Journal of Cleaner Production 94 (2015) 235–246

Contents lists available at ScienceDirect

Journal of Cleaner Production

journal homepage: www.elsevier.com/locate/jclepro

Review

Type III Environmental Declaration Programmes and harmonization of product category rules: status quo and practical challenges

Nikolay Minkov*, Laura Schneider, Annekatrin Lehmann, Matthias Finkbeiner

Chair of Sustainable Engineering, Department of Environmental Technology, Technische Universität Berlin, Office Z1, Strasse des 17. Juni 135, 10623, Berlin, Germany

ARTICLE INFO

Article history:
Received 29 July 2014
Received in revised form
30 January 2015
Accepted 4 February 2015
Available online 19 February 2015

Keywords:
ISO 14025
Type III environmental programme
Product category rules
Harmonization
Alignment

ABSTRACT

A steady growth of the number of existing Type III environmental programmes (schemes) has been noticed in recent years. Consequently, overlapping and duplication of the product category rules supervised by these programmes is increasing, risking the legitimacy of environmental claims. To overcome these difficulties and challenges, different approaches striving for mutual recognition and harmonization of schemes have been launched, e.g. the Guidance for Product Category Rules Development (the Guidance). Since a proper reflection of these current developments is not yet available, this paper reviews existing Type III programmes and their conformance to ISO 14025. Further, an overview of cooperation approaches and global trends for harmonization of rules is provided, including the latest European product environmental footprint initiative. As a case study, the requirements of the Guidance are tested by aligning them to a set of exemplary product category rules under development. Challenges in both review and alignment processes are described. The results show that out of 39 analysed programmes, over 75% are fully ISO-conformant. Nearly half claim to cover all types of products and services, followed by the "building and construction sector" related schemes that currently reach a share of over 35%, after a steady growth in the last 2–3 years. Concerning the origin of schemes, European based ones are dominating (over 55% of all). The cooperation initiatives analysis outlines that mutual recognition of instructions and rules among operators is becoming a valuable approach to reduce time, costs and duplication of documentation. The development of supplementary guidelines is also considered useful in order to assure harmonization among parties. Finally, the draft category rules alignment test is acknowledged as a challenging, but feasible task. Based on this review, more than 10 areas for improvement of the harmonization level of instructions are identified. The paper provides recommendations for the development of the new ISO/DTS 14027, one of which is the adoption of the Guidance as seed document.

1. Introduction

In this paper, the status quo and practical challenges of Type III Environmental Declaration Programmes and the harmonization of Product Category Rules (PCR) are analysed by a literature review. This analysis tackles the questions, how many Type III programmes actually exist, how they developed over time, what the main divergences among them are and how the harmonization between them could be improved.

Type III environmental declarations (better known as environmental product declarations – EPDs) provide quantified and independently verified environmental information over the life cycle of goods or services (ISO, 2006a; Steen et al., 2008; Zackrisson et al., 2008). EPDs are methodologically based on life cycle assessment (LCA), standardized by ISO 14040 (2006b) and ISO 14044 (2006c) and developed according to a set of pre-defined product category rules. The principles and procedures of EPDs are defined by ISO 14025 (ISO, 2006a).

EPDs should enable comparison between products, fulfilling the same function (Fet and Skaar, 2006; Fet et al., 2009). Their development and use is a voluntary act (ISO, 2006a), nevertheless the demand in recent years has increased (Ingwersen and Stevenson, 2012; Strazza et al., 2010). Subsequently, the number of Type III

* Corresponding author. Tel.: +49 30 314 28 517; fax: +49 30 314 21 720.
E-mail addresses: nikolay.minkov@tu-berlin.de (N. Minkov), laura.schneider@tu-berlin.de (L. Schneider), annekatrin.lehmann@tu-berlin.de (A. Lehmann), matthias.finkbeiner@tu-berlin.de (M. Finkbeiner).

http://dx.doi.org/10.1016/j.jclepro.2015.02.012
0959-6526/

programme operators – the bodies supervising and administrating the development of PCRs and verifying EPDs under a Type III Environmental Declaration Programme (also known as EPD programme or EPD scheme) – has increased too, as they are becoming more known and sought (Del Borghi et al., 2008; Strazza et al., 2013). This demand is observed particularly in the building and construction sector (Braune et al., 2011).

In theory, everyone can become a programme operator (Schmincke and Grahl, 2007), to set their own instructions (defined per ISO 14025 as General Programme Instructions – GPI), to develop PCRs and to verify EPDs. Environmental labels in general (and EPDs in particular) can be used to increase the positive market feedbacks by providing transparent environmental information through LCA (Del Borghi et al., 2014). However, the increasing number of EPD schemes can also lead to trade barriers on the market (Bogeskär et al., 2002; Del Borghi, 2013), due to different requirements. Moreover, in the recent years, PCRs published by different programme operators are increasingly overlapping. This has resulted in inconsistencies of PCRs for the same product categories (Ingwersen and Subramanian, 2014; Ingwersen et al., 2012). The absence of a systematic coordination of PCR development on international level (through e.g. a consistent and properly working global PCR library) leads to difficulties in finding newly published documents. Moreover, comparability between the environmental performance of products lacks significance and bears to risk the legitimacy of LCA-based claims on the market (Ingwersen and Subramanian, 2014). “Similar-but-different” methods for calculating environmental impacts are lately introducing additional confusion among consumers, the majority of who do not trust “green” claims (Galatola and Pant, 2014).

PCRs are sometimes set in a way that allows a wide interpretation of the rules, leading to potential incomparability of EPDs based on the same PCRs (Fantin et al., 2012). This lack of detailed instructions and harmonized methodologies can lead to the creation of competitive advantages and misleading results (Dias and Arroja, 2012), e.g. incomparability, due to favoured results of one of the EPDs. In order to assure the practicability of using EPDs to compare products, harmonization of their development among programmes is needed (Schmincke and Grahl, 2007), which further may promote their global consistency (Ingwersen et al., 2012). This could be achieved by the development of general guidelines for scheme management (Del Borghi, 2013). The Guidance for Product Category Rule Development – GPCRD (2013) is such a new approach, providing a step-by-step guidance for PCR development (Ingwersen and Subramanian, 2014), applicable for all types of products (i.e. goods or services).

The European Commission's Product Environmental Footprint (PEF) is also one of the newest initiatives, responding to the request of the Member States to elaborate an approach for measuring and communicating the environmental performance of products that could be used in EU policies (Galatola and Pant, 2014). PEF proposes a multi-criteria measure for the calculation of the environmental footprint of goods or services (EC, 2013a), followed by a regularly updated guidance for the development of PEF category rules, named PEFCR (EC, 2013b).

Another approach published two years ago is EN 15804 (CEN, 2012), but applying only to the construction sector. Nowadays it is already a proved standard developed to ensure harmonization among EPD for all types of building and construction products by providing the so called “Core PCR” (Erlandsson et al., 2013). Other examples of initiatives striving for harmonization and mutual recognition are discussed further in Section 3 of this paper, including an overview of the scientific publications related to the problem.

Considering the increasing interest of EPDs and the increasing number of newly established schemes and overlapping PCRs, it is necessary to research profoundly on the robustness and applicability of new and existing approaches that strive for global consistency. Furthermore, it is considered that primarily there must be a clear understanding of the current state of all EPD-like schemes, their resemblances and differences in terms of methods used and application purposes. Therefore, in order to analyse the current state and practical challenges in the field, the objective of this paper is trifold (graphically presented in Fig. 1). Firstly, by complementing and updating existing studies, a review of existing EPD-like schemes and operators is conducted, including the analysis of their conformance to ISO 14025. Secondly, the available practices for harmonization are examined. For both, a comprehensive and actual overview is provided. Thirdly, by means of a practical example, a PCR under development is used in order to test the alignment possibilities with the requirements of GPCRD. In parallel, GPIs of the analysed operators are compared with the Guidance, thus listing topics of divergences between them. GPCRD is chosen, since it is an initiative developed with the participation of many PCR practitioners and leading Type III operators, thus considered an accepted and promising approach. Another reason is that it is a newly published document, which has not found much reflection in scientific publications yet. Practical examples can be carried out with other initiatives/requirements as well; however, this is out of the paper's scope.

2. Review of EPD-like programmes

EPD schemes and PCRs development has been a very dynamic field in recent years; one can easily lose track on the developments, and overview studies quickly lose their relevance. Moreover, there are not many EPD-related papers in scientific literature. The latest one – a publication of Hunsager et al. (2014), gives an overview of the state of the art of May 2013 by listing 27 EPD programmes.

Considering the dynamics of the market, an updated analysis complementing existing studies is conducted in this section (presented after in Table 1). Beforehand, the method and criteria for evaluation, as well as the scope of the review are discussed.

2.1. Method and scope of the review

GPI is the fundamental and mandatory document for the operation of every EPD scheme. The obligation of the programme operators to develop such programme instructions is defined by clause 6.4 of ISO (2006a), accompanied with 13 mandatory requirements to be part of the GPIs' content, whereas the requirements for PCR development are defined by clause 6.7 of the same standard. In the present analysis, these two ISO clauses are used as the principle criteria to evaluate all EPD schemes that were preliminary identified through a profound online research. Moreover, the requirements for PCR development of clause 6.7 of ISO together with GPCRD are used as a benchmark regarding the development of more specific guides on PCR elaboration. The main findings of the schemes' comparison and analysis are further presented in Section 4.

Carbon footprinting programmes are not included in this study, as firstly, the subject on “quantification and communication of a carbon footprint of products is still under development” (ISO, 2013) and due to the existence of several competing methodologies that also need harmonization (Soode et al., 2013). Secondly, carbon footprint studies address only one impact category – climate change, which may lead to wrong interpretation of the outcomes (Schmidt, 2009).