savings.

- The company by the end of the project, exceeded the energy saving target that was determined in the EnMS energy review. Moreover, they started internal capacity building campaign within the group, to transfer the experience and knowledge to their peers.

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Linkages with EMS

EMS

Not in place

Management system documentation, procedures, and working instructions can be put in place at this stage. If a company does not intend to pursue full-scale ***EMS/EnMS*** implementation for certification, only the relevant management documentation system elements should be put in place, e.g. those related to implementing good housekeeping measures and to the effective monitoring and evaluation of specific implemented measures in the TEST action plan.

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Linkages with EMS

EMS

In place

Existing management system documentation including working instructions should be reviewed and upgraded as necessary to sustain good housekeeping measures (operational procedures) and the monitoring and evaluation of implemented measures. Integrate newly established information system on flows and resource efficiency as part of the management system, linking the managerial and operational levels of an enterprise..

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Highlights

- **Good housekeeping measures should be implemented first**, as they bring benefits at no cost to the company
- **Developing work instructions for implementation** of operating criteria related to resource and energy efficiency as well as preventive maintenance.
- Additional **resource efficiency training** may be required for the staff in charge of the action plan's implementation
- **External experts** can play a role in linking the company to existing financing organization that provide grants or blended financial instruments for investments for RECP and end-of-pipe technologies.
- Supporting the **information system** by generating data for calculating the OPIs and KPIs
- Consolidating company **purchasing processes** by integrating new criteria and procedures for a life cycle perspective of products and services.
- **Communicating** work instructions and operational criteria internally as well as to suppliers of products and services,
- **Step by step implementation of the TEST action plan and monitoring of real savings of related measures, generates trust and resources for full implementation**

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Thank YOU for your Attention

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