

# TrainERGY project

## Good practice - Template

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Training for Energy Efficient Operations - TrainERGY



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# 1 Introduction

## 1.1 Good practice definition

*Good practice is a method or technique that has been generally accepted as superior to any alternatives. It has been proven to work well and produce good results<sup>1</sup>.*

## 1.2 Good practice criteria

The following set of criteria will help you to determine whether a practice is a 'good practice':

# 2 Good practice description

*GP has to be related with one of the topics covered during the training (e.g. Green purchasing, Technologies for reducing waste or Green external operations management). If it is possible, you can try to describe the practice that you would recommend to the supply chain analysed using SCEnATi tool.*

*You can use different resources e.g. company websites, business reports, scientific papers, SCEnATi analysis results and your business experience.*

*Try to answer to all below questions and to not exceed 3000 words.*

## 2.1 Objective

*What is the aim/objective of this document?*

To describe the environmental objective and performance indicators to adhere lean principles for the forklift process

*What is the area of a good practice: green purchasing, green marketing or technologies for reducing waste?*

- Technologies for reducing waste

*What is the company (from a case study) for which a good practice is recommended?*

- ALUMIL

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<sup>1</sup> Nash, J. and Ehrenfeld, J., (1997), "Codes of environmental management practice: assessing their potential as a tool for change." Annual Review of Energy and the Environment 22, pp. 487-535; Bretschneider, S., Marc-Aurele, F.J., Jr., and Wu, J. (2005), "Best Practices" Research: A methodological guide for the perplexed, Journal of Public Administration Research and Theory , (15) 2, pp. 307-323.

## 2.2 Introduction

The main ideology of this report is to explain what environmental objectives and environmental key performance indicators are and how they can be used by companies as a performance indicator. Good practice is a method or technique that has been proven to have positive effects compared to alternative solutions and so it is recommended as a model. Companies prefer using environmental objectives and environmental key performance indicators due to their strategic relevance and their effectiveness. Additionally, in this way companies meet environmental, economic and social standards while addressing future needs. It is easy to learn and implement environmental objectives and environmental key performance indicators since technical feasibility are their basis. A participatory approach is always essential as it supports a joint sense of ownership of decisions and actions. Finally, is it easy to adapt them to similar objectives and they contribute in risk management and risk reduction.

The main objective in this case is the description of an environmental key performance indicator tool that will help the chosen company reduce its waste and more specifically its carbon production. By implementing this practice, waste minimization and management there is significant waste reduction and substantial contribution to a more sustainable development. Other objectives that the company will meet are material and disposal costs reduction, competitive advantage increase through differentiation and CSR performance improvement (www.wrap.com, 2017).

Environmental objectives and environmental key performance indicators in general can be carried out in different periods and SCEnATi can be applied in the same timeframe as well. In more detail SCEnATi by mapping and analyzing the supply chain identifies carbon emissions, optimizes economic and energy hotspots and provides solutions for their reduction.

## 2.3 Actors and Stakeholders

As previously discussed, environmental objectives are as the expression suggests *environmentally friendly goals* one wishes to meet in the future, a few examples include: minimizing raw material usage, minimizing the release of contaminants to the environment, using recycled products when feasible etc. Performance indicators on the other hand are a quantified method to evaluate the success of an organization in meeting objectives for performance. Typically speaking, companies alike are encouraged to set environmental objectives and key performance indicators as they are the individuals that undergo procedures that have the potential to be streamlined. It is important to mention that in order for the system to be effective concerning environmental management, environmental objectives and key performance targets need to first be set at a board level which are then strategically integrated into the company in question. First and foremost, in order to enable effective policies, procedures should be both derived as well as driven from management level. To further add, operational objectives are to follow as what businesses undergo on a daily basis may very well have the most potential in causing harm to the environment. Lastly many businesses now incorporate their objectives into marketing processes as well. The question then arises, who benefits from sustainable processes, firstly, the business itself that has adopted to more eco-friendly procedures as they benefit from an enhanced

brand name, they can increase productivity and reduce costs, as well as minimize carbon risk and improve energy efficiency. All business partners/ suppliers and transporters are key actors and stakeholders. Firms are not the only stakeholders that benefit, society as a whole improves as they are living a healthier life, the world also benefits as a result of less damage being done to the environment in which is vital for its own protection (Wrap, 2017; Hourneaux et al, 2013).

## 2.4 Methodological approach



Figure 1: Environmental Performance Index (Yale University, 2017)

In order to achieve the lean process of the design of forklift, Alumil must follow the Environmental Performance Indicators (EPI) that were established by the United Nations in order for companies (within

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their operations & activities) to maintain specific ecosystem viability and ensure environmental health. As a result the figure 1 shows the specific methodology with specific categories in which organizations must apply their operations according to the 20 indicators (Yale University, 2017). The EPI are measured by countries, as a result, ALUMIL activities will be ranked in Greece. For instance, Greece is 23<sup>rd</sup> on a rank of 178 countries (Yale University, 2017).

## 2.5 Validation

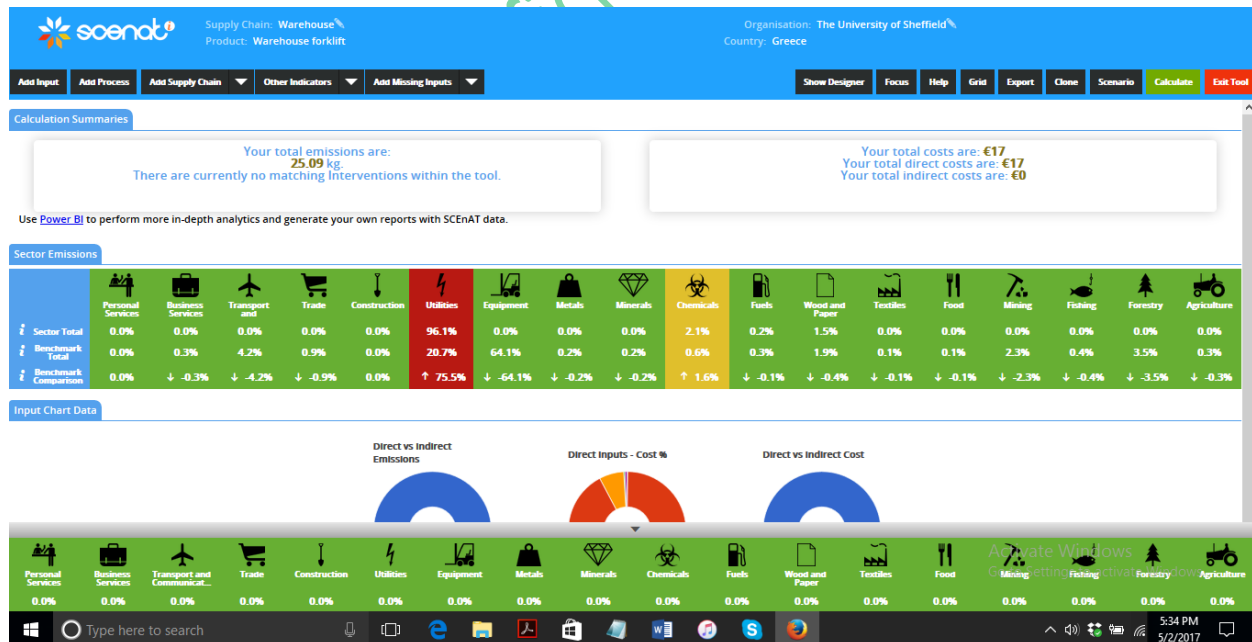
GMP (Good Manufacturing Practice) validation is an element of quality assurance program for a product or process of a company. To ensure that the products or processes are absolutely fit for intended use, the company has to demonstrate in a documented form that the processes, methods, tests, activities and equipment they deploy are capable of repeatedly producing the desired product. Therefore, each critical step in the manufacturing process must be verified to perform as intended under defined conditions (GMP7, 2006).

When referring to the validation, the main objective is to prove through the improvements resulted by applied Lean principles for the re-design of the forklift process in order to enable Environmental performance measurement using the SCEnATi tool, the company, in our case, Alumil is able to produce the same output. Moreover, the cost (emerged from resource efficiency) and CO2 outputs were the key EPIs that you selected as part of the good practice. When benchmarking the performance of Alumil's supply chain in a comparative before-after manner it can be certainly stated that the output didn't change state, when additionally reducing the manufacturing cost of from 32.59kg to 25.09kg and total costs from 21.47 euro to 17 euro ensuring a total absence of indirect costs. Moreover, worth mentioning that the modifications applied to the SC hadn't in any manner and means the intent of altering the outcome. Therefore it can be certainly confirmed that the practice properly addressed view and is valid in terms of the interests of the stakeholders.

Existing Alumil SC benchmark



After re-design





## 2.6 Results/outputs

According to many researches, which have been conducted, the last few years the use of environmental performance indicators can be done in different ways and degrees. Many researches have been handled in order to investigate the advantages of using the environmental performance indicators by firms of all sizes. For instance, large firms will have a higher degree of Environmental Performance Indicators than small firms where the indicators are directly related to production costs (Hourneaux et al, 2013).

The above hypothesis is confirmed by the following variables: Materials, Energy and Water – at a 99% of confidence interval and for two other variables, Emissions, Effluents, Waste and Environmental Aspects of Products and Services, at a 95% of confidence interval. Moreover, environmental performance indicators directly related to production costs have a higher degree of use by firms than others (Hourneaux et al, 2013).

Production Direct Costs – composed by indicators related to Materials, Energy and Water and similar to James (1994) production indicators – were responsible for determining a difference in the use of the EPIs between the two groups of firms, representing 74.50% of the use of the EPIs by the companies surveyed. Our data are based on a specific research with its hypothesis been confirmed at a 95% of confidence interval (Hourneaux, 2014).

## 2.7 Impact

By setting environmental objectives and implementing environmental key performance indicators business can enjoy several benefits. To begin with, businesses can save costs and increase efficiency by waste reduction. Cost savings are mainly identified in the use of raw materials and supplies, reductions in waste, water and energy use and in this case carbon production reduction. Continuing, by reporting on relevant environmental issues in a clear and transparent way customer confidence is improved and the products or services offered are more trust worthy. Moreover, reporting on environmental information can make you a more attractive supplier than your competitors. Reporting on environmental matters has an impact on product and service innovation as well and it helps to secure new markets and customers or safeguard existing ones. Finally applying environmental performance indicators minimize the organisation's impact on the environment and it can reduce the exposure to fines. It can improve relations with regulators and help ensure the company maintains its licence to operate by providing assurances about compliance with environmental legislation and conformity with other relevant laws and regulations (Defra, 2006).

## 2.8 Success factors

According to what they are intended to, environmental performance indicators may have several functions or features. In order to ensure the proper decision-making process, managers base their



decision on environmental performance indicators, which shows an accurate balance between business and environment (EPI) (Bennett and James, 1998). As per Metcalf (1996), EPIs provide the following:

- Allows proper monitoring process in a chosen environmental area in an organization
- Allows to identify environmental areas in which an organization is weak
- Allows the resources distribution in a more efficient manner
- Allows to data collection of the environmental results given by EPI

EPI helps companies to properly analyse their performance and determine if the companies are environmentally friendly and if the operations conform to the regulations. (Young and Welford, 1998). Besides that, EPI is a core practice for companies in order to evaluate their products, services, and activities toward more sustainable operations (Fiksel et al., 1999). However, it is also essential that EPI should be appropriate, simple/easy to understand and firms should be able to easily compare their results with similar competitors (Johnston and Smith, 2001). Finally, EPI is a very important practice that a company should use in order to boost its performance and knowing where the company stands in sustainability.

## 2.9 Constraints

When applying environmental performance indicators transparency comes first since internal processes, systems and procedures are just as important as the quantitative data. A company also has to be accountable to the stakeholders for its behavior. It is essential that any reporting is placed in context, to link the specific impacts and understanding of the company to the wider movement by society to embed the principles of sustainable development.

In addition to these general reporting principles, there are also some common KPI-specific principles. Quantitative KPIs should be measured, and should therefore be quantitative in nature. This means they can be acted upon; for instance, if setting targets to reduce an emission, the effectiveness of environmental policies and management systems can be substantiated. KPIs should also be followed by a general narrative, explaining its purpose and impacts. All relevant information and comparators should be taken into account and progress should be discussed. Finally, all companies should be able to report data in a comparable format, so users of reports can assess the performance of a single company over time and relative to its competitors (Defra, 2006).

## 2.10 Lessons learned

Environmental Key Performance Indicators (KPIs) provide businesses with tools for measurement (for example SCEnATi). They are quantifiable metrics that reflect the environmental performance of a business in order to achieve goals and objectives. KPIs help businesses to implement strategies by linking various levels of an organisation (business units, departments and individuals) with clearly defined targets and benchmarks. The KPIs impact has increased the last years and will continue to do so because poor management of energy, natural resources, waste or carbon directly affect performance.

Governments also expect that businesses use environmental KPIs to adequately capture the link between environmental and financial performance. Other reasons why KPIs are important are to focus on 'key' measures to apply new regulations and to calculate data, such as energy bills.

## 2.11 Sustainability

Much of the environmental sustainability factors regarding the outcome of the re-modelling of the supply chain using the SCEnATi tool are related to energy efficiency based entirely on the good practice ideology of proper EPI monitoring and control for boosting environmental performance. Observing the final benchmarks, the results reflected by the SCEnATi tool present a reduction of energy consumption from an initial value equal to 78% to a value of 75.5%. The aforementioned allows us to reduce the energy consumption in a drastic manner, at the same time allowing the company to be more eco-friendly. Although, it is worth mentioning the slight increase of chemical waste from 0.5% to 1.6% due to the re-design of the forklift process which in a transitive manner involved more wrapping i.e. – the large heavy pallets designed to be lifted by the forklift were “broken” into smaller pallets which make the forklift consume less but which also require more packaging. The environmental impact regarding the aforementioned is easily mitigated in case when the packaging possesses an excellent recyclability attribute.

Performing a cost-to-environmental-sustainability compare analysis, we can observe that the suggested solution has greater effect environmental sustainability rather than cost, but at the same time the values are rather considerable, resulting in a beneficial impact of no lower than 20% for both factors. The decrease in overall emissions results in a 23.01% environmental sustainability boost while the decrease of cost results in a 20.82% revenue increase per product.

## 2.12 Demonstration

There are a number of procedures that are needed in order for a business to demonstrate the potential to ultimately set environmental objectives and key performance indicators. The first step is creating both objectives as well as targets that look at both how a business wishes to perform overall, as well as the decisions it wishes to take in the short term in order to guarantee that the organizations goals are met in the long term. Targets and objectives for the business should be set on an environmental policy, information gained from the initial review as well as the register of legislation. When taking into consideration each objective and target the SMART criteria should be addressed, is the target specific, measurable, achievable, realistic and time- bound? One must identify the department responsible for ensuring goals are met, identify someone to oversee the implementation of changes and make sure targets are met, and ensure that measures taken do not indirectly create another significant environmental aspect. Hence, explained above are simple techniques, which will aid a business into gradually, but successfully implementing environmental objectives and key performance indicators into daily processes (Hourneaux et al, 2013).

## 2.13 Related website(s) / resources

- Bennett m. and James p. (1998) Environment Under the Spotlight: Current Practice and Future Trends in Environment-Related Performance Measurement for Businesses. ACCA, London.
- Defra (2006) Available from: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/69281/pb113\\_21-envkpi-guidelines-060121.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69281/pb113_21-envkpi-guidelines-060121.pdf)
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- GMP7 (2006) GMP Validation. Available from: [http://www.gmp7.com/gmp-validation\\_cm495.html](http://www.gmp7.com/gmp-validation_cm495.html)
- Hourneaux F. et al (2013) The use of environmental performance indicators and size effects; A study of industrial companies. Ecological Indicators
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- Wrap (2017) Available from: <http://www.wrap.org.uk/sites/files/wrap/Waste%20man%20technical1.pdf>
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- Young W. and Welford R. (1998) An environmental performance measurement framework for business. Green Manage.