

Ports Energy and Carbon Savings

Deliverable 1.2.4

Evaluation report of the method

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1. Introduction

Energy audits and carbon footprints are effective methods that can assist facility managers to develop their energy saving plans and to achieve their energy saving and carbon reduction goals.

Evaluation methods are the criteria for evaluating the success of a program or project. In this context, an evaluation method has been applied to investigate the accuracy of the energy audit and carbon footprint methodology for small and medium sized ports. The use of the energy audit and carbon footprint methodology informs the port user or port operating company of their energy consumption and provides data to develop a carbon footprint of their business operation. The evaluation method used allows flexibility to continue improving the energy audit methodology based on user feedback.

A case study of the pilot partner Portsmouth International Port based on the application of the energy audit method and tool is illustrated and validated in deliverables 1.2.1 and 1.2.2. A baseline of energy consumption and greenhouse gas emissions is included in 1.2.3. This report describes the main criteria of evaluation technique of energy audit method, how these criteria are significant to the evaluation method and why the port operating company need to take these findings into consideration.

The goal of this evaluation is to investigate the factors/criteria that have impacted on the use of the method for conducting an energy audit. It also provides some suggestions of how port operating company could improve to data collection in small and medium sized ports.

2. Criteria for a cross-cutting of evaluation methods

There are several factors which have an impact on the evaluation of the energy audit and carbon footprint methodology. The significant criteria which is relevant to the evaluation is as follows:

2.3 Understanding of energy audit method and carbon footprint procedure

Report D1.1.4 presents the methods and protocol for the development of a port energy audit and carbon footprint. The methods presented require input from a range of actors and data sources across the port operation. The testing of the method with a pilot case identified that there are a number of challenges that need to be addressed.

2.1.1. Challenges

- Port operating company and/or port manager(s) the port lack the specialist knowledge of energy audits and carbon footprints, and subsequently, why it is necessary to conduct energy audit. Therefore they may not be able to complete the audit or may provide inaccurate or limited data.
- Port operating company and/or port manager(s) lack the necessary resourcing (human or infrastructure) to complete the audit and carbon footprint.
- Port operating company and/or port manager(s) do not have a full appreciation of the port as a whole. This may arise where the port act solely as a landlord and have limited control or influence over activity occurring within per se. This may result in limited data or missing areas of energy consumption.

2.1.2. Solutions

- Provision of a guidance manual or related document of energy audit and the concept of carbon footprint to all staff and employee who work in port. Including illustrations relevant to all ports of where energy consumption occurs or energy consumption profile.
- Further development of understanding of port operating company and/or port manager(s) through training programmes or consultancy support.
- Ensure integration of energy consumption and carbon reduction as part of the port business strategy, leading to higher priority for completion.

2.2 Usability of energy audit methodology

Ease of use of the method and of data collection are important considerations in the evaluation. Difficulties either applying the method or collecting the data are likely to be key barriers in implementation. The energy audit method was designed for an ease of use with a simple format. However, the port operating company and port entrepreneur can face challenges as follow:

2.2.1 Challenges

- Availability of the data required for collection.
- Not all ports have the same processes and therefore the method is broken down for all areas of energy consumption. This made the document large and daunting for those with little previous experience of audits.

2.2.2 Solutions

- Support for the development of procedures for the collection and management of required data and input.
- The inclusion of an illustration of the scopes of the ports and contents so that users become familiar only with the areas relevant to their port.

- The port operating company needs to communicate and cooperate with technicians or a skilled person who can access to some type of data. For example, people who involves with the cargo handling process could help to provide data information in consistent to in-boundary ground transportation (scope 1).

2.3 Accessibility of data

Data acquisition is primarily concerned with collecting data relevant to where energy consumption takes places (Zhu, 2006). Data access refers to a user's ability to access or retrieve data stored within a database or other repository.

2.3.1 Challenges

- Issues with collection, sharing and storing data includes: availability, confidential, technical level, how accurate of data/information.

2.3.2 Solutions

- The port operating company needs to communicate and cooperate with technicians or a skilled person who can access to some type of data. For example, people who involves with the cargo handling process could help to provide data information in consistent to in-boundary ground transportation (scope 1).
- Clarification is required regarding the safe storage and analysis of the data. More ports are being required to provide the same set of data for national reporting (particularly in Netherlands).
- Ensuring the language is as non-technical (or well explained) as possible and in relevant languages to ports in the 2 Seas area.
- The second year of auditing will be easier than the first as the relevant data and data source is identified.

2.4 Benefits of energy audit methodology

Regarding an understanding of energy audit and carbon footprint concept, the port operating company and port user should recognize an advantage and business application of undertaking an energy audit as well as benefit of estimating their carbon footprint.

2.4.1 Challenges

- Port operating company and employee do not understand the advantage of conducting energy audit tool as well as profitable of estimating carbon footprint.
- Identifying the onward application of the energy audit and requirement to repeat the process to add value to the port operating company.

2.4.2 Solutions

- To educate staff in ports through the energy audit workshop to promote not only the importance of an audit, but also how the result from an energy audit form part of the business of running a successful port.
- To further develop the energy audit tool into a platform or program which becomes more convenience and professional to all port entrepreneur and the audit methodology can be seen as part of the procedure flow.

2.5 Time

Time is one of the important criteria for energy audit process. It is the significant stage at which to conduct the energy audit and the resource available to do so.

2.5.1 Challenges

- Time required for the collection of data.
- Resources available to enable the collection of data.

2.5.2 Solutions

- To provide a proper time for data gathering process as part of a job role within the organisation. The more data port operation company has, the more precisely of result from energy audit (carbon footprint) will be.

3. Conclusion

Energy audit and carbon footprint methods must be effective as they provide the gateway to achieving multiple objectives, including reducing energy consumption, managing costs, and environmental impact. However, developing a methodology for an energy audit is required not only to improve operating performance but also to define a correct path to identify energy saving methods and implement them in a rational way. The energy audit process maybe triggered by a number of factors and needs to consider the full scopes of energy consumption within a port boundary.

The energy audit method was validated with pilot data. Further improvements will be made throughout the PECS project. To ensure the methodology is practicable and acceptable for port operating companies and port managers, it is important to first improve understanding and awareness of the uses of the energy audit outputs. The application of the method to demonstrate energy and carbon savings will help ports understand the benefits of the method. Translations of guidance into various languages would make the method more accessible for those who are new to the methods. Finally, identification of possible measures to reduce energy consumption, and evaluation of these measure on a cost/benefit basis are main outcome from energy audit methodology.

4. References

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