

TECHNICAL REPORT
RAPPORT TECHNIQUE
TECHNISCHER BERICHT

FINAL DRAFT
FprCEN/TR 17005

April 2016

ICS 91.010.99

English Version

Sustainability of construction works - Additional environmental impact categories and indicators - Background information and possibilities - Evaluation of the possibility of adding environmental impact categories and related indicators and calculation methods for the assessment of the environmental performance of buildings

Indicateurs complémentaires pour la déclaration de la performance environnementale des produits de construction et pour l'évaluation de la performance environnementale des bâtiments

This draft Technical Report is submitted to CEN members for Vote. It has been drawn up by the Technical Committee CEN/TC 350.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a Technical Report. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a Technical Report.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

	Page
European foreword	5
Introduction	6
1 Scope	9
2 The need for additional impact categories	10
2.1 Environmental relevance	10
2.2 Policy relevance	13
2.3 Conclusions	14
3 Evaluation criteria for additional environmental impact categories for CEN/TC 350	15
3.1 Introduction	15
3.1.1 General	15
3.1.2 Criteria related to standardization	15
3.1.3 Criteria related to the LCIA models and indicators	15
3.2 Evaluation framework for additional environmental impact categories for CEN/TC 350	16
3.2.1 General	16
3.2.2 Environmental relevance – Standardization (step 1)	17
3.2.3 Relevance for buildings (step 2a)	18
3.2.4 Relevance for construction products (step 2b)	18
3.2.5 Policy relevance (step 3)	18
3.2.6 Performance based (step 4a)	18
3.2.7 Quantifiable (step 4b)	18
3.2.8 Scientific robustness and certainty (step 5)	19
3.2.9 Applicability of the life cycle impact assessment method/model (step 6)	20
3.2.10 Stakeholder acceptance of the impact assessment model (step 7)	21
3.3 Compliance criteria of the ILCD handbook	21
3.4 Information sources regarding the additional impact categories	21
4 The evaluation of additional impact categories	21
4.1 General	21
4.2 Human toxicity: Cancer and non-cancer effects	22
4.2.1 Description	22
4.2.2 Relevance of human toxicity (step 1+2+3)	25
4.2.3 List of available LCIA methods (step 4)	31
4.2.4 Scientific substantiation of available LCIA methods (step 5)	32
4.2.5 Applicability (step 6)	34
4.2.6 Stakeholder acceptance (step 7)	36
4.2.7 Conclusions on methodology	37
4.2.8 Overall conclusions on human toxicity	39
4.3 Ecotoxicity: Terrestrial, freshwater and marine	40
4.3.1 Description of impact category	40
4.3.2 Relevance of ecotoxicity – standardization (step 1+2+3)	43
4.3.3 List of available LCIA methods (step 4)	45
4.3.4 Scientific substantiation of available LCIA methods (step 5)	46
4.3.5 Applicability (step 6)	49
4.3.6 Stakeholder acceptance (step 7)	52
4.3.7 Conclusions on methodology	52

4.3.8	Overall conclusions on ecotoxicity	55
4.4	Particulate matter formation	55
4.4.1	Description of impact category	55
4.4.2	Relevance of particulate matter formation (step 1+2+3)	61
4.4.3	List of available LCIA methods (step 4)	68
4.4.4	Scientific substantiation of the available LCIA methods (step 5)	71
4.4.5	Applicability (step 6)	74
4.4.6	Stakeholder acceptance (step 7)	76
4.4.7	Conclusions on methodology	76
4.4.8	Overall conclusions on particulate matter	76
4.5	Ionizing radiation: human health and ecosystem health	77
4.5.1	Description	77
4.5.2	Relevance of ionizing radiation (step 1+2+3)	81
4.5.3	List of available LCIA methods (step 4)	87
4.5.4	Scientific substantiation of the available LCIA methods (step 5)	87
4.5.5	Applicability (step 6)	88
4.5.6	Stakeholder acceptance (step 7)	89
4.5.7	Conclusions on methodology	90
4.5.8	Overall conclusions on ionizing radiation	90
4.6	Land use: Occupation and transformation / Biodiversity	91
4.6.1	Description	91
4.6.2	Relevance of land use (step 1+2+3)	95
4.6.3	List of available LCIA methods (step 4)	108
4.6.4	Scientific substantiation of the available LCIA methods (step 5)	109
4.6.5	Applicability (step 6)	113
4.6.6	Stakeholder acceptance (step 7)	117
4.6.7	Conclusions on methodology	117
4.6.8	Overall conclusions on land use	118
4.7	Water scarcity	119
4.7.1	Description	119
4.7.2	Relevance of water scarcity (step 1+2+3)	125
4.7.3	List of available LCIA methods (step 4)	127
4.7.4	Scientific substantiation of the available LCIA methods (step 5)	129
4.7.5	Applicability (step 6)	132
4.7.6	Stakeholder acceptance (step 7)	133
4.7.7	Conclusions on methodology	133
4.7.8	Overall conclusions on water scarcity	134
5	Overview of intermediate non-LCA indicators	135
5.1	General	135
5.2	Land use/biodiversity assessed in BREEAM	135
5.2.1	General	135
5.2.2	Land Use and Biodiversity	136
5.3	DGNB	138
5.3.1	General	138
5.3.2	Land Use and Biodiversity	139
5.4	HQE	140
A	Annex A (informative) Possibilities for uptake in standardization process	142
A.1	Introduction	142
A.2	Structure of the table	142
A.3	Options for uptake of additional impact categories and indicators in standardization	144

Annex B (informative) Recommended methods for life cycle impact assessment within ILCD Handbook.....	148
Annex C (informative) Life cycle impact assessment within the ILCD Handbook	151
Annex D (informative) General criteria and sub-criteria for the analysis of characterization models within ILCD Handbook.....	153
Annex E (informative) Description of the general literature sources consulted.....	156
Annex F (informative) Illustration of land use types in LCIA methods	157
Bibliography	160

European foreword

This document (FprCEN/TR 17005:2016) has been prepared by Technical Committee CEN/TC 350 "Sustainability of construction works", the secretariat of which is held by AFNOR.

This document is currently submitted to the Vote on TR.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.