

Deliverable Report

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Project acronym: STEAM UP

Project title: Steam and Management Under Pressure

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Deliverable Number: Deliverable 2.5

Deliverable Title: Workshop Report, Recommendations and Plan for Implementation in WP's

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Description of the Deliverable:

This deliverables consist of the results of the workshop held at the second consortium meeting in Madrid. Based on the results, recommendations for follow up where made including a plan for implementation in the respective work packages (WP 3 and WP 4).

Summary

Based on the inventory in WP 2 in a workshop session a list of subjects were identified that needs to be included in respectively the Audit Methodology in WP 3 and the Training Materials in WP 4. The identified subjects are:

- Reach high-level (top-)management
- Non Energy Benefits
- Examples, Pictures and Stories on:
 - Technical Issues
 - Economic Issues (Financial Appraisal)
 - Behavioural Issues
- Connect to Corporate Strategy
- Implementation of Energy Management System
- Guideline on (Audit) Methodology
- Energy Performance Indicators
- System Approach
- Make it a Process not a Project
- Get to know the (complexity of the) organisation and your contact
- Focus on the Steam-Up methodology (and concept)

For this subjects information sources were identified that could help the implementation in the respective WP's. Also a compact plan for implementation was laid down.

1. Introduction

Based on the results of the inventory of the State-of-the-Art, as laid down in deliverable 2.4 and presented during the consortium meeting on October 1st in Madrid, a workshop was organized with the consortium to address the implications of the inventory results for the following Work Packages (WP 3 and WP 4).

The workshop aims to give answers on the following three questions:

- ✓ Which new **insights** did you get (or which old ones are confirmed?)?
- ✓ WHAT do they **imply** for Work Packages 3 and 4?
- ✓ HOW are we going to **deal** with it in WP 3 & WP 4 (Which **actions** to take?)

2. Overall conclusions inventory State-of-the Art

Based on the inventory the following overall conclusions were drawn regarding the respective subjects:

- ✓ STEAM: still much saving opportunities: alternatives, operation, use and distribution
- ✓ AUDITING and FOLLOW UP: follow up (plans, resources, verification) can be improved
- ✓ ENERGY MANAGEMENT: only partly in place ((management) commitment seems weak)
- ✓ DECISION MAKING: strategy is leading, profitability less

3. Inventory of general insights based on results WP 2 inventory

In a first round of the workshop session on day 1 of the consortium meeting general insights were listed being abstracted in an overview of subjects that needed to be addressed in developing of the audit methodology in WP 3 and in developing the trainings in WP 4. The identified subjects are listed below.

Identified subjects to include

1. Reach high-level (top-)management
2. Non Energy Benefits
3. Examples, Pictures and Stories on:
 - ✓ Technical Issues
 - ✓ Economic Issues (Financial Appraisal)
 - ✓ Behavioural Issues
4. Connect to Corporate Strategy
5. Implementation of Energy Management System
6. Guideline on (Audit) Methodology
7. Energy Performance Indicators
8. System Approach
9. Make it a Process **not** a Project

4. Inventory of the needs for developing materials in WP 3 and WP 4

In a second round of the workshop session on the second day of the consortium meeting the needs for the developers of the audit methodology (WP 3) and the trainings (WP 4) with respect to the identified subjects was inventoried. These are further elaborated with possible sources and tools for information and a short plan for implementation within the respective work packages. The results are laid down in the table below.

Identified subjects to Include	Needed for WP 3 (Audit)	Needed for WP 4 (Training)
1. Reach high-level (top-) management	<p style="text-align: center;"><u>Workshop</u></p> <p>Needed: People or ways to get easy access to (top-) management. Suggestions:</p> <ul style="list-style-type: none"> ✓ Lean Six Sigma Consultants ✓ Accountants <p>Sources:</p> <ul style="list-style-type: none"> ✓ SEAI project on Lean and Energy Efficiency: <ul style="list-style-type: none"> ▪ www.seai.ie ▪ Contact SEAI (RVO has contacts via John O’Sullivan) ✓ EN 16427-1 (requirements first audit meeting) ✓ Contact Person at enterprise and ask for (in 1st meeting): <ul style="list-style-type: none"> ▪ Company information ▪ Strategy, Mission ▪ Sector Developments ▪ Other (management-) relevant issues 	<p style="text-align: center;"><u>Workshop</u></p> <p>Needed:</p> <ul style="list-style-type: none"> ✓ Training Materials on “How to get easy access to (top-) management?” <p>Sources:</p> <ul style="list-style-type: none"> ✓ See column Needed for WP 3
	<p style="text-align: center;"><u>Implementation</u></p> <p>Action:</p> <ul style="list-style-type: none"> ✓ Develop guiding (as part of the audit methodology) on how to engage (top-) management in energy efficiency in general and energy audits specifically <p>Time plan:</p> <ul style="list-style-type: none"> ✓ Conform time plan WP 3 for deliverable 3.1 Steam Audit Methodology (due April 30th 2016) <p>Responsible:</p> <ul style="list-style-type: none"> ✓ ENVIROS (WP lead) 	<p style="text-align: center;"><u>Implementation</u></p> <p>Action:</p> <ul style="list-style-type: none"> ✓ Develop Training Materials (guidelines, slides, tools, exercise,...) for the trainings on (top-) management engagement. <p>Time plan:</p> <ul style="list-style-type: none"> ✓ Concepts of materials due February 28th 2016. ✓ Conform time plan WP 4 for deliverable 4.2 Training Materials (due October 31st 2016) <p>Responsible:</p> <ul style="list-style-type: none"> IEE and ESCAN (WP lead)

2. Non Energy Benefits (NEBs)	<u>Workshop</u>	<u>Workshop</u>
	<p>Needed:</p> <ul style="list-style-type: none"> ✓ Information and method(s) on NEBs suited to facilitate the inclusion of NEBs in the audit process. <p>Sources:</p> <ul style="list-style-type: none"> ✓ NEB presentation(s) AURA (Erik Gudbjerg) ✓ Flyer (or Pitch) on benefits of NEBs ✓ NEB-Tool: http://neb.uk.teknologisk.dk/ ✓ NEB literature available (Erik Gudbjerg, Ronald Vermeeren) ✓ Power Points on NEBs for specific Steam Saving Measures (NEB workshop October 2nd Madrid) ✓ NEB Guide (under development) of Sustainable Energy Authority Ireland (SEAI) as part of the Irish Standard on Energy Efficient Design 	<p>Needed:</p> <ul style="list-style-type: none"> ✓ Training Materials on NEBs <p>Sources:</p> <ul style="list-style-type: none"> ✓ See column Needed for WP 3
	<u>Implementation</u>	<u>Implementation</u>
	<p>Action:</p> <ul style="list-style-type: none"> ✓ Develop guiding (as part of the audit methodology) on how to include NEBs in the energy audits and offer tools and examples to work with NEBs. <p>Time plan:</p> <ul style="list-style-type: none"> ✓ Conform time plan WP 3 for deliverable 3.1 (due April 30th 2016) <p>Responsible:</p> <ul style="list-style-type: none"> ✓ ENVIROS (WP lead) 	<p>Action:</p> <ul style="list-style-type: none"> ✓ Develop Training Materials (guidelines, slides, tools, exercise,...) for the trainings on NEBs. <p>Time plan:</p> <ul style="list-style-type: none"> ✓ Concepts of materials due February 28th 2016. ✓ Conform time plan WP 4 for deliverable 4.2 (due October 31st 2016) <p>Responsible:</p> <ul style="list-style-type: none"> ✓ AURA and ESCAN (WP lead)

<p>3. Examples, Pictures and Stories on:</p> <ul style="list-style-type: none"> ✓ Technical Issues ✓ Economic Issues (Financial Appraisal) ✓ Behavioural Issues 	<p style="text-align: center;"><u>Workshop</u></p> <p><u>Needed:</u></p> <ul style="list-style-type: none"> ✓ Examples (practical), Pictures and (success-) Stories on Technical, Economic and Behavioural aspects in the field of steam, energy auditing and management practises. <p><u>Sources:</u></p> <ul style="list-style-type: none"> ✓ Best Practise inputs on steam (17) from enterprise interviews in WP 2. ✓ Literature collected in WP 2 on (investment) decision behaviour of enterprises. ✓ Best Practise examples available at partners. ✓ Best Practise examples available at open sources ✓ Behaviour model of Green and Kreuter (presented at consortium meeting October 1st) ✓ IEA Workshop on Business Behaviour and Energy Efficiency, 12-13 November in Paris. 	<p style="text-align: center;"><u>Workshop</u></p> <p><u>Needed:</u></p> <ul style="list-style-type: none"> ✓ Examples, Pictures and Stories on Technical, Economic and Behavioural aspects in the field of steam, energy auditing and management practises ✓ Train auditors in Investment assessment methods (IRR, NPV, TCO and LCC) <p><u>Sources:</u></p> <ul style="list-style-type: none"> ✓ See column Needed for WP 3
	<p style="text-align: center;"><u>Implementation</u></p> <p><u>Action:</u></p> <ul style="list-style-type: none"> ✓ Develop, identify and assess materials (as part of the audit methodology) on the mentioned issues fit for use in the energy audit methodology. ✓ Behaviour: Attend IEA Workshop (RVO) ✓ Behaviour: Apply model of Green and Kreuter on Implementation of ISO 50001 (RVO) <p><u>Time plan:</u></p> <ul style="list-style-type: none"> ✓ Conform time plan WP 3 for deliverable 3.1 <p><u>Responsible:</u></p> <ul style="list-style-type: none"> ✓ ENVIROS (WP lead) 	<p style="text-align: center;"><u>Implementation</u></p> <p><u>Action:</u></p> <ul style="list-style-type: none"> ✓ Develop, identify and assess materials (as part of the audit methodology) on the mentioned issues fit for the trainings. <p><u>Time plan:</u></p> <ul style="list-style-type: none"> ✓ Concepts of materials due February 28th 2016. ✓ Conform time plan WP 4 for deliverable 4.2 <p><u>Responsible:</u></p> <ul style="list-style-type: none"> ✓ AURA (behaviour), RVO (behaviour), Consul (economy & business cases) and ESCAN (WP lead)

4. Connect to Corporate Strategy	<u>Workshop</u>	<u>Workshop</u>
	<p><u>Needed:</u></p> <ul style="list-style-type: none"> ✓ Insight in Corporate Strategy, market and market developments and trends ✓ Know the market and it's development: competitors, local, national, European, world ✓ Assess how steam and energy efficiency can contribute to the strategic goals and why energy efficiency is a strategic issue <p><u>Sources:</u></p> <ul style="list-style-type: none"> ✓ Sector Information (Source: Banks e.g. Industry at NL RABO bank: https://www.rabobank.nl/bedrijven/cijfers-en-trends/industrie/ (Dutch) ✓ Annual reports, company website (vision, mission) ✓ Platforms and for and (internet-) fora on steam (developments, technologies, Best Practises) ✓ NEBs (see above) ✓ Literature inventory WP 2 especially 	<p><u>Needed:</u></p> <ul style="list-style-type: none"> ✓ Training Materials on "How to link energy efficiency to Corporate Strategy?" <p><u>Sources:</u></p> <ul style="list-style-type: none"> ✓ See column Needed for WP 3
	<u>Implementation</u>	<u>Implementation</u>
	<p><u>Action:</u></p> <ul style="list-style-type: none"> ✓ Develop guiding (as part of the audit methodology) on how to get insights in corporate strategy and make the link with energy efficiency <p><u>Time plan:</u></p> <ul style="list-style-type: none"> ✓ Conform time plan WP 3 for deliverable 3.1 (due April 30th 2016) <p><u>Responsible:</u></p> <ul style="list-style-type: none"> ✓ ENVIROS (WP lead) 	<p><u>Action:</u></p> <ul style="list-style-type: none"> ✓ Develop Training Materials (guidelines, slides, tools, exercise,...) for the trainings on "How to link energy efficiency to Corporate Strategy?" <p><u>Time plan:</u></p> <ul style="list-style-type: none"> ✓ Concepts of materials due February 28th 2016. ✓ Conform time plan WP 4 for deliverable 4.2 <p><u>Responsible:</u></p> <ul style="list-style-type: none"> ✓ AEA and ESCAN (WP lead)

5. Implementation of Energy Management System	<p style="text-align: center;"><u>Workshop</u></p> <p><u>Needed:</u></p> <ul style="list-style-type: none"> ✓ Implementation guiding (simple) ISO 50001 ✓ Steam specific guiding for implementation ISO 50001 <p><u>Sources:</u></p> <ul style="list-style-type: none"> ✓ Checklist ISO 50001 and specific checklist for implementing ISO 50001 for steam systems (under development at project partner IEE) ✓ Guidance for use ISO 50001 (Annex A) ✓ ISO 50004: 2014 Energy management systems – Guidance for the implementation, maintenance and improvement of an energy management system. http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=60041 ✓ EPS methodology ✓ UNIDO Training Packages Energy Management 	<p style="text-align: center;"><u>Workshop</u></p> <p><u>Needed:</u></p> <ul style="list-style-type: none"> ✓ Training Materials on Implementation of Energy Management (ISO 50001) and steam specific guiding for implementation ISO 50001. <p><u>Sources:</u></p> <ul style="list-style-type: none"> ✓ See column Needed for WP 3
	<p style="text-align: center;"><u>Implementation</u></p> <p><u>Action:</u></p> <ul style="list-style-type: none"> ✓ Guiding on how to address Energy Management during the audits and (initial) guiding on Energy Management implementation <p><u>Time plan:</u></p> <ul style="list-style-type: none"> ✓ Conform time plan WP 3 for deliverable 3.1 and 3.2 Recommendations including energy audit results in EnMS (ISO 50001) (due April 30th 2016) <p><u>Responsible:</u></p> <ul style="list-style-type: none"> ✓ ENVIROS (WP lead) 	<p style="text-align: center;"><u>Implementation</u></p> <p><u>Action:</u></p> <ul style="list-style-type: none"> ✓ Develop Training Materials (guidelines, slides, tools, exercise,...) for the trainings on Implementation of Energy Management. <p><u>Time plan:</u></p> <ul style="list-style-type: none"> ✓ Concepts of materials due February 28th 2016. ✓ Conform time plan WP 4 for deliverable 4.2 <p><u>Responsible:</u></p> <ul style="list-style-type: none"> AEa, RVO and ESCAN (WP lead)

6. Guideline on (Audit) Methodology	<u>Workshop</u>	Not Apply
	<p><u>Needed:</u></p> <ul style="list-style-type: none"> ✓ Guidance for use (and checklist) for the Audit Methodology and Tools <p><u>Implementation</u></p> <p><u>Action:</u></p> <ul style="list-style-type: none"> ✓ Already planned to be included in the audit methodology <p><u>Time plan:</u></p> <ul style="list-style-type: none"> ✓ Conform time plan WP 3 for deliverable 3.1 (due April 30th 2016) <p><u>Responsible:</u></p> <ul style="list-style-type: none"> ✓ ENVIROS (WP lead) 	

7. Energy Performance Indicators	<u>Workshop</u>	<u>Workshop</u>
	<p><u>Needed:</u></p> <ul style="list-style-type: none"> ✓ Guidelines on how to set EnPI's <p><u>Sources:</u></p> <ul style="list-style-type: none"> ✓ ISO 50006: 2014 Energy management systems -- Measuring energy performance using energy baselines (EnB) and energy performance indicators (EnPI) -- General principles and guidance. http://www.iso.org/iso/catalogue_detail.htm?csnnumber=51869 ✓ EnPI-tool US Dep[artment of Energy (developed by Georgia Institute of Technology) https://ecenter.ee.doe.gov/EM/tools/Pages/EnPI.aspx 	<p><u>Needed:</u></p> <ul style="list-style-type: none"> ✓ Training Materials on "How to set EnPI's?" <p><u>Sources:</u></p> <ul style="list-style-type: none"> ✓ See column Needed for WP 3
	<u>Implementation</u>	<u>Implementation</u>
	<p><u>Action:</u></p> <ul style="list-style-type: none"> ✓ Already planned to be included in the audit methodology <p><u>Time plan:</u></p> <ul style="list-style-type: none"> ✓ Conform time plan WP 3 for deliverable 3.1 (due April 30th 2016) <p><u>Responsible:</u></p> <ul style="list-style-type: none"> ✓ ENVIROS (WP lead) 	<p><u>Action:</u></p> <ul style="list-style-type: none"> ✓ Develop Training Materials (guidelines, slides, tools, exercise,...) for the trainings on EnPI's. <p><u>Time plan:</u></p> <ul style="list-style-type: none"> ✓ Concepts of materials due February 28th 2016. ✓ Conform time plan WP 4 for deliverable 4.2 <p><u>Responsible:</u></p> <ul style="list-style-type: none"> ADELPHI and ESCAN (WP lead)

8. System Approach	<u>Workshop</u>	<u>Workshop</u>
	<p><u>Needed:</u></p> <ul style="list-style-type: none"> ✓ Guideline to assess the 'steam system' in an industrial company as an integral system and not just as loose components in order to optimize the saving potentials of that system. ✓ This asks for a checklist answering e.g. the following (consecutive) questions: <ul style="list-style-type: none"> ▪ Why is steam used (for what purpose)? ▪ How is it used (by what means)? ▪ How is it distributed? ▪ How is it produced? <p><u>Sources:</u></p> <ul style="list-style-type: none"> ✓ Trias Energetica ✓ Knowledge within consortium (Aura, Erik Gudbjerg) 	<p><u>Needed:</u></p> <ul style="list-style-type: none"> ✓ Training Materials on System Approach. <p><u>Sources:</u></p> <ul style="list-style-type: none"> ✓ See column Needed for WP 3
	<u>Implementation</u>	<u>Implementation</u>
	<p><u>Action:</u></p> <ul style="list-style-type: none"> ✓ Incorporate the 'system approach' in the audit methodology. <p><u>Time plan:</u></p> <ul style="list-style-type: none"> ✓ Conform time plan WP 3 for deliverable 3.1 (due April 30th 2016) <p><u>Responsible:</u></p> <ul style="list-style-type: none"> ✓ ENVIROS (WP lead) 	<p><u>Action:</u></p> <ul style="list-style-type: none"> ✓ Develop Training Materials (guidelines, slides, tools, exercise,...) for the trainings on System Approach. <p><u>Time plan:</u></p> <ul style="list-style-type: none"> ✓ Concepts of materials due February 28th 2016. ✓ Conform time plan WP 4 for deliverable 4.2 <p><u>Responsible:</u></p> <ul style="list-style-type: none"> AEA and ESCAN (WP lead)

9. Make it a Process <u>NOT</u> a Project	<u>Workshop</u>	<u>Workshop</u>
	<p><u>Needed:</u></p> <ul style="list-style-type: none"> ✓ Awareness at companies that energy efficiency improving is a continuing process (“It never stops!”) ✓ Ask for a method or means to build this awareness and help to put it into action <p><u>Sources:</u></p> <ul style="list-style-type: none"> ✓ Energy Management Approach like ISO 50001 	<p><u>Needed:</u></p> <ul style="list-style-type: none"> ✓ Training Materials on Structural Attention for Energy Efficiency (Energy Management) <p><u>Sources:</u></p> <ul style="list-style-type: none"> ✓ See column Needed for WP 3
	<u>Implementation</u>	<u>Implementation</u>
	<p><u>Action:</u></p> <ul style="list-style-type: none"> ✓ See item 5. Implementation of Energy Management System <p><u>Time plan:</u></p> <ul style="list-style-type: none"> ✓ Conform time plan WP 3 for deliverable 3.1 (due April 30th 2016) <p><u>Responsible:</u></p> <ul style="list-style-type: none"> ✓ ENVIROS (WP lead) 	<p><u>Action:</u></p> <ul style="list-style-type: none"> ✓ See item 5. Implementation of Energy Management System <p><u>Time plan:</u></p> <ul style="list-style-type: none"> ✓ Concepts of materials due February 28th 2016. ✓ Conform time plan WP 4 for deliverable 4.2 <p><u>Responsible:</u></p> <p>AEA, RVO and ESCAN (WP lead)</p>

Although not listed explicitly in the subjects as described above the subject below were brought up on during the ‘post-it’ session on Thursday October 1st. Therefore they are further elaborated and actions for implementation are planned.

10. Get to know the (complexity of the) organisation and your contact	<u>Workshop</u>	<u>Workshop</u>
	<p>Needed:</p> <ul style="list-style-type: none"> ✓ To get to know the organisation, it's (operational) processes and relevant key players (organisation/management audit). ✓ To get to know your contact in the organisation, it's (formal) role, interest(s) and his/her distance to management. <p>Sources:</p> <ul style="list-style-type: none"> ✓ Contact Person at Enterprise and ask for (in 1st meeting) ✓ The participative model of the EPS with involvement of all relevant stakeholders in (parts) of the audit process. ✓ Literature and open source information on culture (assessment) e.g. <ul style="list-style-type: none"> ▪ http://geert-hofstede.com/organisational-culture-scan-light.html ▪ http://www.sbcm.nl/fileadmin/sbcm_data/producten/creeeren_van_werk/producten/downloads/Quick_Scan_Organisatiecultuur.pdf (in Dutch) ▪ http://sheilamargolis.com/consulting/organizational-culture-change-initiatives/organizational-culture-assessment-questions/ ✓ Ronald Vermeeren has contacts with a consultant on cultural change. 	<p>Needed:</p> <ul style="list-style-type: none"> ✓ Training materials on how to get to know the organisation, your contact(s) and it's relevant key players. <p>Sources:</p> <ul style="list-style-type: none"> ✓ See column Needed for WP 3
	<u>Implementation</u>	<u>Implementation</u>
	<p>Action:</p> <ul style="list-style-type: none"> ✓ Develop guiding (as part of the audit methodology) on how to get to know the organisation (quick-scan) and the position and interest of your contacts. <p>Time plan:</p> <ul style="list-style-type: none"> ✓ Conform time plan WP 3 for deliverable 3.1 (due April 30th 2016) <p>Responsible:</p> <ul style="list-style-type: none"> ✓ ENVIROS (WP lead) 	<p>Action:</p> <ul style="list-style-type: none"> ✓ Develop Training Materials (guidelines, slides, tools, exercise, checklist...) for the trainings on "Getting to know the organisation?" <p>Time plan:</p> <ul style="list-style-type: none"> ✓ Concepts of materials due February 28th 2016. ✓ Conform time plan WP 4 for deliverable 4.2 <p>Responsible:</p> <ul style="list-style-type: none"> ✓ AEA, RVO and ESCAN (WP lead)

11. Focus on the Steam-Up methodology (and concept)	<u>Workshop</u>	<u>Workshop</u>
	<p><u>Needed:</u></p> <ul style="list-style-type: none"> ✓ A proper understanding and clear explanation on the Steam-Up methodology and/or concept <p><u>Sources:</u></p> <ul style="list-style-type: none"> ✓ Annex I of the Grant Agreement: Concept based on: <ul style="list-style-type: none"> ▪ Knowledge ▪ NEBs ▪ Business case ▪ Stake holder involvement ▪ (Energy Management) 	<p><u>Needed:</u></p> <ul style="list-style-type: none"> ✓ Training materials for setting the stage for the Steam-Up concept. <p><u>Sources:</u></p> <ul style="list-style-type: none"> ✓ See column Needed for WP 3
	<u>Implementation</u>	<u>Implementation</u>
	<p><u>Action:</u></p> <ul style="list-style-type: none"> ✓ Develop and introduction to the audit methodology about the Steam-Up concept. <p><u>Time plan:</u></p> <ul style="list-style-type: none"> ✓ Conform time plan WP 3 for deliverable 3.1 (due April 30th 2016) <p><u>Responsible:</u></p> <ul style="list-style-type: none"> ✓ ENVIROS (WP lead) 	<p><u>Action:</u></p> <ul style="list-style-type: none"> ✓ Develop training materials (couple of slides) introducing the Steam-Up concept. <p><u>Time plan:</u></p> <ul style="list-style-type: none"> ✓ Concepts of materials due February 28th 2016. ✓ Conform time plan WP 4 for deliverable 4.2 <p><u>Responsible:</u></p> <ul style="list-style-type: none"> ✓ ESCAN (WP lead)