

# Environmental Product Declaration



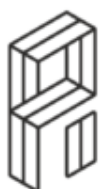
In accordance with ISO 14025 for:

**ERLY<sup>®</sup> (Eco Recycled Leather Yarn)**



From

***ATKO Planning Inc.***



Recycled Leather  
**ATKO PLANNING INC.**

Programme:	The International EPD <sup>®</sup> System, <a href="http://www.environdec.com">www.environdec.com</a>
Programme operator:	EPD International AB
EPD registration number:	S-P-05595
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Valid until:	2027-02-20

**ATKO LEATHER YARN**

ERLY<sup>®</sup> (Eco Recycled Leather Yarn)

## Programme information

<b>Programme:</b>	The International EPD® System  EPD International AB Box 210 60 SE-100 31 Stockholm Sweden  <a href="http://www.environdec.com">www.environdec.com</a> <a href="mailto:info@environdec.com">info@environdec.com</a>
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Product category rules (PCR): <i>PCR 2013:12 Textile yarn and thread of natural fibers, man- made filaments or staple fibers, version 2.1. UN CPC 263 and 264.</i>
PCR review was conducted by: <i>The Technical Committee of the International EPD® System. Review chair: Barbara Nebel Contact via <a href="mailto:info@environdec.com">info@environdec.com</a>.</i>
Independent third-party verification of the declaration and data, according to ISO 14025:2006: <input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification
Third party verifier: Ik Kim, SMaRT-Eco consulting
Approved by: The International EPD® System Technical Committee, supported by the Secretariat
Procedure for follow-up of data during EPD validity involves third party verifier: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programmes may not be comparable.

## Company information

### Owner of the EPD:

- Name: ATKO Planning Inc.
- Phone: +82-02-3409-9657
- Address: 136-31, Manjangan-ro, Gwangtan-myeon, Paju-si, Gyeonggi-do, Republic of Korea
- Contact: Mr. Paul Kim, sales@atkoleather.com

### Description of the company:

ATKO Planning Inc., founded in 2012, in order to develop sustainable leather materials, selected as one of Green New Deal 100 promising companies in South Korea in 2021, is a global recycled leather company which awarded major prize of domestic and international.

By the research on environmental friendly materials based on our long experience, and technical skill in genuine leather industry, we turn leather scrap into leather fiber and have launched products such a world first recycled leather spun yarn(ERLY®), recycled leather textile and recycled leather suede.

ATKO's innovated products were recognized by Premiere Vision where is authoritative and got the grand jury prize in 2019 evaluating 'ATKO Planning has reinvented one of the most universal and symbolic materials of this era'

Due to the growing global demand for eco-friendly products and regulations in the world, eco-friendly products are no longer an option but a necessity. ATKO Planning Inc. provides technology and products suitable for this trend.

All processes that produce our products comply with the process of eliminating water use, do not use additional hazardous substances, and do not use any toxic substances.

Based on unique technology of recycled leather, ATKO Planning Inc. is expanding our business in various fields, and we have already been collaborating with global companies.

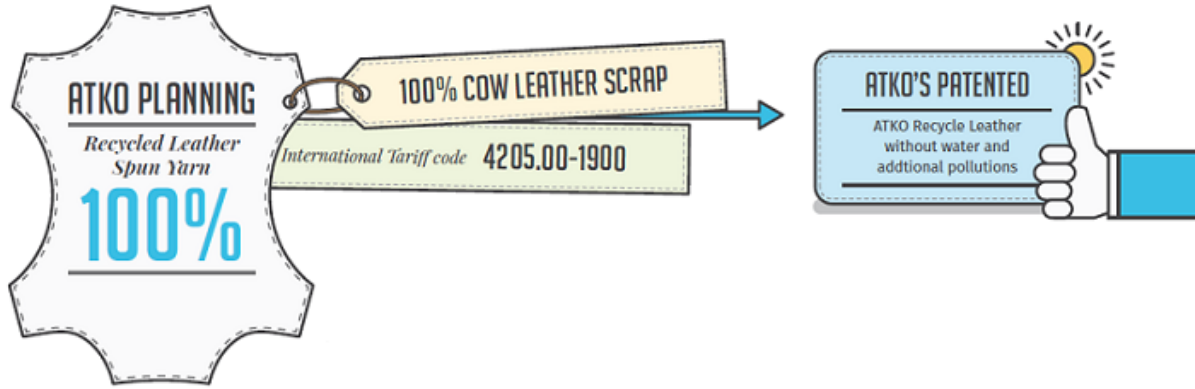
We will be continuously putting efforts into researching technology of recycling leather waste to complete sustainability.

Company's YouTube channel: <https://www.youtube.com/channel/UCNm3F9AMWISFh1r8cu1J9Q>

Product-related or management system-related certifications: ISO 14001, ISO 9001

Name and location of production site: Republic of Korea

- ATKO Planning Paju Plant: 136 -31, Manjangan-ro, Gwangtan-myeon, Paju-si, Gyeonggi-do,
- Gimhae Plant: 263-101, Sangdong-ro, Sangdong-myeon, Gimhae-si, Gyeongsangnam-do
- Yangsan Plant: 225, Chungnyeol-ro, Yangsan-si, Gyeongsangnam-do

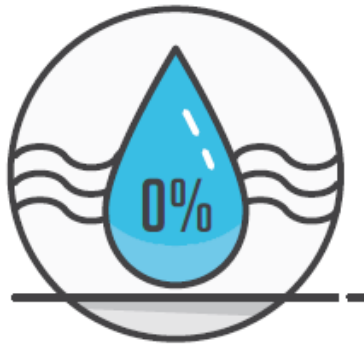


*Recycle*



ATKO recycles pre-consumer leather scrap. ATKO's products can be applied to closed loop. ATKO welcomes to cooperate with company that pursue closed loop.

*Dry process*



ATKO Planning's manufacturing process uses no water.

*Carbon neutral*



Low carbon emission during manufacturing process in ATKO.

*Shape change*



Through recycling process, leather scrap turns to be a leather yarn while maintaining the properties of leather.

*No chemical*



ATKO planning's manufacturing process uses no chemical.

*Patented material*



Recycled leather process is 100% patented.

*Recycled PET*



ATKO planning used recycled PET to produce leather spun yarn. composition (R.lea:R.PET=30%:70% or 51%:49%)

*Warmth | Anti-bacterial*



ATKO leather spun yarn has various characteristics like warmth, and anti-bacterial.

## Product information

Product name: ERLY (Eco-Recycled Leather Yarn)

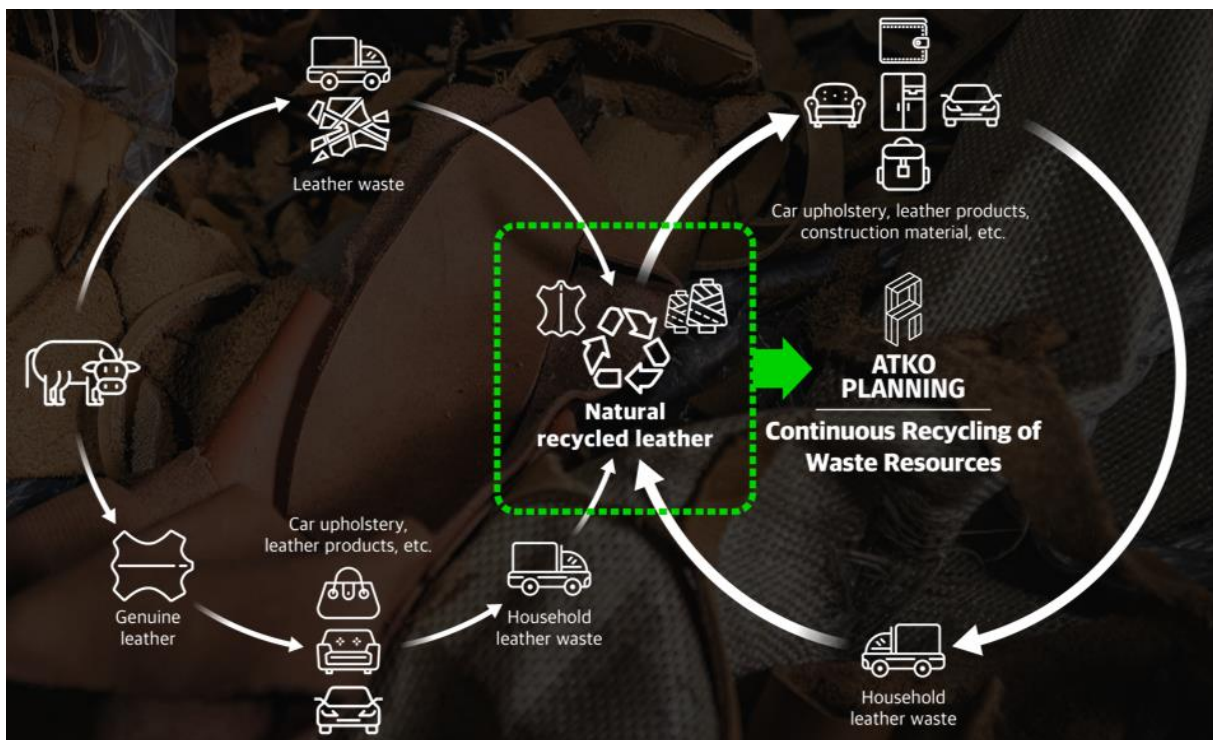
Product identification: 30~50% recycled leather and 50~70% recycled PET (polyester) using ATKO planning's own process of recycling leather.

Product description:

Leather waste accounts for almost 10% of total waste in the world, but leather waste used for recycling only accounts for about 13.7% of the total. Remained about 86% of waste leather contaminates soil and water quality as it doesn't degrade easily in landfills. Even incinerating leather waste is not a sensible option either, as toxic particles are generated during such process.

Under this circumstance, waste of finished leather, estimated 7 million tons, come up every year in the world has had no way to recycle until ATKO Planning Inc. developed new innovative recycled leather. ATKO Planning Inc. invented the world first recycled leather fiber and launched the world first recycled leather spun yarn (ERLY) using recycled leather fiber and recycled PET.

ATKO Planning Inc. closely consider all process of making recycled leather. For making sustainable recycled leather, we have 4 core technical principles. Firstly, we use only cow leather waste as prime material. Only tanneries with LWG silver or gold rate supply leather scrap with ATKO Planning Inc. Through fiberization process, ATKO gets recycled leather fiber. Secondly, no water use. To make recycled leather, if we use water and make wastewater, it makes no sense. ATKO's all processes are designed as dry process to use no water. Thirdly, no toxic substance use. ATKO'S recycled leather spun yarn, ERLY, is not produced by chemical bonding but physical bonding. it means that there is no need to use any additional hazardous substances or toxic substances during process. Lastly, it must be re-recycled. Ultimately, ATKO's goal is to realize the continuous recycling of waste resources.



As ATKO's recycled leather spun yarn is produced with physical bonding only, it can be re-recycled if it can be collected and brought back to ATKO after its life cycle. that's the reason why ATKO strictly keep our principles, no water, no chemical, in spite of lots of difficulites. ATKO has opened a new chapter in the world's recycling industry with unparalleled and innovative technology that takes recycled leather and creates a new form of leather.

- Applications: fabric, garment, bag, footwear, car upholstery, leather products, constrction material
- Color varations: Black, Brown, White(Light Grey) & color covering with PET yarn.
- Characteristics: Inherent characteristics of leather fiber such as superior antibacterial properties.
- Yarn count: 600D (1/15 n/m), 900D (1/10 n/m)
- Functions: Textile, Suede
- Composition: Various composition between leather and polyester is possible. The product of this LCA study and EPD report is based on 50% recycled leather and 50% recycled PET (R-PET).

UN CPC code: 29290 (HS Code 4205.00-1900)

Geographical scope: Global

## ATKO 4000

# ATKO Leather Yarn

**ERLY®**  
600D, 900D

<p>Yarn count (Nm) <b>1/10   900D</b>    <b>1/15   600D</b></p> <hr/> <p>Product Applications</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  Bag         </div> <div style="text-align: center;">  Footwear         </div> <div style="text-align: center;">  Fabric &amp; garment         </div> </div> <hr/> <p>Color</p> <p style="text-align: center;">Black, White, Brown</p> <hr/> <p>Composition</p> <p style="text-align: center;">Recycled Leather    30% 50% Recycled Polyester 70% 50% Higher proportion of leather is possible but not recommended as low productivity and high cost</p> <hr/> <p>Functions</p> <p style="text-align: center;">Textile, Suede</p> <hr/> <p>Property</p> <p style="text-align: center;">Natural leather warmth and Very flexible, Soft, Mid-soft, Hard, Customized possible</p>	 <p>Mixing fiber Leather fiber + Recycled PET</p> <p>Carding</p> <p>Drawing</p> <p>Roving</p> <p>Spinning &amp; Complete</p> <p>Recycled Leather Spun Yarn</p>
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## LCA information

Functional unit / declared unit: 1kg of ERLY

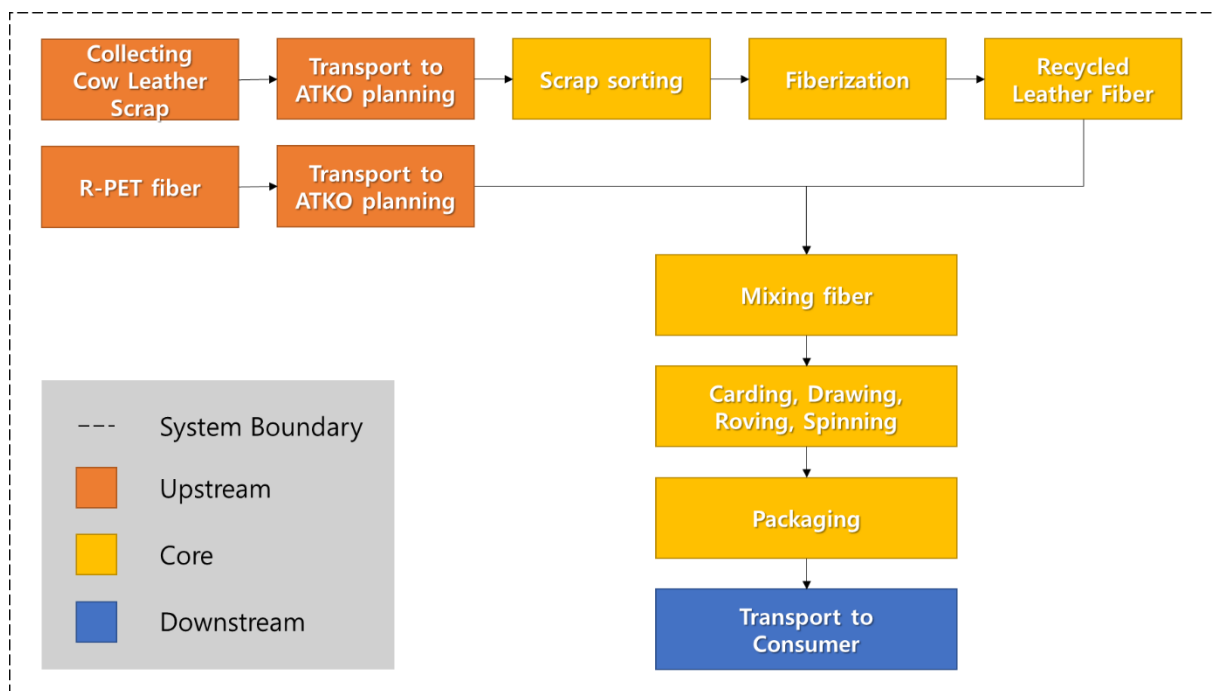
Time representativeness: 2021 (the primary data is from November 2020 to October 2021)

Database(s) and LCA software used: Sphera: Professional DB 2021; Extension database XVII; Full US 2021, Extension database VII: plastics 2021 (Sphera) and Gabi software version 10.0.0.110

Description of system boundaries: Cradle to gate, which include as follows;

- Production of raw materials
- Transport of raw materials
- Production
- Transport of product

System diagram:



- UPSTREAM processes:

- Collecting cow leather scrap from tannery
- Production of R-PET (purchased from other suppliers in Korea)
- Raw materials delivery

- CORE processes:

- Investigation and selection of leather scrap and sorting by colour
- Quality assurance of restricted material (Heavy metal)
- Fiberization of leather scrap
- Collecting leather fiber
- Mixing recycled leather fiber and R-PET fiber
- Carding, Drawing, Roving and Spinning



- Packaging

- DOWNSTREAM processes: Transport to consumer

Excluded life cycle stages: Use phase and end of life is not included following the PCR.

LCA methodology

EF 3.0 method was used for Global Warming Potential and Water Scarcity Potential. CML 2001 baseline method was used for Acidification, Eutrophication, Abiotic Depletion Fossil Fuels and Abiotic Depletion Elements and Photochemical Oxidant Formation potential (POCP).

Cut-off Rules: No Cut-off rule was applied within the LCA study underlying this EPD

Additional Information

It should be noted that ATKO planning does not produce R-PET fiber. R-PET fiber are purchased from other supplier in Korea. The R-PET fiber is made of 100% recycled polyethylene terephthalate (PET). Due to this fact, manufacturing R-PET fiber is included in the upstream processes within the LCA study underlying this EPD.

Data Quality

- Primary data: All the data related to the materials and energy flows is site-specific data (primary data) collected from the actual manufacturing plant.

- Secondary data: The generic data (secondary data) is from available database from Gabi. The production processes including upstream and core process is located in Korea. The Geography of generic data closest to Korea was selected among the data available.

The recycling and manufacturing of R-PET are considered as one of the upstream processes according to the PCR because R-PET fiber is purchased from external suppliers. Therefore, this LCA study used the LCI database for R-PET fiber instead of primary data. Among the available LCI databases, R-PET pellet and PET fiber is selected for the study.

Allocation

- Utility: The utility use from Gimhae and Yangsan plants such as electricity and steam are allocated from yearly total use of each plant.

- By-product: During the fiberization process of leather scrap, filament, staple fiber, and leather particle material (LPM) are produced as output products. The leather filament is a raw material of ERLY and the others, staple fiber and LPM, are by-products. The inputs and outputs of fiberization process are allocated by mass of each product.

Limitations and Assumptions

- External plants: ATKO Planning Paju plant takes charge of the recycling process of leather scrap, fiberization. The Gimhae plant and Yangsan plant are the external plants of outsourcing companies and takes charge of some core processes from fiber mixing to packaging. The primary data from Gimhae and Yangsan plants was collected. The utility data from the external plants is allocated based on the total production amount of the plants and the production amount of ERLY.

- Transport data: In 2021, some of the products were not sold to customers and used to produce own products such as ATKO 5000 and ATKO 6000. The downstream process in the LCA study includes all the transport to external customers and internal production.

## Content declaration

### Product

Materials / chemical substances	% of material weight	% of which recycled	
		PRE consumer share	POST consumer share
Recycled leather fiber	44.25%	100%	0%
Recycled PET fiber	44.25%	0%	100%
Pigments and Dyestuff	<1%	0%	0%
Water	10.5%	0%	0%
Total	100%	100%	100%

The manufacture of ERLY is based on pre-consumer recycled leather and post-consumer recycled PET. ERLY does not include any harmful substances under the European REACH legislation, including the textile relevant and current candidates for SVHC (Substances of Very High Concern) of the candidate list according to STANDARD 100 by OEKO-TEX®, Product Class III, Annex 4.

### Packaging

Distribution packaging: Cardboard bobbins, low-density polyethylene film, silica gel, Carton box



## Environmental performance

### Environmental impacts

PARAMETER		UNIT	Upstream	Core	Downstream	TOTAL
Global warming potential (GWP)	Fossil	kg CO <sub>2</sub> eq.	1.03E+00	3.20E+00	4.11E-02	4.27E+00
	Biogenic	kg CO <sub>2</sub> eq.	6.45E-04	6.54E-03	0.00E+00	7.18E-03
	Land use and land transformation	kg CO <sub>2</sub> eq.	1.76E-04	3.02E-04	0.00E+00	4.78E-04
	TOTAL	kg CO <sub>2</sub> eq.	1.03E+00	3.21E+00	4.11E-02	4.28E+00
Acidification potential (AP)		kg SO <sub>2</sub> eq.	6.61E-03	3.30E-03	1.15E-04	1.00E-02
Eutrophication potential (EP)		kg PO <sub>4</sub> <sup>3-</sup> eq.	7.27E-04	5.67E-04	2.46E-05	1.32E-03
Formation potential of tropospheric ozone (POCP)		kg C <sub>2</sub> H <sub>4</sub> eq.	8.59E-04	3.00E-04	2.30E-06	1.16E-03
Abiotic depletion potential – Elements		kg Sb eq.	2.49E-07	2.44E-07	0.00E+00	4.93E-07
Abiotic depletion potential – Fossil fuels		MJ, net calorific value	1.38E+01	3.75E+01	0.00E+00	5.13E+01
Water scarcity potential		m <sup>3</sup> eq.	-2.14E-01	1.09E-01	0.00E+00	-1.06E-01

### Use of resources

PARAMETER		UNIT	Upstream	Core	Downstream	TOTAL
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	6.79E-01	2.53E+00	0.00E+00	3.21E+00
	Used as raw materials	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	TOTAL	MJ, net calorific value	6.79E-01	2.53E+00	0.00E+00	3.21E+00
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	1.59E+01	5.64E+01	0.00E+00	7.22E+01
	Used as raw materials	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	TOTAL	MJ, net calorific value	1.59E+01	5.64E+01	0.00E+00	7.22E+01
Secondary material		kg	8.95E-01	0.00E+00	0.00E+00	8.95E-01
Renewable secondary fuels		MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable secondary fuels		MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water		m <sup>3</sup>	-4.39E-03	9.72E-02	0.00E+00	9.28E-02

## Waste production and output flows

### Waste production

PARAMETER	UNIT	Upstream	Core	Downstream	TOTAL
Hazardous waste disposed	kg	-3.68E-11	3.93E-09	0.00E+00	3.89E-09
Non-hazardous waste disposed	kg	2.42E-02	1.48E-02	0.00E+00	3.90E-02
Radioactive waste disposed	kg	2.09E-04	7.35E-03	0.00E+00	7.56E-03

### Output flows

PARAMETER	UNIT	Upstream	Core	Downstream	TOTAL
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for energy recovery	kg	0.00E+00	9.17E-01	0.00E+00	9.17E-01
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00

## References

ATKO planning inc., <http://atkoleather.com/>

Ecoinvent, Ecoinvent Centre, [www.ecoinvent.org](http://www.ecoinvent.org)

SimaPro, SimaPro LCA Software, Pré Consultants, the Netherlands, [www.pre-sustainability.com](http://www.pre-sustainability.com)

The International EPD® System, The International EPD® System is a programme for type III environmental declarations, maintaining a system to verify and register EPD®s as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025, [www.environdec.com](http://www.environdec.com)

GPI, General Programme Instructions of the International EPD® System. Version 3.0.

PCR 2013:12, Textile Yarn and Thread of Natural Fibers, Man-made Filaments or Staple Fibers. 2.1  
2019-01-08

ISO 14025:2009-11: Environmental labels and declarations - Type III environmental declarations — Principles and procedures

EN ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework (ISO 14040:2006) and Requirements and guidelines (ISO 14044:2006)

