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TECHNICAL SPECIFICATION

Environmental Engineering (EE); Simplified Method for including Uncertainty and Sensitivity Aspects in Calculations of the Avoided Environmental Impact of Information and Communication Technology Solutions

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650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B
Association à but non lucratif enregistrée à la
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Contents

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Environmental Engineering (EE).

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Introduction

Investigating the net Environmental Impact (EI) of technologies has become more common. Life Cycle Assessment (LCA) is the preferred quantification methodology however the uncertainty quantification is often not included. This is problematic as the uncertainty determines if conclusions can be drawn. Recently several assessment methods for avoided environmental impact have been proposed [i.1], [i.2], [i.3] and [i.4]. These methods have some commonalities one being the lack of uncertainty and sensitivity quantification methodology [i.5], which might prevent conclusions to be drawn. Attempts to solve these problems have been carried out [i.6].

It is generally accepted that Information and Communication Technology (ICT) is a kind of double-edged sword in this context: more impact for its production, use and disposal, however much less impact when used to address sustainability matters [i.2]. The Rebound Effect (RE) with its uncertainty are not covered by any standard so far.

Simply put the RE is the difference between potential avoided impact and actual avoided impact [i.7]. The relative RE is equal to (potential benefit - actual benefit)/potential benefit [i.7].

The total RE can roughly be divided into the direct RE and the economy-wide RE. The problems addressed are that uncertainty calculations are not systematic in LCA of ICT Services especially including the RE.

The standardization gap is that so far, the uncertainty for avoided EI estimations for ICT has not been included clearly, especially for the intriguing RE. The objective of the present document is to use some existing methods, [i.2] and [i.6], and propose a method which helps assess in a simplified manner the probability that there will be avoided EI resulting from the introduction of ICT Solutions. For the first time, a standard is defined which includes uncertainty and sensitivity calculations to make visible the relation between the degree of simplification and the ability to draw conclusions. The method herein is applicable to net EI LCAs including ICT Services and beyond such as product LCAs.