LINCORA LOCKERS

Lockers
Series 50 and Tactical

LINCORA

ENVIRONMENTAL PRODUCT DECLARATION

ISO 14025:2006 and ISO 21930:2017

LINCORA is pleased to present this Environmental Product Declaration (EPD) for their lokers. This EPD was developed in compliance with ISO 14025 and ISO 21930 and has been verified by ASTM International.

The LCA and the EPD were prepared by Vertima Inc. The EPD includes cradle-to-grave life cycle assessment (LCA) results.

For more information about LINCORA, visit https://www.lincora.com/

For any explanatory material regarding this EPD, please contact the program operator.

1. GENERAL INFORMATION

PCR GENERAL INFORMATION	
Reference PCR	EPD-NORGE, NPCR PART A: Construction products and services, v2.0, Issue date: 24.03.2021, Valid to: 24.03.2026 EPD-NORGE, NPCR 026 Part B for Furniture and components of furniture, sections applicable to indoor storage, (references to EN 15804+A2), v3.0, Issue date: 08.10.2024, Valid to: 08.10.2027
The PCR review was conducted by:	Norwegian EPD Foundation, Technical committee

EPD GENERAL INFORMATION		
Program Operator	ASTM 100 Barr Harbor Drive, West Conshohocken, PA 19428 US www.astm.org	
Declared Product(s)	**Series 50 locker** **Tactical locker**	
EPD Registration Number EPD 868	**EPD Date of Issue** April 2025	**EPD Period of Validity** 5 years
EPD Recipient Organization	Lincora 6265, rue Notre Dame E, Montréal (Québec) H1N 2E9 Canada www.lincora.com	

EPD Type/Scope and Declared Unit	**Year of Reported Manufacturer Primary Data**
Product specific cradle-to-grave EPD with functional unit of one (1) indoor storage unit in use for 15 years.	2022

Geographical Scope	**LCA Software**	**LCI Databases**	**LCIA Methodology**
North America	OpenLCA v.2.1.1	Ecoinvent v3.9.1 and US LCI	EN 15804+A2, TRACI 2.1, CED (LVH) v1.0

This LCA and EPD were prepared by:	Vertima Inc. www.vertima.ca
This EPD and LCA were independently verified in accordance with ISO 14025:2006, ISO 14040:2006 and ISO 14044:2006, as well as ISO 21930:2017, which is the core PCR. ☐ Internal ☒ External	Lindita Bushi Lindita Bushi, Ph.D. Athena Sustainable Material Institute

LIMITATIONS

Environmental declarations within the same product category but from different programs may not be comparable. [1]

2. PRODUCT SYSTEM DESCRIPTION

Lincora is a Canadian manufacturing company of steel lockers for multiple applications such as schools, hallways, first responders, military and other use. Its manufacturing facility is based in Montréal, Québec (Canada). Since 1975, Lincora designs and manufacture premium all-welded standard and custom lockers. Thanks to its Configurator, clients can: (1) Imagine and create the locker that will meet all the users' storage requirements, (2) adapt the locker to the space, and not the other way around, and (3) adjust the dimensions, if necessary, during the construction of the project.

2.1. PRODUCT DESCRIPTION

Lincora offers a wide range of lockers. Stylish and reliable, Lincora steel lockers are made to last in any type of environment. The dimensions, levels of robustness of the enclosure and doors, as well as the types of steels used and the options available, are individually adjustable to meet the needs of the users.

Main characteristics of the lockers are:

- Premium quality cold rolled standard steel ASTM A366 with no surface imperfections, fully welded, non-riveted and finished with powder coat paint.
- Fully adjustable dimensions and up to 1/8 of an inch (3,18 mm) incremental.
- From 1 to 6 compartments per column.
- From 1 to 3 columns per unit.

This study covers the following categories of lockers, as well as their customisation:

- Series 50: Lockers from series 50 to 56 are included in this group. For these lockers, the dimensions, the number of columns and doors per locker, the frame and door strength level, the types of steel used, and the hardware options are all individually customizable to meet the end-users needs. In this EPD, the default locker of the series 50 is a locker with three columns and three doors.
- Tactical: The design and configuration of the tactical storage locker depends on the nature, quantity, and size of the equipment to store. It features the following characteristics: Integrated storage drawer for bullet-proof jacket, lockable firearm storage, shoe storage, individual lockable compartments in the top part of the locker and coat rod with integrated separations.

Tactical locker comes with or without an integrated bench. In this EPD, both options are presented.

Lincora's lockers commercial names

Category	Commercial names
Series 50	Series 50, 52, 53, 56
Tactical	Tactical Tactical with bench

2.2. MATERIAL COMPOSITION

Materials	Composition per functional unit (%)		
	Series 50	Tactical (without bench)	Tactical with bench
Steel	92,7%	92,7%	81,8%
Paint	1,9%	1,9%	1,9%
Hardware	5,4%	5,4%	5,4%
Wood	0,0%	0,0%	10,9%
TOTAL	**100,0%**	**100,0%**	**100,0%**

The recycled content of the lockers is 26% and 23% for the Tactical with bench. The average product is calculated based on 2022 annual production data (on mass) of all the lockers manufactured on site and their composition.

For specific properties and performance data, please consult the following link: www.lincora.com.

2.3. PACKAGING

Lockers are packaged with carboard, polyethylene film, steel straps, nylon straps and wood pallets. Wood pallets, steel straps and cardboard are considered 100% recycled whereas plastic is sent to landfill via a dump truck.

3. LCA CALCULATION RULES

3.1. FUNCTIONAL UNIT

The selected functional unit (DU) for this study is **one (1) storage unit in use for 15 years[1].**

Item	Series 50	Tactical (without bench)	Tactical with bench
Dimension : height, length, depth (mm)	1829 x 762 x 457	1828 x 686 x 610	2057 x 686 x 610
Volume (m^3)	0,64	0,76	0,86
Configuration	3 columns and 3 doors	1 column and 1 door, drawer	1 column and 1 door, drawer, bench
Mass (kg)	73,9	100,1	107,9

[1]In accordance with the PCR, a service life of 15 years is required, equivalent to the estimated service life. When installed under suitable conditions, Lincora's lockers surpass this requirement, with data showing that some products have remained in use for over 30 years while continuing to perform exceptionally well.
A complete list of certifications and approvals can be found in the product brochures and documentation, available at https://www.lincora.com/documents/.

3.2. PRODUCTION AVERAGE

The average product for each category is calculated based on 2022 annual production data (on mass) of all the lockers manufactured on site and their composition.

3.3. SYSTEM BOUNDARIES

The system boundaries are **cradle-to-grave**, i.e., cover all the following life cycle stages, as illustrated in Table 1: Raw materials extraction (A1), Transport to factory (A2), Product manufacturing (A3), Transport to site (A4), Installation (A5), Use stage (B1 to B7), End-of-life (C1 to C4) and Module D. **Table 1** presents the stages included in the system boundaries and Figure 1 presents the process flow diagram for the lockers under study.

Table 1: Description of the system boundary life cycle stages and related information modules

PRODUCTION STAGE			CONSTRUC-TION PROCESS STAGE		USE STAGE							END-OF-LIFE STAGE				Module D
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Raw material supply	Transport	Manufacturing	Product distribution	Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Deconstruction	Transport	Waste	Disposal	Benefits and burdens beyond the system
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Key: X = included; MND = module not declared (excluded)

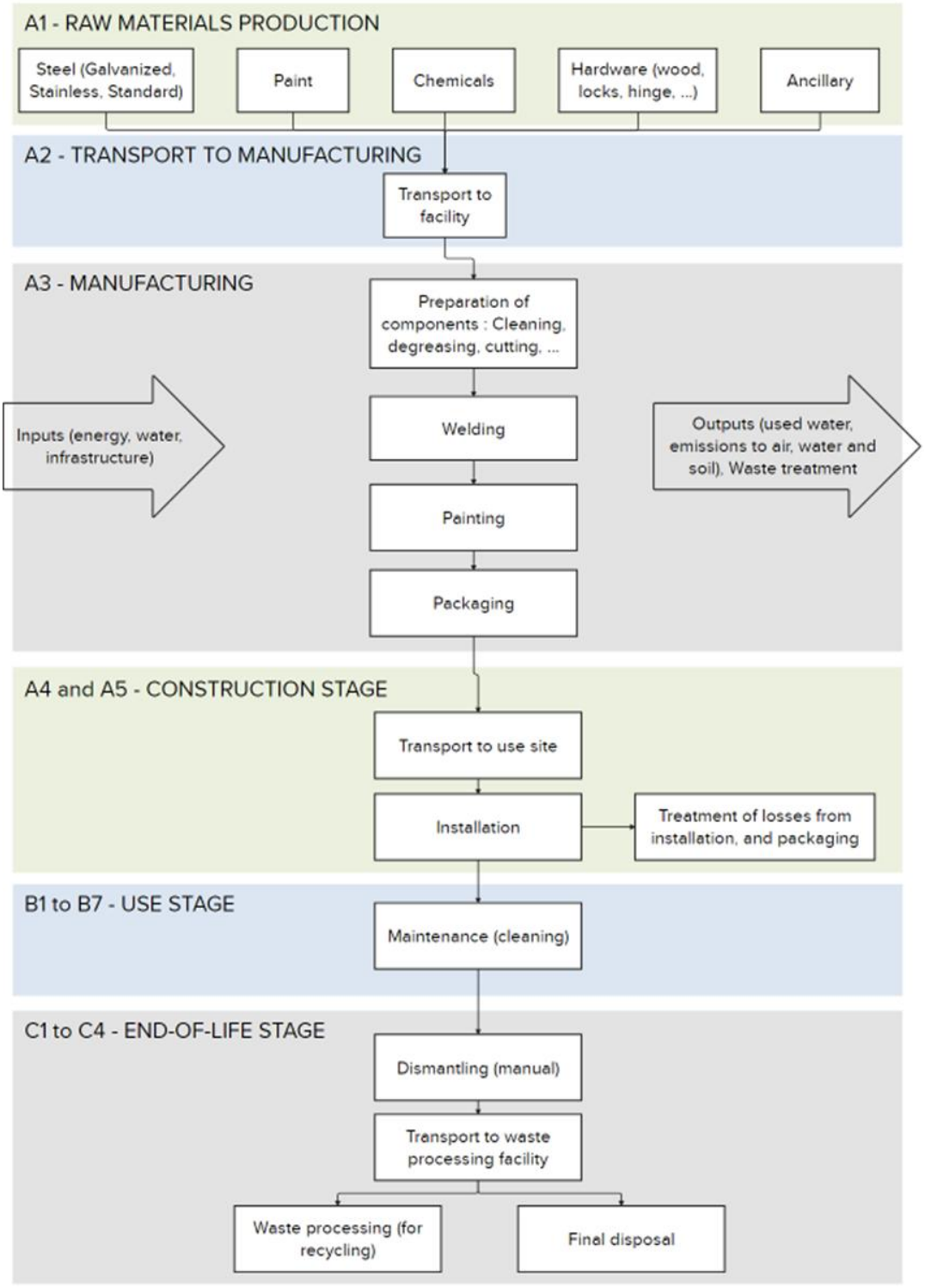


Figure 1: System boundaries of cradle-to-grave LCA of Lincora's lockers.

Life Cycle Stages

Raw materials extraction (module A1): This life cycle stage includes the extraction and transformation of raw materials included in the lockers: steel, hardware, paint, and wood.

Transport to factory (module A2): This life cycle stage includes all transport of raw materials from Lincora's suppliers to Lincora's plant, mostly by truck.

Manufacturing (module A3): This life cycle stage includes energy (electricity and natural gas), water consumption and wastewater treatment, packaging materials to make lockers ready for shipment, emissions to air and water, and waste treatment of waste generated during the manufacturing process. The distance to the waste management facility is 32 km, as per the US EPA WARM model [13].

Product distribution and installation (modules A4 and A5): This life cycle stage includes the transport of the lockers by truck to the clients in North America. Destinations are known by region/province and are representative of 2022 shipments. Lockers are installed using tools common to everyday practice and installation was excluded from this study. A5 includes the wastage of the used packaging and its transport to the disposal site.

Use stage (B1 to B7): The lockers are not electrically connected, and no energy or water is required for the use phase of the product (B1), and no maintenance is necessary for it to function. As per the PCR, it is assumed that there is no need for repair, replacement or refurbishment during the lifespan of the products considered in this study (modules B3 to B5). Additionally, there is no operational energy or water use associated with the lockers (modules B6 and B7).

As for maintenance of the lockers (B2), as mentioned by PCR, it was considered that lockers should be cleaned. Based on an EPD for similar products[1], it was assumed that 1 l of tap water and 5 g of soap per product and per year are needed.

End-of-life stage (C1 to C4): This life cycle stage includes transport of the lockers to their end-of-life processing facilities and their final disposal. The product is assumed to be dismantled manually and transported to a waste management center. Waste treatment of lockers materials is based on the American Iron and Steel Institute, recycling rates of steel-based appliances, 10 years average (2012-2019). Namely, the recycling rate of metal parts (steel frame and aluminium hardware) is assumed to be 78%, while it is 0% for other parts. The distance to the waste management facility is 32 km [13].

Module D: As 78% of the lockers are assumed to be recycled, results of module D have been calculated as the difference between recycling components exiting the system and recycled content entering the system.

3.4. CUT-OFF CRITERIA

In this EPD, no flows were excluded. It should be noted that no data on the manufacturing of production equipment, buildings and other capital goods, daily transport of the employees, office work, business trips and other activities from Lincora's employees were included in the model. The model only considers the processes associated with infrastructure that are already included in the ecoinvent unit processes.

[1] EPD available here :
https://cdn3.evostore.io/documents/bisley_uk/s_p_01615_epd_bisley_monobloctm_and_clk_lockers.pdf

3.5. ALLOCATION

ISO 14040 allocation procedure states that whenever possible, allocation should be avoided by collecting data related to the process under study or by expanding the product system. According to ISO 14040, step 2 consists of partitioning the inputs and outputs between the different products in a way that reflects the physical relationship between them.

For this LCA, data were provided for the whole year and all the products, consequently no allocation was needed to perform this LCA.

For re-use, recycling, and recovery, the system boundaries were defined at the point where waste reaches its end state and is ready for its next use. In other words, a cut-off approach was employed, as further processing of the recycled material is considered part of raw material preparation for another product system (open loop recycling).

3.6. DISCLAIMERS TO THE ENVIRONEMENTAL INDICATORS

As per PCR, the following disclaimers apply to the environmental indicators (EN15804+A2) reported in the EPD.

Impact category indicators	Disclaimer
Global warming potential (GWP)	none
Depletion potential of the stratospheric ozone layer (ODP)	none
Potential incidence of disease due to PM emissions (PM)	none
Acidification potential, Accumulated Exceedance (AP)	none
Eutrophication potential, Fraction of nutrients reaching freshwater end compartment (EP-freshwater)	none
Eutrophication potential, Fraction of nutrients reaching marine end compartment (EP-marine)	none
Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	none
Formation potential of tropospheric ozone (POCP)	none
Potential Human exposure efficiency relative to U235 (IRP)	1
Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	2
Abiotic depletion potential for fossil resources (ADP-fossil)	2
Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	2
Potential Comparative Toxic Unit for ecosystems (ETP-fw)	2
Potential Comparative Toxic Unit for humans (HTP-c)	2
Potential Comparative Toxic Unit for humans (HTP-nc)	2
Potential Soil quality index (SQP)	2
Disclaimer 1 – This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator	
Disclaimer 2 – The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator	

3.7. DATA SOURCES AND QUALITY REQUIREMENTS

Data Quality Parameter	Data Quality Discussion
Source of manufacturing data: Description of sources of data	Manufacturing data was collected from one manufacturing plant located in Montréal, Québec, for the 2022 production year. This data included: total annual mass of products produced at the manufacturing plant: specific product composition; raw materials and fuels entering the product production process; transport distance of materials, fuels and electricity consumption, water consumption, and packaging. Fuel energy content (LHV) were provided by the ecoinvent process database. Emissions to air from the industrial process were estimated with an ecoinvent process. A sensitivity analysis was performed on the data used for air emissions. The assumptions used in this analysis were deemed relevant and were therefore retained in the base scenario for the study's results.
Source of secondary data: Description of sources of raw material, energy source, transport, waste and packaging data	Data used for raw materials was taken from ecoinvent. In priority, background data was taken from ecoinvent 3.9.1 “cut-off” datasets representative of the Canada or North America. When appropriate, the grid mix was changed for the grid mix of the province or country where production takes place. Otherwise, ecoinvent data representative of the global market or the “rest-of-the-world” was selected as proxies. Transport and galvanized steel data were taken from the US LCI [11] database, which is specific to a North American context.
Geographical representativeness	The manufacturing facility is based in Québec province; hence electricity consumption is based on the Québec grid mix and natural gas consumption from the CA-QC supply. Geographical correlation of the material supply and the selected datasets are largely representative of the same area. When this was not possible, datasets representing a larger geographical area were used.
Temporal representativeness	Primary data was collected to be representative of the full year (2022). Datasets selected were not always published within the last ten years. Nevertheless, ecoinvent and US LCI remain the reference LCI databases.
Technological representativeness	Primary data, obtained from the manufacturer, is representative of the current technologies and materials used by this company.
Completeness	All relevant process steps were considered and modeled to satisfy the goal and scope. Cut-off criteria were respected.

4. LIFE CYCLE ASSESSMENT RESULTS

4.1. RESULTS TABLES

Results are presented for **one (1) storage unit in use for 15 years.** It should be noted that Life Cycle Impact Assessment (LCIA) results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

Results are presented for environmental indicators EN15804+A2, TRACI 2.1, resource use and output flows and waste generated.

The following pages display the tables of results as follow:

- LCIA results, Resource use and Output flows and waste for *SERIES 50*
- LCIA results, Resource use and Output flows and waste for *TACTICAL WITHOUT BENCH*
- LCIA results, Resource use and Output flows and waste for *TACTICAL WITH BENCH*

LCIA results for *SERIES 50* produced by Lincora (EN15804+A2)

Indicator	Unit	A1	A2	A3	A1 - A3	A4	A5	B1 & B3-B7	B2	C1	C2	C3	C4	D
AP	mol H+ eq	9,91E-01	1,50E-04	3,52E-01	1,34E+00	4,35E-02	1,60E-04	0	1,66E-03	0	3,70E-03	1,61E-02	9,60E-04	-1,08E-01
GWP-total	kg CO2 eq	2,61E+02	3,58E-02	1,02E+02	3,63E+02	9,42E+00	3,20E-01	0	2,02E-01	0	7,82E-01	1,46E+00	1,35E-01	-2,88E+01
GWP-biog.	kg CO2 eq	2,99E+00	7,38E-06	-1,67E-01	2,82E+00	1,03E-01	5,99E-06	0	-1,89E-01	0	8,46E-03	-2,37E-02	4,00E-04	1,63E-01
GWP-fossil	kg CO2 eq	2,57E+02	3,58E-02	1,01E+02	3,59E+02	9,31E+00	3,20E-01	0	1,51E-01	0	7,74E-01	1,48E+00	1,34E-01	-2,90E+01
GWP-luluc	kg CO2 eq	3,41E-01	2,77E-06	7,64E-01	1,11E+00	1,94E-03	1,44E-06	0	2,39E-01	0	1,60E-04	2,11E-03	8,20E-05	3,98E-03
ETP-fw	CTUe	6,29E+03	3,55E-01	1,87E+03	8,16E+03	2,73E+02	4,22E+00	0	4,65E+01	0	2,25E+01	7,37E+01	7,34E+00	7,74E+02
EP-fw	kg P eq	7,41E-02	4,89E-07	3,25E-02	1,07E-01	1,41E-05	3,73E-07	0	2,64E-03	0	1,16E-06	8,50E-04	1,68E-05	-1,38E-02
EP-m	kg N eq	-4,57E-02	6,21E-05	9,04E-02	4,47E-02	1,89E-02	3,20E-04	0	2,05E-03	0	1,62E-03	3,76E-03	3,60E-04	-1,67E-02
EP-t	mol N eq	2,24E+00	6,70E-04	7,66E-01	3,01E+00	2,08E-01	8,90E-04	0	6,12E-03	0	1,78E-02	4,20E-02	3,91E-03	-2,89E-01
HTP-c	CTUh	1,65E-06	4,03E-12	3,63E-08	1,69E-06	2,22E-10	7,84E-10	0	4,01E-10	0	1,83E-11	2,43E-09	6,68E-11	3,11E-07
HTP-nc	CTUh	7,45E-06	4,35E-10	1,48E-06	8,93E-06	3,05E-07	3,92E-09	0	1,93E-08	0	2,84E-08	1,06E-07	1,55E-09	4,22E-06
IRP	kBq U-235 eq	6,17E+00	1,50E-04	1,04E+01	1,65E+01	7,90E-04	4,89E-05	0	8,22E-03	0	6,51E-05	1,55E-01	2,45E-03	3,98E-01
SQP	Pt	6,55E+02	2,98E-02	3,25E+02	9,80E+02	3,09E-01	1,16E-01	0	2,56E+01	0	2,55E-02	4,06E+01	6,59E+00	-1,20E+02
ODP	kg CFC11 eq	3,27E-06	5,50E-10	6,65E-07	3,94E-06	3,09E-08	8,79E-11	0	7,68E-09	0	2,54E-09	2,28E-08	3,54E-09	-8,81E-07
PM	disease inc.	1,39E-05	3,13E-10	3,16E-06	1,71E-05	4,28E-07	1,40E-07	0	2,58E-08	0	3,70E-08	2,11E-07	2,03E-08	-1,31E-06
POCP	kg NMVOC eq	9,81E-01	2,10E-04	2,63E-01	1,24E+00	6,21E-02	3,70E-04	0	1,02E-03	0	5,43E-03	1,26E-02	1,35E-03	-1,71E-01
ADPF	MJ	1,95E+03	4,66E-01	1,33E+03	3,28E+03	1,32E+02	4,71E-02	0	1,52E+00	0	1,09E+01	1,95E+01	3,10E+00	-2,39E+02
ADPE	kg Sb eq	1,40E-03	7,06E-09	1,60E-04	1,56E-03	6,18E-08	7,97E-09	0	1,44E-06	0	5,10E-09	8,86E-05	2,01E-07	-4,60E-04
WDP	m3 depriv.	3,98E+01	7,90E-04	1,06E+02	1,46E+02	6,45E-02	1,97E-03	0	2,98E-01	0	5,31E-03	3,78E-01	1,37E-01	-3,87E+01

AP: Acidification; **GWP-total**: Climate change; **GWP-biogenic**: Climate change - Biogenic; **GWP-fossil**: Climate change - Fossil; **GWP-luluc**: Climate change - Land use and Land use change; **Ecotox-fw**: Ecotoxicity, freshwater; **EP-fw**: Eutrophication, freshwater; **EP-m**: Eutrophication, marine; **EP-t:** Eutrophication, terrestrial; **HT-c**: Human toxicity, cancer; **HT-nc**: Human toxicity, non-cancer; **Ion**.: Ionizing radiation; **Land**: Land use; **ODP**: Ozone depletion; **PM**: Particulate matter; **POCP**: Photochemical ozone formation; **ADF-f**: Resource use, fossils; **ADP-m**: Resource use, minerals and metals; **WDP**: Water use.

LCIA results for *SERIES 50* produced by Lincora (TRACI 2.1 and AR5)

Indicator	Unit	A1	A2	A3	A1 - A3	A4	A5	B1 & B3-B7	B2	C1	C2	C3	C4	D
GWP_{100}-AR5	kg CO_2 eq.	2,53E+02	3,51E-02	9,95E+01	3,52E+02	9,44E+00	3,04E-01	0	4,00E-01	0	7,80E-01	1,44E+00	1,29E-01	-2,70E+01
GWP_{100}-AR4	kg CO_2 eq.	2,50E+02	3,47E-02	9,76E+01	3,47E+02	9,40E+00	2,95E-01	0	4,00E-01	0	7,77E-01	1,43E+00	1,26E-01	-2,64E+01
AP	kg SO2 eq.	8,44E-01	1,40E-04	3,06E-01	1,15E+00	7,60E-02	3,10E-04	0	1,25E-03	0	6,55E-03	1,40E-02	2,81E-03	-9,25E-02
EP	kg N eq.	3,98E-01	1,47E-05	2,78E-01	6,77E-01	5,76E-03	1,62E-02	0	3,32E-02	0	4,90E-04	7,23E-03	2,00E-04	-6,25E-02
ODP	kg CFC-11 eq.	4,33E-06	5,84E-10	1,00E-06	5,34E-06	3,20E-08	9,45E-11	0	8,46E-09	0	2,64E-09	2,60E-08	3,83E-09	-1,24E-06
SFP	kg O_3 eq.	1,27E+01	3,87E-03	5,07E+00	1,77E+01	2,07E+00	5,25E-03	0	1,47E-02	0	1,79E-01	2,30E-01	2,26E-02	-1,60E+00
FFD	MJ Surplus	1,48E+02	6,61E-02	1,15E+02	2,63E+02	1,84E+01	6,07E-03	0	1,37E-01	0	1,51E+00	1,95E+00	4,19E-01	-3,81E+00

GWP: Global Warming Potential; **AP**: Acidification Potential; **EP**: Eutrophication Potential; **ODP**: Ozone Layer Depletion Potential; **SFP**: Smog Formation Potential; **FFD**: Fossil Fuel Depletion Potential.

Resource use for *SERIES 50* produced by Lincora

Indicator	Unit	A1	A2	A3	A1 - A3	A4	A5	B1 & B3-B7	B2	C1	C2	C3	C4	D
PERE	MJ, LHV	1,78E+02	1,51E-03	3,34E+02	5,12E+02	2,43E-01	8,30E-04	0	6,88E+00	0	2,00E-02	3,02E+00	3,27E-02	-3,84E+01
PERM	MJ, LHV	0	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ, LHV	1,78E+02	1,51E-03	3,34E+02	5,12E+02	2,43E-01	8,30E-04	0	6,88E+00	0	2,00E-02	3,02E+00	3,27E-02	-3,84E+01
PENRE	MJ, LHV	2,37E+03	4,36E-01	6,91E+02	3,06E+03	1,26E+02	3,60E-02	0	1,39E+00	0	1,04E+01	1,66E+01	2,83E+00	-2,33E+02
PENRM	MJ, LHV	0	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ, LHV	2,37E+03	4,36E-01	6,91E+02	3,06E+03	1,26E+02	3,60E-02	0	1,39E+00	0	1,04E+01	1,66E+01	2,83E+00	-2,33E+02
SM	MJ, LHV	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ, LHV	0	0	0	0	0	0	0	0		0	0	0	0
NRSF	MJ, LHV	0	0	0	0	0	0	0	0		0	0	0	0
FW	m^3	1,04E+00	1,92E-05	2,57E+00	3,61E+00	1,55E-03	4,63E-05	0	7,00E-03		1,30E-04	9,49E-03	3,21E-03	-9,44E-01

PERE: Renewable Primary Resources Used as Energy Carrier (Fuel); **PERM**: Renewable Primary Resources with Energy Content Used as Material; **PERT**: Renewable Primary Resources Total; **PENRE**: Non-Renewable Primary Resources Used as Energy Carrier (Fuel); **PENRM**: Non-Renewable Primary Resources with Energy Content Used as Material; **PENRT**: Non-Renewable Primary Resources Total; **SM**: Secondary Materials; **RSF**: Renewable Secondary Fuels; **NRSF**: Non-Renewable Secondary Fuels; **FW**: Use of Net Fresh Water Resources.

Output flows and waste for *SERIES 50* produced by Lincora

Indicator	Unit	A1	A2	A3	A1 - A3	A4	A5	B1 & B3-B7	B2	C1	C2	C3	C4	D
HWD(1)	kg	3,61E+02	2,41E-03	1,50E+02	5,11E+02	8,16E-02	2,34E-03	0	2,39E-01	0	6,73E-03	5,80E+00	6,18E-02	-8,63E+01
NHWD(2)	kg	2,97E+01	2,30E-04	6,53E+00	3,62E+01	1,22E-01	4,14E-01	0	7,55E-01	0	1,00E-02	5,57E-01	1,85E+01	4,86E+00
HLRW(3)	m^3	8,83E-08	1,74E-12	1,61E-07	2,49E-07	9,40E-12	6,38E-13	0	1,11E-10	0	7,74E-13	1,75E-09	3,05E-11	5,31E-09
ILLRW(4)	m^3	4,21E-07	9,07E-12	7,03E-07	1,12E-06	5,57E-11	3,38E-12	0	5,79E-10	0	4,59E-12	1,20E-08	1,65E-10	2,49E-08
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	2,37E+01	2,37E+01	0	2,34E-01	0	0	0	0	5,54E+01	0	0
MER	kg	0	0	0	0	0	0	0	0	0	0	0	0	0
EE	MJ, LHV	0	0	0	0	0	0	0	0		0	0	0	0

HWD: Hazardous Waste Disposed; **NHWD**: Non-Hazardous Waste Disposed; **RWD**: Radioactive Waste Disposed; **HLRW**: High-Level Radioactive Waste, Conditioned, to Final Repository; **ILLRW**: Intermediate and Low-Level Radioactive Waste, Conditioned, to Final Repository; **CRU**: Components for Re-Use; **MFR**: Materials for Recycling; **MER**: Materials for Energy Recovery; **EE**: Exported Energy.

(1): Calculated from life cycle inventory results, based on datasets classified under " treatment and disposal of hazardous waste." The manufacturer does not generate hazardous waste.

(2): Calculated from life cycle inventory results, based on waste that is neither "hazardous" nor "radioactive" and EPD values.

(3): Calculated from life cycle inventory results, based on ecoinvent waste flow "high-level radioactive waste for final repository". The manufacturer does not generate radioactive waste.

(4): Calculated from life cycle inventory results, based on ecoinvent waste flow "low-level radioactive waste for final repository". The manufacturer does not generate radioactive waste.

LCIA results for *TACTICAL, without bench* produced by Lincora (EN15804+A2)

Indicator	Unit	A1	A2	A3	A1 - A3	A4	A5	B1 & B3-B7	B2	C1	C2	C3	C4	D
AP	mol H+ eq	1,34E+00	2,10E-04	4,77E-01	1,82E+00	5,89E-02	2,20E-04	0	1,66E-03	0	4,99E-03	2,18E-02	1,30E-03	-1,47E-01
GWP-total	kg CO2 eq	3,53E+02	4,85E-02	1,38E+02	4,91E+02	1,28E+01	4,33E-01	0	2,02E-01	0	1,06E+00	1,97E+00	1,83E-01	-3,90E+01
GWP-biog.	kg CO2 eq	4,05E+00	1,00E-05	-2,27E-01	3,83E+00	1,39E-01	8,11E-06	0	-1,89E-01	0	1,14E-02	-3,21E-02	5,40E-04	2,21E-01
GWP-fossil	kg CO2 eq	3,49E+02	4,85E-02	1,37E+02	4,86E+02	1,26E+01	4,33E-01	0	1,51E-01	0	1,04E+00	2,00E+00	1,82E-01	-3,92E+01
GWP-luluc	kg CO2 eq	4,62E-01	3,75E-06	1,03E+00	1,50E+00	2,62E-03	1,95E-06	0	2,39E-01	0	2,20E-04	2,85E-03	1,10E-04	5,38E-03
ETP-fw	CTUe	8,52E+03	4,81E-01	2,53E+03	1,11E+04	3,70E+02	5,72E+00	0	4,65E+01	0	3,04E+01	9,98E+01	9,86E+00	1,05E+03
EP-fw	kg P eq	1,00E-01	6,62E-07	4,40E-02	1,44E-01	1,91E-05	5,05E-07	0	2,64E-03	0	1,57E-06	1,15E-03	2,28E-05	-1,87E-02
EP-m	kg N eq	-6,19E-02	8,41E-05	1,22E-01	6,06E-02	2,56E-02	4,30E-04	0	2,05E-03	0	2,19E-03	5,09E-03	4,90E-04	-2,26E-02
EP-t	mol N eq	3,04E+00	9,00E-04	1,04E+00	4,07E+00	2,82E-01	1,20E-03	0	6,12E-03	0	2,41E-02	5,68E-02	5,30E-03	-3,92E-01
HTP-c	CTUh	2,24E-06	5,46E-12	4,92E-08	2,29E-06	3,00E-10	1,06E-09	0	4,01E-10	0	2,47E-11	3,29E-09	9,06E-11	4,22E-07
HTP-nc	CTUh	1,01E-05	5,90E-10	2,00E-06	1,21E-05	4,13E-07	5,31E-09	0	1,93E-08	0	3,84E-08	1,43E-07	2,11E-09	5,72E-06
IRP	kBq U-235 eq	8,36E+00	2,00E-04	1,40E+01	2,24E+01	1,07E-03	6,63E-05	0	8,22E-03	0	8,80E-05	2,10E-01	3,32E-03	5,39E-01
SQP	Pt	8,87E+02	4,03E-02	4,40E+02	1,33E+03	4,19E-01	1,57E-01	0	2,56E+01	0	3,44E-02	5,50E+01	8,95E+00	-1,62E+02
ODP	kg CFC11 eq	4,43E-06	7,45E-10	9,01E-07	5,33E-06	4,18E-08	1,19E-10	0	7,68E-09	0	3,43E-09	3,09E-08	4,81E-09	-1,19E-06
PM	disease inc.	1,88E-05	4,24E-10	4,29E-06	2,31E-05	5,80E-07	1,90E-07	0	2,58E-08	0	4,99E-08	2,86E-07	2,76E-08	-1,77E-06
POCP	kg NMVOC eq	1,33E+00	2,80E-04	3,56E-01	1,69E+00	8,42E-02	5,10E-04	0	1,02E-03	0	7,33E-03	1,70E-02	1,83E-03	-2,32E-01
ADPF	MJ	2,64E+03	6,31E-01	1,80E+03	4,44E+03	1,79E+02	6,38E-02	0	1,52E+00	0	1,47E+01	2,64E+01	4,20E+00	-3,23E+02
ADPE	kg Sb eq	1,90E-03	9,57E-09	2,10E-04	2,11E-03	8,38E-08	1,08E-08	0	1,44E-06	0	6,88E-09	1,20E-04	2,72E-07	-6,30E-04
WDP	m3 depriv.	5,39E+01	1,07E-03	1,43E+02	1,97E+02	8,74E-02	2,67E-03	0	2,98E-01	0	7,18E-03	5,12E-01	1,86E-01	-5,24E+01

AP: Acidification; **GWP-total**: Climate change; **GWP-biogenic**: Climate change - Biogenic; **GWP-fossil**: Climate change - Fossil; **GWP-luluc**: Climate change - Land use and Land use change; **Ecotox-fw**: Ecotoxicity, freshwater; **EP-fw**: Eutrophication, freshwater; **EP-m**: Eutrophication, marine; **EP-t:** Eutrophication, terrestrial; **HT-c**: Human toxicity, cancer; **HT-nc**: Human toxicity, non-cancer; **Ion**.: Ionizing radiation; **Land**: Land use; **ODP**: Ozone depletion; **PM**: Particulate matter; **POCP**: Photochemical ozone formation; **ADF-f**: Resource use, fossils; **ADP-m**: Resource use, minerals and metals; **WDP**: Water use.

LCIA results for *TACTICAL, without bench* produced by Lincora (TRACI 2.1 and AR5)

Indicator	Unit	A1	A2	A3	A1 - A3	A4	A5	B1 & B3-B7	B2	C1	C2	C3	C4	D
GWP_{100}-AR5	kg CO_2 eq.	3,42E+02	4,76E-02	1,35E+02	4,77E+02	1,28E+01	4,12E-01	0	4,00E-01	0	1,05E+00	1,96E+00	1,75E-01	-3,65E+01
GWP_{100}-AR4	kg CO_2 eq.	3,38E+02	4,70E-02	1,32E+02	4,71E+02	1,27E+01	3,99E-01	0	4,00E-01	0	1,05E+00	1,93E+00	1,71E-01	-3,57E+01
AP	kg SO2 eq.	1,14E+00	1,90E-04	4,14E-01	1,56E+00	1,03E-01	4,20E-04	0	1,25E-03	0	8,84E-03	1,90E-02	3,80E-03	-1,25E-01
EP	kg N eq.	5,40E-01	2,00E-05	3,77E-01	9,16E-01	7,81E-03	2,19E-02	0	3,32E-02	0	6,70E-04	9,79E-03	2,70E-04	-8,46E-02
ODP	kg CFC-11 eq.	5,87E-06	7,91E-10	1,36E-06	7,23E-06	4,34E-08	1,28E-10	0	8,46E-09	0	3,57E-09	3,51E-08	5,20E-09	-1,68E-06
SFP	kg O_3 eq.	1,72E+01	5,24E-03	6,87E+00	2,40E+01	2,80E+00	7,11E-03	0	1,47E-02	0	2,42E-01	3,12E-01	3,07E-02	-2,17E+00
FFD	MJ Surplus	2,00E+02	8,96E-02	1,56E+02	3,56E+02	2,49E+01	8,22E-03	0	1,37E-01	0	2,04E+00	2,64E+00	5,68E-01	-5,15E+00

GWP: Global Warming Potential; **AP**: Acidification Potential; **EP**: Eutrophication Potential; **ODP**: Ozone Layer Depletion Potential; **SFP**: Smog Formation Potential; **FFD**: Fossil Fuel Depletion Potential.

Resource use for *TACTICAL, without bench* produced by Lincora

Indicator	Unit	A1	A2	A3	A1 - A3	A4	A5	B1 & B3-B7	B2	C1	C2	C3	C4	D
PERE	MJ, LHV	2,41E+02	2,04E-03	4,52E+02	6,93E+02	3,30E-01	1,12E-03	0	6,88E+00	0	2,71E-02	4,09E+00	4,43E-02	-5,20E+01
PERM	MJ, LHV	0	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ, LHV	2,41E+02	2,04E-03	4,52E+02	6,93E+02	3,30E-01	1,12E-03	0	6,88E+00	0	2,71E-02	4,09E+00	4,43E-02	-5,20E+01
PENRE	MJ, LHV	3,21E+03	5,91E-01	9,36E+02	4,14E+03	1,70E+02	4,88E-02	0	1,39E+00	0	1,40E+01	2,25E+01	3,84E+00	-3,15E+02
PENRM	MJ, LHV	0	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ, LHV	3,21E+03	5,91E-01	9,36E+02	4,14E+03	1,70E+02	4,88E-02	0	1,39E+00	0	1,40E+01	2,25E+01	3,84E+00	-3,15E+02
SM	MJ, LHV	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ, LHV	0	0	0	0	0	0	0	0		0	0	0	0
NRSF	MJ, LHV	0	0	0	0	0	0	0	0		0	0	0	0
FW	m^3	1,41E+00	2,60E-05	3,48E+00	4,89E+00	2,10E-03	6,26E-05	0	7,00E-03		1,70E-04	1,29E-02	4,36E-03	-1,28E+00

PERE: Renewable Primary Resources Used as Energy Carrier (Fuel); **PERM**: Renewable Primary Resources with Energy Content Used as Material; **PERT**: Renewable Primary Resources Total; **PENRE**: Non-Renewable Primary Resources Used as Energy Carrier (Fuel); **PENRM**: Non-Renewable Primary Resources with Energy Content Used as Material; **PENRT**: Non-Renewable Primary Resources Total; **SM**: Secondary Materials; **RSF**: Renewable Secondary Fuels; **NRSF**: Non-Renewable Secondary Fuels; **FW**: Use of Net Fresh Water Resources.

Output flows and waste for *TACTICAL, without bench* produced by Lincora

Indicator	Unit	A1	A2	A3	A1 - A3	A4	A5	B1 & B3-B7	B2	C1	C2	C3	C4	D
HWD(1)	kg	4,89E+02	3,27E-03	2,03E+02	6,92E+02	1,11E-01	3,17E-03	0	2,39E-01	0	9,08E-03	7,85E+00	8,38E-02	-1,17E+02
NHWD(2)	kg	4,02E+01	3,10E-04	8,84E+00	4,90E+01	1,65E-01	5,61E-01	0	7,55E-01	0	1,36E-02	7,55E-01	2,51E+01	6,57E+00
HLRW(3)	m^3	1,20E-07	2,35E-12	2,18E-07	3,38E-07	1,27E-11	8,64E-13	0	1,11E-10	0	1,05E-12	2,37E-09	4,14E-11	7,19E-09
ILLRW(4)	m^3	5,70E-07	1,23E-11	9,52E-07	1,52E-06	7,55E-11	4,58E-12	0	5,79E-10	0	6,20E-12	1,63E-08	2,24E-10	3,38E-08
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	3,21E+01	3,21E+01	0	3,17E-01	0	0	0	0	7,51E+01	0	0
MER	kg	0	0	0	0	0	0	0	0	0	0	0	0	0
EE	MJ, LHV	0	0	0	0	0	0	0	0		0	0	0	0

HWD: Hazardous Waste Disposed; **NHWD**: Non-Hazardous Waste Disposed; **RWD**: Radioactive Waste Disposed; **HLRW**: High-Level Radioactive Waste, Conditioned, to Final Repository; **ILLRW**: Intermediate and Low-Level Radioactive Waste, Conditioned, to Final Repository; **CRU**: Components for Re-Use; **MFR**: Materials for Recycling; **MER**: Materials for Energy Recovery; **EE**: Exported Energy.

(1): Calculated from life cycle inventory results, based on datasets classified under " treatment and disposal of hazardous waste." The manufacturer does not generate hazardous waste.

(2): Calculated from life cycle inventory results, based on waste that is neither "hazardous" nor "radioactive" and EPD values.

(3): Calculated from life cycle inventory results, based on ecoinvent waste flow "high-level radioactive waste for final repository". The manufacturer does not generate radioactive waste.

(4): Calculated from life cycle inventory results, based on ecoinvent waste flow "low-level radioactive waste for final repository". The manufacturer does not generate radioactive waste.

LCIA results for *TACTICAL, with bench* produced by Lincora (EN15804+A2)

Indicator	Unit	A1	A2	A3	A1 - A3	A4	A5	B1 & B3-B7	B2	C1	C2	C3	C4	D
AP	mol H+ eq	1,45E+00	2,20E-04	5,15E-01	1,96E+00	6,36E-02	2,30E-04	0	1,66E-03	0	5,38E-03	2,09E-02	2,28E-03	-1,40E-01
GWP-total	kg CO2 eq	3,80E+02	5,23E-02	1,49E+02	5,29E+02	1,38E+01	4,67E-01	0	2,02E-01	0	1,14E+00	1,89E+00	1,50E+00	-3,74E+01
GWP-biog.	kg CO2 eq	3,73E+00	1,08E-05	-2,44E-01	3,48E+00	1,50E-01	8,74E-06	0	-1,89E-01	0	1,23E-02	-3,06E-02	1,18E+00	2,12E-01
GWP-fossil	kg CO2 eq	3,76E+02	5,23E-02	1,48E+02	5,24E+02	1,36E+01	4,67E-01	0	1,51E-01	0	1,13E+00	1,92E+00	3,25E-01	-3,76E+01
GWP-luluc	kg CO2 eq	5,00E-01	4,04E-06	1,12E+00	1,61E+00	2,83E-03	2,10E-06	0	2,39E-01	0	2,30E-04	2,73E-03	2,20E-04	5,15E-03
ETP-fw	CTUe	9,19E+03	5,18E-01	2,73E+03	1,19E+04	3,99E+02	6,17E+00	0	4,65E+01	0	3,27E+01	9,54E+01	1,39E+01	1,00E+03
EP-fw	kg P eq	1,08E-01	7,14E-07	4,74E-02	1,56E-01	2,06E-05	5,45E-07	0	2,64E-03	0	1,69E-06	1,10E-03	5,09E-05	-1,79E-02
EP-m	kg N eq	-6,66E-02	9,06E-05	1,32E-01	6,55E-02	2,76E-02	4,60E-04	0	2,05E-03	0	2,36E-03	4,87E-03	4,90E-03	-2,17E-02
EP-t	mol N eq	3,27E+00	9,70E-04	1,12E+00	4,39E+00	3,05E-01	1,30E-03	0	6,12E-03	0	2,60E-02	5,43E-02	9,17E-03	-3,75E-01
HTP-c	CTUh	2,41E-06	5,88E-12	5,30E-08	2,47E-06	3,24E-10	1,15E-09	0	4,01E-10	0	2,66E-11	3,14E-09	1,91E-10	4,04E-07
HTP-nc	CTUh	1,09E-05	6,36E-10	2,16E-06	1,30E-05	4,46E-07	5,73E-09	0	1,93E-08	0	4,14E-08	1,37E-07	5,27E-09	5,47E-06
IRP	kBq U-235 eq	9,02E+00	2,10E-04	1,51E+01	2,41E+01	1,16E-03	7,15E-05	0	8,22E-03	0	9,48E-05	2,01E-01	7,49E-03	5,16E-01
SQP	Pt	1,01E+03	4,35E-02	4,74E+02	1,49E+03	4,52E-01	1,69E-01	0	2,56E+01	0	3,71E-02	5,26E+01	1,58E+01	-1,56E+02
ODP	kg CFC11 eq	4,78E-06	8,03E-10	9,71E-07	5,75E-06	4,52E-08	1,28E-10	0	7,68E-09	0	3,70E-09	2,96E-08	7,97E-09	-1,14E-06
PM	disease inc.	2,03E-05	4,57E-10	4,62E-06	2,49E-05	6,26E-07	2,05E-07	0	2,58E-08	0	5,38E-08	2,74E-07	4,79E-08	-1,69E-06
POCP	kg NMVOC eq	1,43E+00	3,10E-04	3,84E-01	1,82E+00	9,09E-02	5,50E-04	0	1,02E-03	0	7,90E-03	1,63E-02	3,41E-03	-2,22E-01
ADPF	MJ	2,85E+03	6,80E-01	1,94E+03	4,79E+03	1,93E+02	6,87E-02	0	1,52E+00	0	1,58E+01	2,53E+01	7,13E+00	-3,10E+02
ADPE	kg Sb eq	2,05E-03	1,03E-08	2,30E-04	2,28E-03	9,05E-08	1,16E-08	0	1,44E-06	0	7,42E-09	1,10E-04	5,63E-07	-6,00E-04
WDP	m3 depriv.	5,81E+01	1,16E-03	1,54E+02	2,13E+02	9,44E-02	2,87E-03	0	2,98E-01	0	7,74E-03	4,90E-01	3,12E-01	-5,02E+01

AP: Acidification; **GWP-total**: Climate change; **GWP-biogenic**: Climate change - Biogenic; **GWP-fossil**: Climate change - Fossil; **GWP-luluc**: Climate change - Land use and Land use change; **Ecotox-fw**: Ecotoxicity, freshwater; **EP-fw**: Eutrophication, freshwater; **EP-m**: Eutrophication, marine; **EP-t:** Eutrophication, terrestrial; **HT-c**: Human toxicity, cancer; **HT-nc**: Human toxicity, non-cancer; **Ion**.: Ionizing radiation; **Land**: Land use; **ODP**: Ozone depletion; **PM**: Particulate matter; **POCP**: Photochemical ozone formation; **ADF-f**: Resource use, fossils; **ADP-m**: Resource use, minerals and metals; **WDP**: Water use.

LCIA results for *TACTICAL, with bench* produced by Lincora (TRACI 2.1 and AR5)

Indicator	Unit	A1	A2	A3	A1 - A3	A4	A5	B1 & B3-B7	B2	C1	C2	C3	C4	D
GWP_{100}-AR5	kg CO_2 eq.	3,69E+02	5,13E-02	1,45E+02	5,14E+02	1,38E+01	4,44E-01	0	4,00E-01	0	1,14E+00	1,87E+00	1,07E+00	-3,50E+01
GWP_{100}-AR4	kg CO_2 eq.	3,65E+02	5,06E-02	1,42E+02	5,07E+02	1,37E+01	4,31E-01	0	4,00E-01	0	1,13E+00	1,85E+00	9,83E-01	-3,42E+01
AP	kg SO2 eq.	1,23E+00	2,00E-04	4,46E-01	1,68E+00	1,11E-01	4,60E-04	0	1,25E-03	0	9,53E-03	1,81E-02	5,09E-03	-1,20E-01
EP	kg N eq.	5,82E-01	2,15E-05	4,06E-01	9,88E-01	8,43E-03	2,36E-02	0	3,32E-02	0	7,20E-04	9,36E-03	8,49E-02	-8,10E-02
ODP	kg CFC-11 eq.	6,32E-06	8,52E-10	1,47E-06	7,79E-06	4,69E-08	1,38E-10	0	8,46E-09	0	3,84E-09	3,36E-08	8,71E-09	-1,61E-06
SFP	kg O_3 eq.	1,85E+01	5,65E-03	7,41E+00	2,59E+01	3,02E+00	7,67E-03	0	1,47E-02	0	2,60E-01	2,98E-01	5,34E-02	-2,07E+00
FFD	MJ Surplus	2,16E+02	9,65E-02	1,68E+02	3,84E+02	2,69E+01	8,86E-03	0	1,37E-01	0	2,20E+00	2,53E+00	9,47E-01	-4,93E+00

GWP: Global Warming Potential; **AP**: Acidification Potential; **EP**: Eutrophication Potential; **ODP**: Ozone Layer Depletion Potential; **SFP**: Smog Formation Potential; **FFD**: Fossil Fuel Depletion Potential.

Resource use for *TACTICAL, with bench* produced by Lincora

Indicator	Unit	A1	A2	A3	A1 - A3	A4	A5	B1 & B3-B7	B2	C1	C2	C3	C4	D
PERE	MJ, LHV	2,73E+02	2,20E-03	4,87E+02	7,60E+02	3,56E-01	1,21E-03	0	6,88E+00	0	2,92E-02	3,92E+00	9,96E-02	-4,98E+01
PERM	MJ, LHV	0	0	0	0	0	0	0	0	0	0	0	0	0
PERT	MJ, LHV	2,73E+02	2,20E-03	4,87E+02	7,60E+02	3,56E-01	1,21E-03	0	6,88E+00	0	2,92E-02	3,92E+00	9,96E-02	-4,98E+01
PENRE	MJ, LHV	3,46E+03	6,37E-01	1,01E+03	4,47E+03	1,84E+02	5,26E-02	0	1,39E+00	0	1,51E+01	2,15E+01	6,46E+00	-3,02E+02
PENRM	MJ, LHV	0	0	0	0	0	0	0	0	0	0	0	0	0
PENRT	MJ, LHV	3,46E+03	6,37E-01	1,01E+03	4,47E+03	1,84E+02	5,26E-02	0	1,39E+00	0	1,51E+01	2,15E+01	6,46E+00	-3,02E+02
SM	MJ, LHV	0	0	0	0	0	0	0	0	0	0	0	0	0
RSF	MJ, LHV	0	0	0	0	0	0	0	0		0	0	0	0
NRSF	MJ, LHV	0	0	0	0	0	0	0	0		0	0	0	0
FW	m^3	1,52E+00	2,80E-05	3,75E+00	5,27E+00	2,27E-03	6,75E-05	0	7,00E-03		1,90E-04	1,23E-02	7,32E-03	-1,22E+00

PERE: Renewable Primary Resources Used as Energy Carrier (Fuel); **PERM**: Renewable Primary Resources with Energy Content Used as Material; **PERT**: Renewable Primary Resources Total; **PENRE**: Non-Renewable Primary Resources Used as Energy Carrier (Fuel); **PENRM**: Non-Renewable Primary Resources with Energy Content Used as Material; **PENRT**: Non-Renewable Primary Resources Total; **SM**: Secondary Materials; **RSF**: Renewable Secondary Fuels; **NRSF**: Non-Renewable Secondary Fuels; **FW**: Use of Net Fresh Water Resources.

Output flows and waste for *TACTICAL, with bench* produced by Lincora

Indicator	Unit	A1	A2	A3	A1 - A3	A4	A5	B1 & B3-B7	B2	C1	C2	C3	C4	D
HWD(1)	kg	5,27E+02	3,52E-03	2,19E+02	7,46E+02	1,19E-01	3,42E-03	0	2,39E-01	0	9,79E-03	7,51E+00	1,78E-01	-1,12E+02
NHWD(2)	kg	4,33E+01	3,30E-04	9,53E+00	5,28E+01	1,78E-01	6,05E-01	0	7,55E-01	0	1,46E-02	7,23E-01	3,62E+01	6,30E+00
HLRW(3)	m^3	1,29E-07	2,54E-12	2,35E-07	3,64E-07	1,38E-11	9,31E-13	0	1,11E-10	0	1,13E-12	2,27E-09	9,42E-11	6,89E-09
ILLRW(4)	m^3	6,14E-07	1,32E-11	1,03E-06	1,64E-06	8,15E-11	4,94E-12	0	5,79E-10	0	6,69E-12	1,55E-08	5,12E-10	3,23E-08
CRU	kg	0	0	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	3,46E+01	3,46E+01	0	3,42E-01	0	0	0	0	7,18E+01	0	0
MER	kg	0	0	0	0	0	0	0	0	0	0	0	0	0
EE	MJ, LHV	0	0	0	0	0	0	0	0		0	0	0	0

HWD: Hazardous Waste Disposed; **NHWD**: Non-Hazardous Waste Disposed; **RWD**: Radioactive Waste Disposed; **HLRW**: High-Level Radioactive Waste, Conditioned, to Final Repository; **ILLRW**: Intermediate and Low-Level Radioactive Waste, Conditioned, to Final Repository; **CRU**: Components for Re-Use; **MFR**: Materials for Recycling; **MER**: Materials for Energy Recovery; **EE**: Exported Energy.

(1): Calculated from life cycle inventory results, based on datasets classified under " treatment and disposal of hazardous waste." The manufacturer does not generate hazardous waste.

(2): Calculated from life cycle inventory results, based on waste that is neither "hazardous" nor "radioactive" and EPD values.

(3): Calculated from life cycle inventory results, based on ecoinvent waste flow "high-level radioactive waste for final repository". The manufacturer does not generate radioactive waste.

(4): Calculated from life cycle inventory results, based on ecoinvent waste flow "low-level radioactive waste for final repository". The manufacturer does not generate radioactive waste.

4.2. CONTRIBUTION ANALYSIS

The results for all indicators are shown in following figures. The interpretation of the results is very similar for the three lockers; therefore, a common analysis is summarized below.

Throughout the whole lifecycle of the lockers, the production stage (A1 to A3) has the most significant environmental impacts, for all the indicators, with a contribution between 85% and 100%.

Environmental indicators (EN15804+A2 and TRACI 2.1):
The main contributors to the product's environmental impacts are:

- Production of primary steel (A1) from coke
- Electricity production for steel production (A1) and hardware manufacturing (A3)
- Water and electricity consumption in argon production (A3)

Steel production is a major contributor to multiple environmental impacts. The process is particularly responsible for acidification potential through the release of sulfur dioxide (SO_2) and nitrogen oxides (NO_x). It also plays a significant role in climate change due to the high levels of carbon dioxide (CO_2) emitted during production. Additionally, steel production contributes to both cancer and non-cancer human toxicity, with chromium VI and carbon monoxide as key harmful substances.

Blasting and mining operations (Iron ore and Bauxite) are the primary sources of freshwater ecotoxicity, through the release of toxic substances (mostly aluminium) in aquatic ecosystems.

Electricity production from nuclear power, particularly the release of radon-222, is a significant contributor to ionizing radiation impacts on human health. Meanwhile, electricity production from coal, especially in the United States, is a leading source of particulate matter (PM2.5).

Coking from steel production is the main process contributing to photochemical ozone formation, driven by the release of nitrogen oxides (NO_x) and non-methane volatile organic compounds.

Production processes in copper and steel industries majorly impact resource use. The extraction and use of hard coal for steel production significantly deplete fossil resources, while copper production (linked with tellurium extraction), contribute to the depletion of mineral and metal resources.

For climate change – biogenic, the impacts throughout the lifecycle of the lockers account for less than 1% of climate change – total.

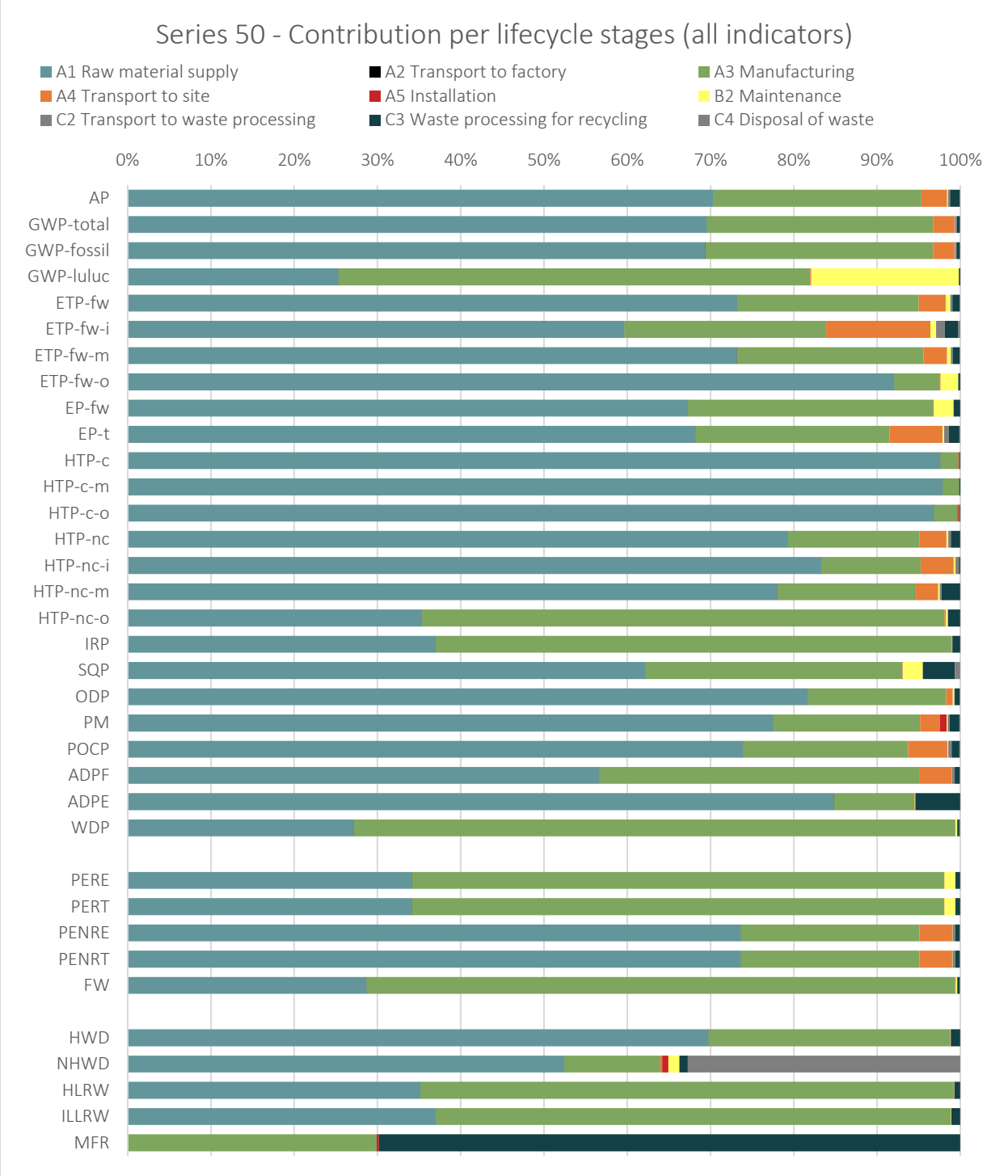
The transport to site stage (A4) has a contribution of 0% to 13% across all indicators due to the use of fuel-powered trucks for delivery across Québec and North America.

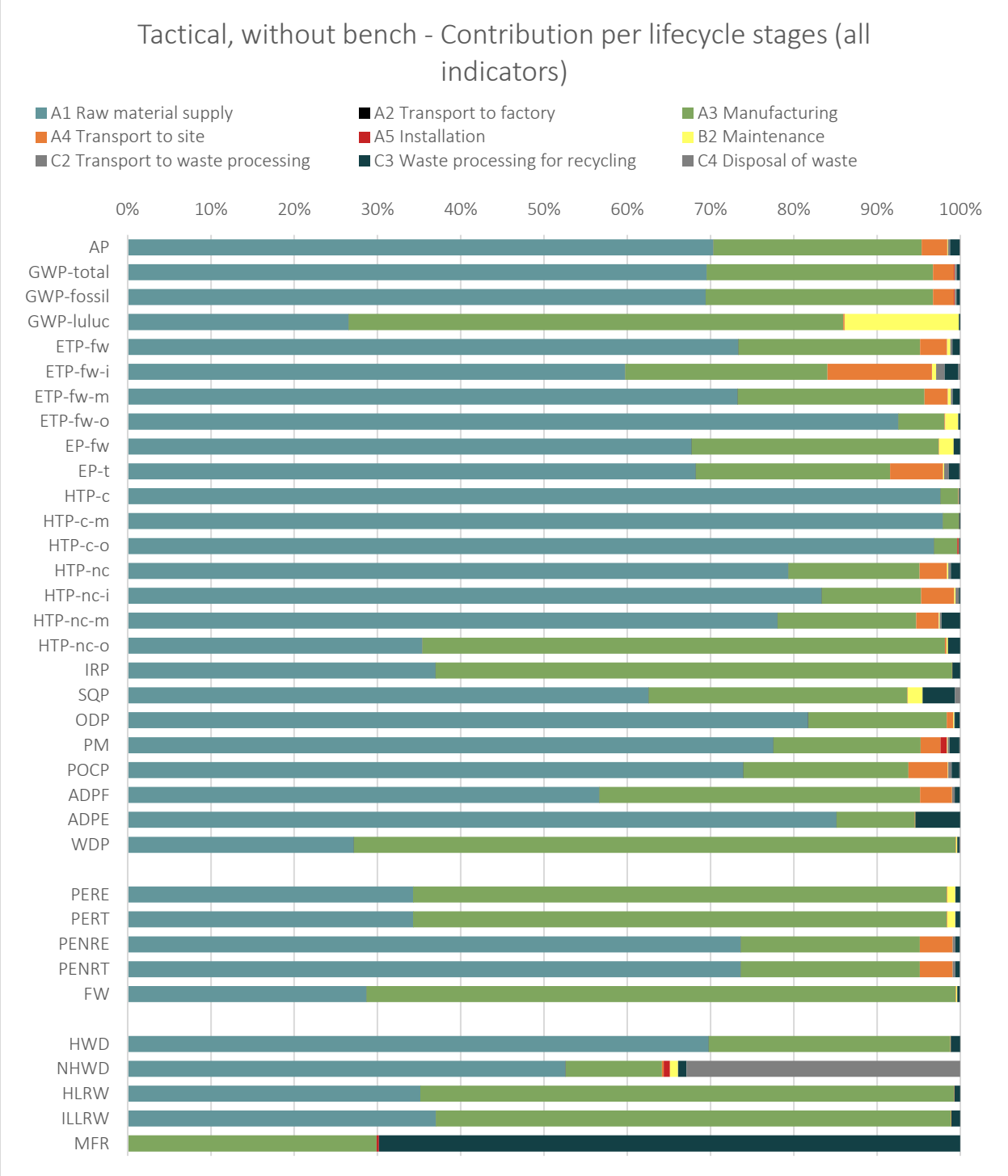
Resource use: As shown in figures of resource use, the main contributor to PERE is manufacturing (A3), mostly due to the use of pallets and cardboard made of wood, used as renewable resource. For PENRE, the consumption of coal for steel production is the main contributor to the indicator. Finally, direct consumption of water leads to manufacturing (A3) being the main contributor to Freshwater consumption throughout the life cycle.

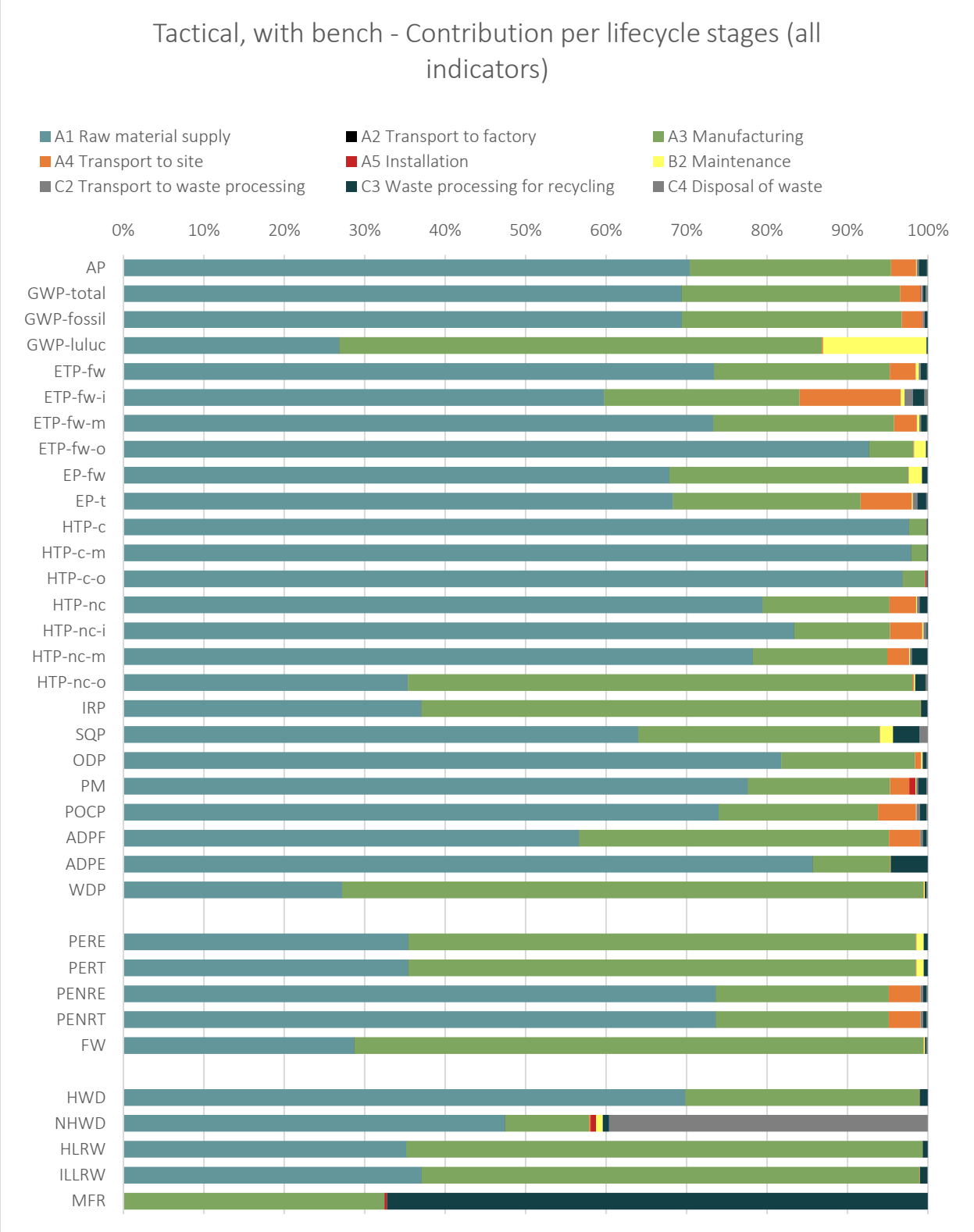
Output flows and waste categories: As illustrated in figures of output flows and waste categories, production of steel (A3) is the predominant contributor to both hazardous and non-hazardous waste disposed (HWD, NHWD) through the treatment of sludges and slags in primary production. And the landfilling of the hardware (C4) is the second most

contributor to the non-hazardous waste disposed (NHWD) indicator. For high-level radioactive waste (HLRW), and intermediate- and low-level radioactive waste (ILLRW), these impacts primarily stem from background processes associated with electricity generation from the grid, particularly from nuclear and coal-based power production. For the materials for recycling (MFR), the recycling of lockers after dismantling accounts for most of the contribution, and the recycling of steel losses accounts for the rest.

Module D: The results of the LCIA for module D are net results, calculated as the difference between burdens and benefits beyond the system boundaries. It is important to understand that results of module D should not be interpreted as direct offsets or recoveries of previous environmental impacts, as they do not replace or negate the emissions and their associated consequences. Furthermore, as explained in section 3.3, the underlying approach of this indicator may not fully align with market trends or the production capacities of specific material such as steel. This misalignment can result in an overestimation of the actual benefits.


Series 50 - Contribution per lifecycle stages (all indicators)
A1 Raw material supply
A2 Transport to factory
A3 Manufacturing
A4 Transport to site
A5 Installation
B2 Maintenance
C2 Transport to waste processing
C3 Waste processing for recycling
C4 Disposal of waste
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
AP
GWP-total
GWP-fossil
GWP-luluc
ETP-fw
ETP-fw-i
ETP-fw-m
ETP-fw-o
EP-fw
EP-t
HTP-c
HTP-c-m
HTP-c-o
HTP-nc
HTP-nc-i
HTP-nc-m
HTP-nc-o
IRP
SQP
ODP
PM
POCP
ADPF
ADPE
WDP
PERE
PERT
PENRE
PENRT
FW
HWD
NHWD
HLRW
ILLRW
MFR


Tactical, without bench - Contribution per lifecycle stages (all indicators)
A1 Raw material supply
A2 Transport to factory
A3 Manufacturing
A4 Transport to site
A5 Installation
B2 Maintenance
C2 Transport to waste processing
C3 Waste processing for recycling
C4 Disposal of waste
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
AP
GWP-total
GWP-fossil
GWP-luluc
ETP-fw
ETP-fw-i
ETP-fw-m
ETP-fw-o
EP-fw
EP-t
HTP-c
HTP-c-m
HTP-c-o
HTP-nc
HTP-nc-i
HTP-nc-m
HTP-nc-o
IRP
SQP
ODP
PM
POCP
ADPF
ADPE
WDP
PERE
PERT
PENRE
PENRT
FW
HWD
NHWD
HLRW
ILLRW
MFR


Tactical, with bench - Contribution per lifecycle stages (all indicators)
A1 Raw material supply
A2 Transport to factory
A3 Manufacturing
A4 Transport to site
A5 Installation
B2 Maintenance
C2 Transport to waste processing
C3 Waste processing for recycling
C4 Disposal of waste
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
AP
GWP-total
GWP-fossil
GWP-luluc
ETP-fw
ETP-fw-i
ETP-fw-m
ETP-fw-o
EP-fw
EP-t
HTP-c
HTP-c-m
HTP-c-o
HTP-nc
HTP-nc-i
HTP-nc-m
HTP-nc-o
IRP
SQP
ODP
PM
POCP
ADPF
ADPE
WDP
PERE
PERT
PENRE
PENRT
FW
HWD
NHWD
HLRW
ILLRW
MFR

5. ADDITIONAL ENVIRONMENTAL INFORMATION

5.1. CONTENT OF REGULATED HAZARDOUS SUBSTANCES

The lockers do not contain any substances on the REACH Regulations' Candidate List of Substances of Very High Concern (SVHC) in amounts greater than the threshold of 0.1% by weight. The low percentage and proper documentation ensure compliance with regulatory standards, minimizing potential environmental and health risks associated with the product's use and disposal.

5.2. RELEASE OF DANGEROUS SUBSTANCES

No dangerous substances are known to be released from the lockers under study. The lockers are considered inherently non-emitting products by LEED® v4 [16].

5.3. OTHER ADDITIONAL ENVIRONMENTAL INFORMATION

No green power, biogas or CO_2 certificates are used in this EPD. The biogenic carbon content of the product and packaging is displayed in table below.

Substance	Biogenic carbon content (kg C – biogenic)		
	Series 50	Tactical (without bench)	Tactical with bench
in product	0	0	5,87E+0
in packaging	2,00E-01	2,71E-01	2,92E-01

The following table presents the additional key environmental information required by PCR part B.

Indicator	A1 - A3	A4	A5	B2	B1-B7	C1	C2	C3	C4	D
Series 50										
GWP-total (kg CO_2 eq.)	3,52E+02	9,44E+00	3,04E-01	4,00E-01	0	0	7,80E-01	1,44E+00	1,29E-01	-2,70E+01
GWP-IOBC [2] (kg CO_2 eq.)	3,63E+02	9,40E+00	3,20E-01	4,11E-01	0	0	7,81E-01	1,49E+00	1,35E-01	-2,89E+01
Total energy cons.[1] (MJ)	3,57E+03	1,26E+02	3,69E-02	8,27E+00	0	0	1,04E+01	1,96E+01	2,86E+00	-2,71E+02
Recycled materials (%)	26%	0	0	0	0	0	0	0	0	78%
Tactical, without bench										
GWP-total (kg CO_2 eq.)	4,77E+02	1,28E+01	4,12E-01	4,00E-01	0	0	1,05E+00	1,96E+00	1,75E-01	-3,65E+01
GWP-IOBC [2] (kg CO_2 eq.)	4,91E+02	1,28E+01	4,33E-01	2,01E-01	0	0	1,06E+00	1,97E+00	1,83E-01	-3,90E+01
Total energy cons.[1] (MJ)	4,84E+03	1,71E+02	4,99E-02	8,27E+00	0	0	1,40E+01	2,66E+01	3,89E+00	-3,67E+02
Recycled materials (%)	26%	0	0	0	0	0	0	0	0	78%
Tactical, with bench										
GWP-total (kg CO_2 eq.)	5,14E+02	1,19E-01	3,42E-03	2,39E-01	0	0	1,14E+00	1,89E+00	1,50E+00	-3,50E+01
GWP-IOBC [2] (kg CO_2 eq.)	5,29E+02	1,38E+01	4,67E-01	2,01E-01	0	0	1,14E+00	1,89E+00	1,50E+00	-3,74E+01
Total energy cons.[1] (MJ)	5,23E+03	1,84E+02	5,38E-02	8,27E+00	0	0	1,51E+01	2,54E+01	6,56E+00	-3,51E+02
Recycled materials (%)	23%	0	0	0	0	0	0	0	0	78%

(1): As per PCR: Total energy consumption = PERE + PENRE + RSF + NSRF. **GWP-IOBC**: Climate change - Instantaneous oxidation of biogenic carbon

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