



INFORMATION TOOLS ON THE ENVIRONMENTAL AND CHEMICAL ASPECTS OF PRODUCTS USED IN THE LIFE CYCLE OF ROADS



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CONTENT



CHEMICAL aspects

- About
- Framework: UN GHS, TDG
- Output: SDS, Labelling
- Proposal
- Digitalization: IAS MAYAK

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ENVIRONMENTAL aspects
















- About
- Framework: LCA + data recognition
- Output: EPD, Climate Declaration
- Proposal
- Digitalization: EPD Portal

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ABOUT: CHEMICAL ASPECTS

				
1-Explosives	2.1-Flammable gases	2.2-Non-toxic and non-flammable gases	2.3-Toxic gases	3-Flammable liquids
				
4.1-Flammable solids	4.2-Spontaneously combustibles	4.3-Dangerous when wet	5.1-Oxidizers	5.2-Organic peroxides
				
6.1-Toxic	6.2-Infectious substances	7-Radioactive	8-Corrosive	9-Miscellaneous dangerous substances

Physical Hazards

				
Flammable	Compressed Gas	Oxidizing	Corrosive	Explosive

Health Hazards

			
Health Hazard	Corrosive	Skin Irritant	Toxic

Environmental Hazards


Environmental Hazard



FRAMEWORK: UN TDG AND UN GHS RECOMMENDATIONS

- The International Maritime Dangerous Goods (IMDG) Code
- European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN)

- SMGS Consignment Note for Euro-Asian Rail Freight Shipments
- Rules for the carriage of dangerous goods by rail (approved at the fifteenth meeting of the Council for Rail Transport of the CIS Member States on April 5, 1996)

- Annex 18 to the Convention on International Civil Aviation;
- Technical Instructions for the Safe Transport of Dangerous Goods by Air (Doc. 9284 AN / 905), ICAO;
- Emergency Procedure Manual for Dangerous Goods (Doc. 9481 AN / 928), ICAO.
- Rules for the Carriage of Dangerous Goods by Aircraft of Civil Aviation
- IATA Dangerous Goods Regulations (58th)

- Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)

by Water



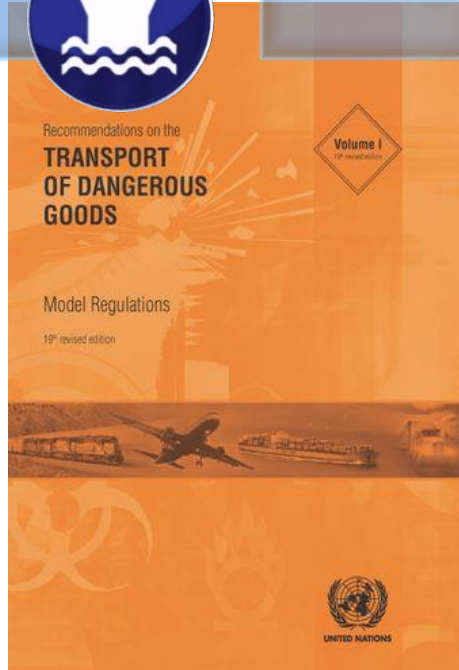
by Rail



by Air



by Road



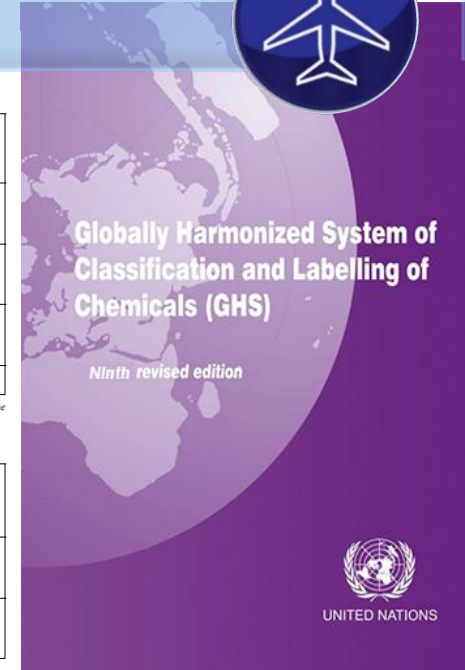
A1.6 Flammable liquids (see Chapter 2.7 for classification criteria)

Classification	Pictogram		Labelling		Hazard statement codes		
	Hazard class	Hazard category	GHS	UN Model Regulations*		Signal word	Hazard statement
Flammable liquids	1				Danger	Extremely flammable liquid and vapour	H224
	2				Danger	Highly flammable liquid and vapour	H225
	3				Warning	Flammable liquid and vapour	H226
	4	No pictogram	Not required	Not required	Warning	Combustible liquid	H227

* Under the UN Recommendations on the Transport of Dangerous Goods, Model Regulations, the symbol, number and border line may be shown in black instead of white. The background colour stays red in both cases.

A1.7 Flammable solids (see Chapter 2.7 for classification criteria)

Classification	Pictogram		Labelling		Hazard statement codes		
	Hazard class	Hazard category	GHS	UN Model Regulations*		Signal word	Hazard statement
Flammable solids	1				Danger	Flammable solid	H228
	2				Warning	Flammable solid	H228



FRAMEWORK: GLOBAL IMPLEMENTATION OF THE GHS



OUTPUT: SAFETY DATA SHEET

Applies to:

Chemicals
(substance, mixture,
material, industrial waste)



by Rail



by Air



by Road



by Water



Section No	Section content
1.	IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING
2.	HAZARDS IDENTIFICATION
3.	COMPOSITION/INFORMATION ON INGREDIENTS
4.	FIRST AID MEASURES
5.	FIRE-FIGHTING MEASURES
6.	ACCIDENTAL RELEASE MEASURES
7.	HANDLING AND STORAGE
8.	EXPOSURE CONTROLS/PERSONAL PROTECTION
9.	PHYSICAL AND CHEMICAL PROPERTIES
10.	STABILITY AND REACTIVITY
11.	TOXICOLOGICAL INFORMATION
12.	ENVIRONMENTAL INFORMATION
13.	DISPOSAL CONSIDERATIONS
14.	TRANSPORT INFORMATION
15.	REGULATORY INFORMATION
16.	ADDITIONAL INFORMATION

PROPOSAL: HOW COULD YOU MAKE IT SAFER?



It is possible to reduce risks when transporting chemical products by road, including when transporting dangerous goods by:

- increasing information and awareness of carriers, forwarders, logistics companies, rapid response services about the dangers of cargo transported along the road;
- increasing the efficiency of handling chemicals, including cargo;
- use of appropriate personal protective equipment;
- organization of information infrastructure to avoid duplication of efforts in:
 - ✓ hazard assessment,
 - ✓ the selection of hazard communication elements,
 - ✓ confirmation of product compliance with declared standards and requirements




DIGITALIZATION OF INFORMATION ON THE SAFETY OF CHEMICAL PRODUCTS



ИАС Маяк

Георгий Баланов

Выйти

Химическое наименование Полимер фенола с формальдегидом, твердый	Дата следующей редакции	Эксперт Виноградова Екатерина Николаевна	Обозначение НД ГОСТ
Торговое наименование Смолы фенолоформальдегидные твердые (марка С	Дата выполнения работы	 Ссылка на просмотр паспорта	Шифр НД 18694-2017
Синоним	Заявитель ООО "Метастрой"	Код ОКПО 72149825	Сигнальное слово Опасно
Дата поступления документов 11.03.2020	Код ОКПД 20.16.56.120	Действителен от 27.03.2020	Код ОКПД2 20.16.56.120
Срочность	Посредник	Действителен до 27.03.2023	Код ТН ВЭД ЕАЭС 3909400000
Дата оплаты	Регулярность Регулярно	<input type="checkbox"/> Отказ Комментарий	<input type="checkbox"/> Подтвердить ПБ

Степень опасности химической продукции по ГОСТ 12.1.007
12.1.007
Высокоопасное вещество - 28 класс

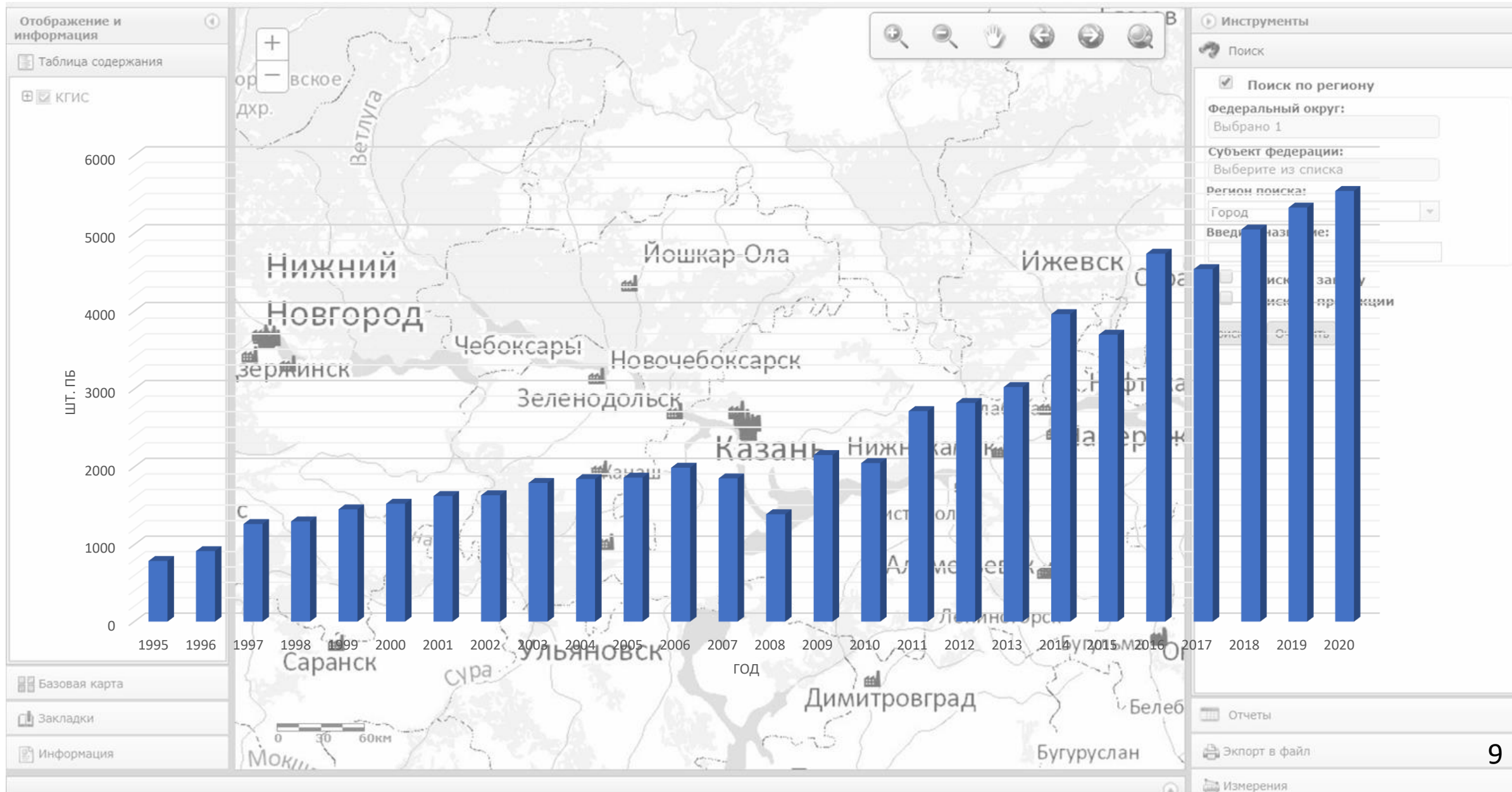
Наименование	Параметр
Номер РПБ	52607881.20.69521
Статус	Зарегистрирован
Дата регистрации	17.08.2021
Дата окончания	17.08.2026
Техническое наименование	Гидротальцит AS-04
Код ОКПД2	20.59.59.900
Код ТН ВЭД	2842908000
Код НД	(М)SDS-ГИДРОТАЛЬЦИТ AS-04, от 23.07.2015 г., версия 1.0, Akdeniz Chemson, Турция
Сигнальное слово	Отсутствует
Компания заявитель	ООО "СИТИСТРОЙПЛАСТ"

Краткая (словесная) характеристика опасности

Умеренно опасное по воздействию на организм вещество по ГОСТ 12.1.007. При попадании на кожу и в глаза может вызывать механическое раздражение. Может вызвать долгосрочные отрицательные последствия для водных организмов.

- Paperless engagement with registering organization
- Access to all safety data sheets in one place
- Confirmation of the relevance and correctness of passports when communicating with stakeholders or the regulator

DIGITALIZATION: CIS CENTER SDS REGISTER



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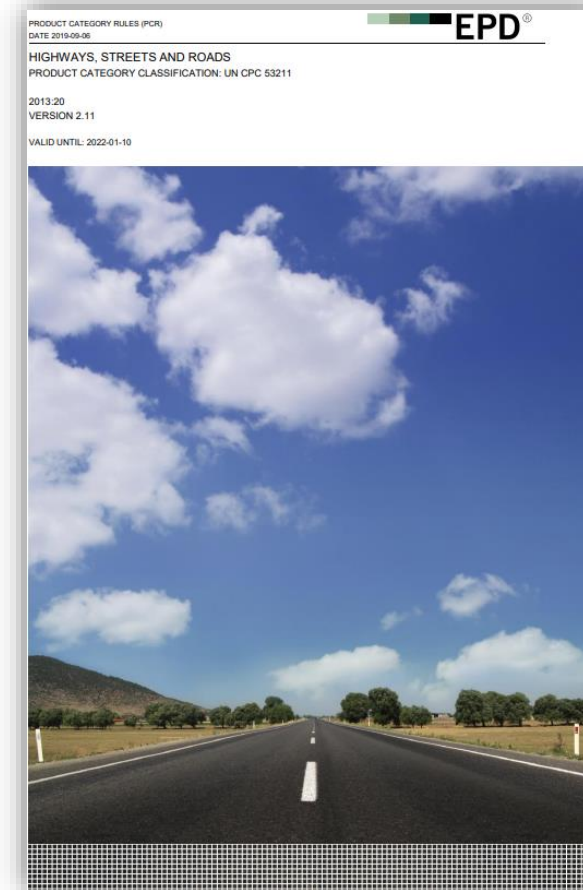
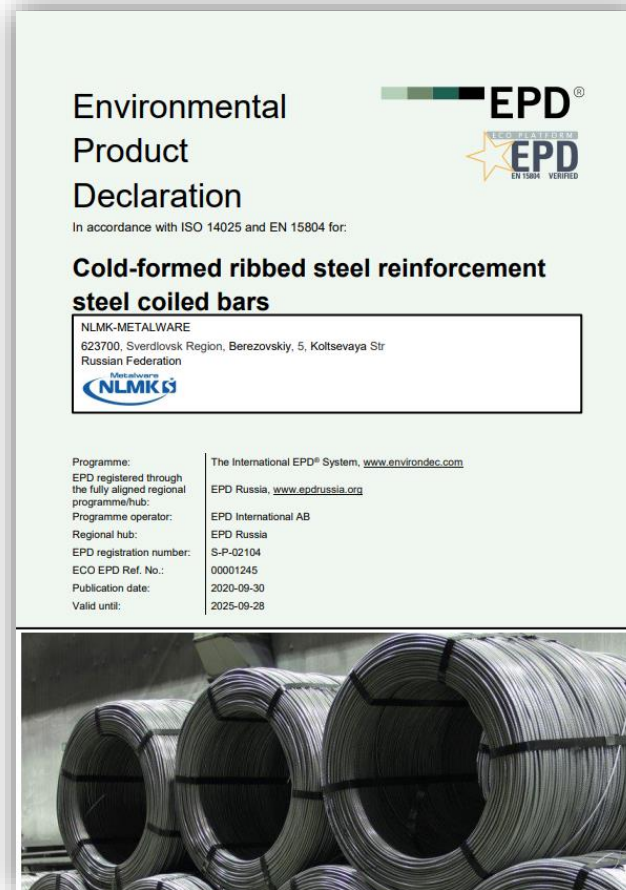
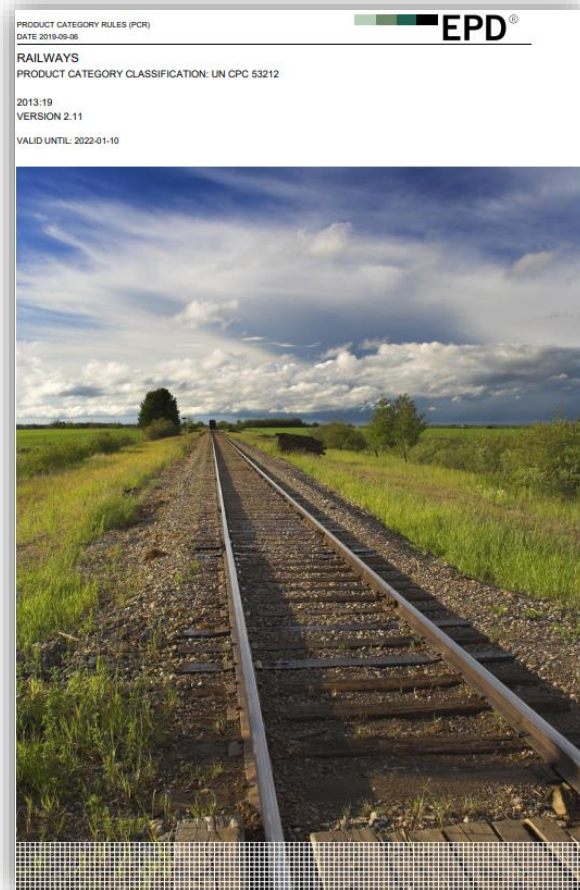


- About
- Framework: LCA + data recognition
- Output: EPD, Climate Declaration
- Proposal
- Digitalization: EPD Portal

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ABOUT: WHAT IS EPD?



An EPD® (Environmental Product Declaration) is a certified third party verified document, which reports environmental data over the life cycle of products or services in accordance with the international standard ISO 14025 and product category rules (PCR)

FRAMEWORK:

WHAT TYPE OF INFORMATION ARE DECLARED IN THE EPD?



PROGRAMME-RELATED INFORMATION

Information on registration of a product, product category rules, and validity of the EPD.



PRODUCT (SERVICE) SPECIFIC INFORMATION

Specific information such as functional properties and a content declaration of a certain product.



ENVIRONMENTAL AND PERFORMANCE-RELATED INFORMATION

A life cycle assessment (LCA) provides information on use of resources and energy as well as various types of emissions. Life cycle could include stages from raw materials supply to disposal or even reuse/recovery/recycling.



ADDITIONAL ENVIRONMENTAL INFORMATION

An EPD may contain environmental information additional to the LCA, such as specific information about the user- and the end-of-life phases, recycling content etc.



MANDATORY STATEMENTS

Information about the verification procedure needs to be included



FRAMEWORK: ENVIRONMENTAL AND PERFORMANCE-RELATED INFORMATION

Life cycle Impact assessment indicators

PARAMETER	UNIT	UPSTREAM/CORE/DOWNSTR EAM/TOTAL			
Global Warming Potential	kg CO2 eq.				
Acidification Potential	Kg SO2 eq.				
Eutrophication Potential	kg PO43- eq.				
Photochemical oxidant formation potential	kg NMVOC eq.				
Abiotic depletion potential for elements/fossil fuels	kg Sb eq./MJ, net calorific value				

Life cycle stages

Product Stage			Construc tion Process Stage		Use Stage						End-of-Life Stage			Benefits and loads beyond the system boundary		
Raw material supply	Transport	Manufacturing	Transport to building site	Installation into building	Use/application	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction/demolition	Transport	Waste processing	Disposal	Reuse/recovery/recycling
UPSTREAM	CORE	DOWNSTREAM														

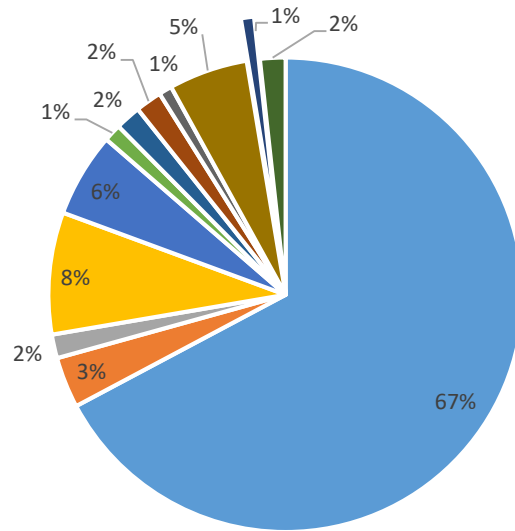
Indicators for resource use based on the life cycle inventory

PARAMETER		UNIT	UPSTREAM/CORE/DOWNSTREAM/TOTAL			
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value				
	Used as raw materials	MJ, net calorific value				
	TOTAL	MJ, net calorific value				
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value				
	Used as raw materials	MJ, net calorific value				
	TOTAL	MJ, net calorific value				
Secondary material		Kg				
Renewable secondary fuels		MJ, net calorific value				
Non-renewable secondary fuels		MJ, net calorific value				
Net use of fresh water		m3				

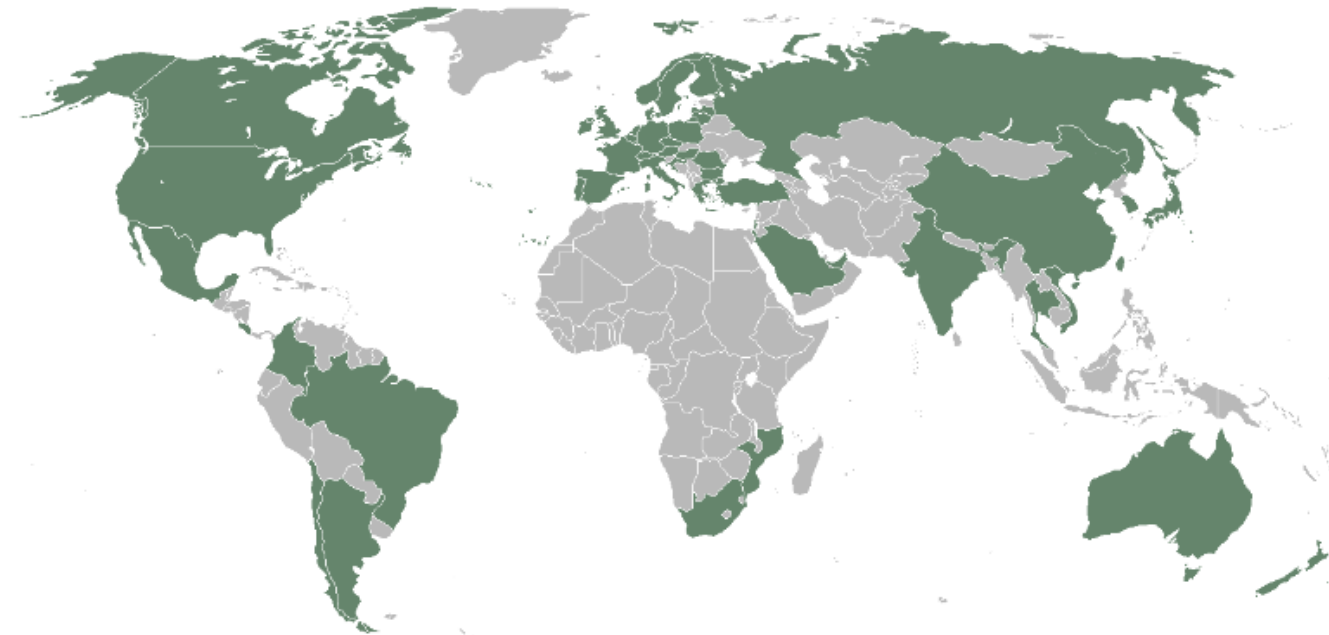
DATA RECOGNITION: EPD AS AN INTERNATIONAL RECOGNIZED TOOL

THE INTERNATIONAL EPD® SYSTEM IS A GLOBAL PROGRAMME OPERATOR FOR ENVIRONMENTAL DECLARATIONS

EPD registrations per sector, % (on December 2020)

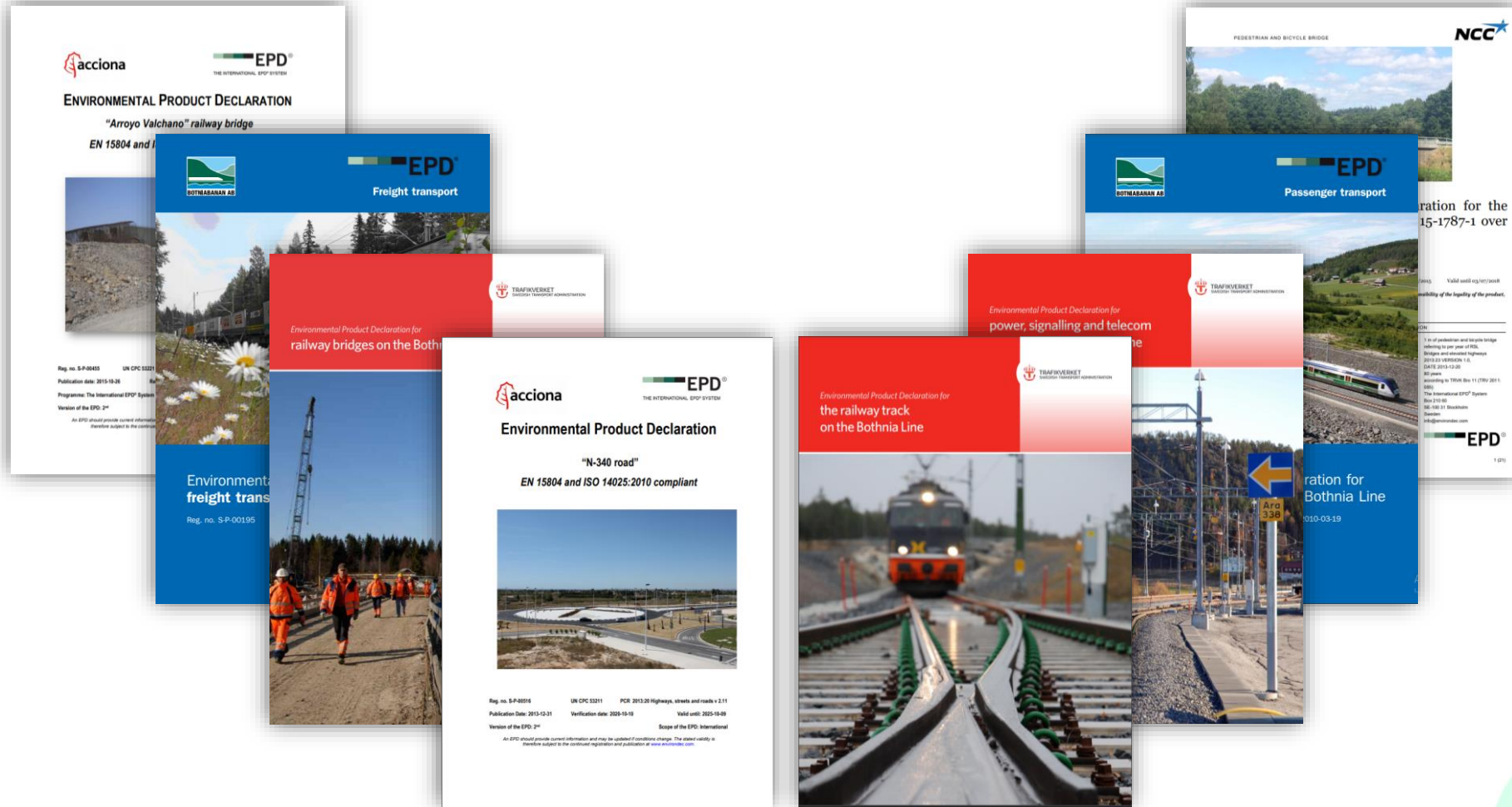


- Construction products
- Electricity, steam & fuels
- Textiles, footwear & apparel
- Machinery & equipment
- Services
- Infrastructure & buildings
- Paper products
- Food & beverages
- Chemical products
- Vehicles & transport equipment
- Furniture & other goods
- Metal, mineral, plastic & glass products



presence of EPD International representatives in countries around the world (<https://www.environdec.com/about-us/global-house-of-epd>)

OUTPUT: EPD EXAMPLES




OUTPUT: WHAT IS A CLIMATE DECLARATION

- EPD Climate Declaration is focuses on climate impact information such as the carbon footprint of a product in terms of Global Warming Potential (GWP) as measurable carbon dioxide equivalents (CO2 eq.).
- It is adapted to ISO 14067 for the calculation of carbon footprint (Carbon Footprint).

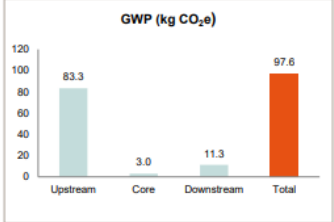
CLIMATE DECLARATION FOR BRIDGE 15-1787-1

Functional unit: 1 m of bridge per year of RSL

The climate declaration shows the emissions of greenhouse gases, expressed as CO₂-equivalents. It is based on verified results from a lifecycle assessment (LCA) performed as basis for an EPD®, in accordance with ISO 14025.



The table shows the global warming potential, 100 years (GWP100) in carbon dioxide equivalents (CO₂e) per functional unit:



Information about the product
The pedestrian and bicycle bridge is a composite bridge made of concrete and steel.
The declared bridge is bridge 15-1787-1 in the project road 27 Viared-Kräkered in Borås municipality, Sweden. It crosses the small river Viskan.

Information about the company
NCC is one of the leading construction and property development companies in the Nordic region. The Group had sales of SEK 57 billion in 2014, with approximately 18 000 employees. NCC operates within three businesses; an industrial business within NCC Roads, a construction and civil engineering business within NCC Construction and a development business within NCC Housing and NCC Property Development.

Climate declaration
The life cycle of the product includes the following modules: Upstream (raw materials/production, A1-A3 and transports A4), Core (construction, A5), Downstream (operation, B1, B6, B7, maintenance B2-B5 and end of life C2-C4).

The reuse, recovery or recycling potential (Module D) is calculated to -38.6 kg CO₂e per functional unit.

Other environmental information
This declaration is limited to one impact category. Information about other relevant environmental aspects is available in the EPD®.

Contact information
Larissa Strömberg, NCC
E-mail: larissa.stromberg@ncc.se
www.ncc.se

EPD PROGRAMME: THE INTERNATIONAL EPD® SYSTEM	REGISTRATION NO: S-P-00709	VALIDITY: 2018-07-03
PCR: 2013-23	UN CPC: 53221	PCR REVIEW CONDUCTED BY: THE TECHNICAL COMMITTEE OF THE INTERNATIONAL EPD® SYSTEM
INDEPENDENT VERIFICATION OF THE DECLARATION AND DATA, ACCORDING TO ISO 14025- EXTERNAL VERIFIER: CARL-OTTO NEVEN, INDIVIDUAL VERIFIER		ACCREDITED / APPROVED BY: THE INTERNATIONAL EPD® SYSTEM
LINK TO MORE INFORMATION: HTTP://EN.ENVIRONDEC.COM/EN/DETAIL/EPD709		
CLIMATE DECLARATIONS FROM DIFFERENT PROGRAMS MAY NOT BE COMPARABLE		

CLIMATE DECLARATION FOR CARBON STEEL REINFORCEMENT BARS

Functional unit: 1 kg of carbon steel rebar in bars

The climate declaration shows the emissions of greenhouse gases, expressed as CO₂-equivalents. It is based on verified results from a lifecycle assessment (LCA) performed as basis for an EPD®, in accordance with ISO 14025 and EN 15804



Climate declaration
The table below shows the carbon footprint of the product, calculated as carbon dioxide equivalents (kg CO₂ eq.) for 1 kg of carbon steel rebar in bars.

	Production A1-A3	Installation A4-A5
GWP-fossil	6.53E-01 kg CO ₂ -eq	7.37E-02 kg CO ₂ -eq
GWP-biogenic	3.81E-02 kg CO ₂ -eq	4.07E-03 kg CO ₂ -eq
GWP-luluc	2.18E-04 kg CO ₂ -eq	4.96E-04 kg CO ₂ -eq
GWP Total	6.53E-01 kg CO ₂ -eq	7.40E-02 kg CO ₂ -eq

Information about the product
Steel rebar, obtained from scrap, melted in chipboard followed by hot rolling. Designed for reinforcement of reinforced concrete structures of buildings and structures. The composition of steel reinforcement products does not change during use.

	Disposal C2-C4	Reuse/recovery/ recycle D
GWP-fossil	1.74E-02 kg CO ₂ -eq	-8.17E-02 kg CO ₂ -eq
GWP-biogenic	1.44E-03 kg CO ₂ -eq	2.18E-03 kg CO ₂ -eq
GWP-luluc	8.75E-05 kg CO ₂ -eq	2.33E-05 kg CO ₂ -eq
GWP Total	1.75E-02 kg CO ₂ -eq	-8.18E-02 kg CO ₂ -eq

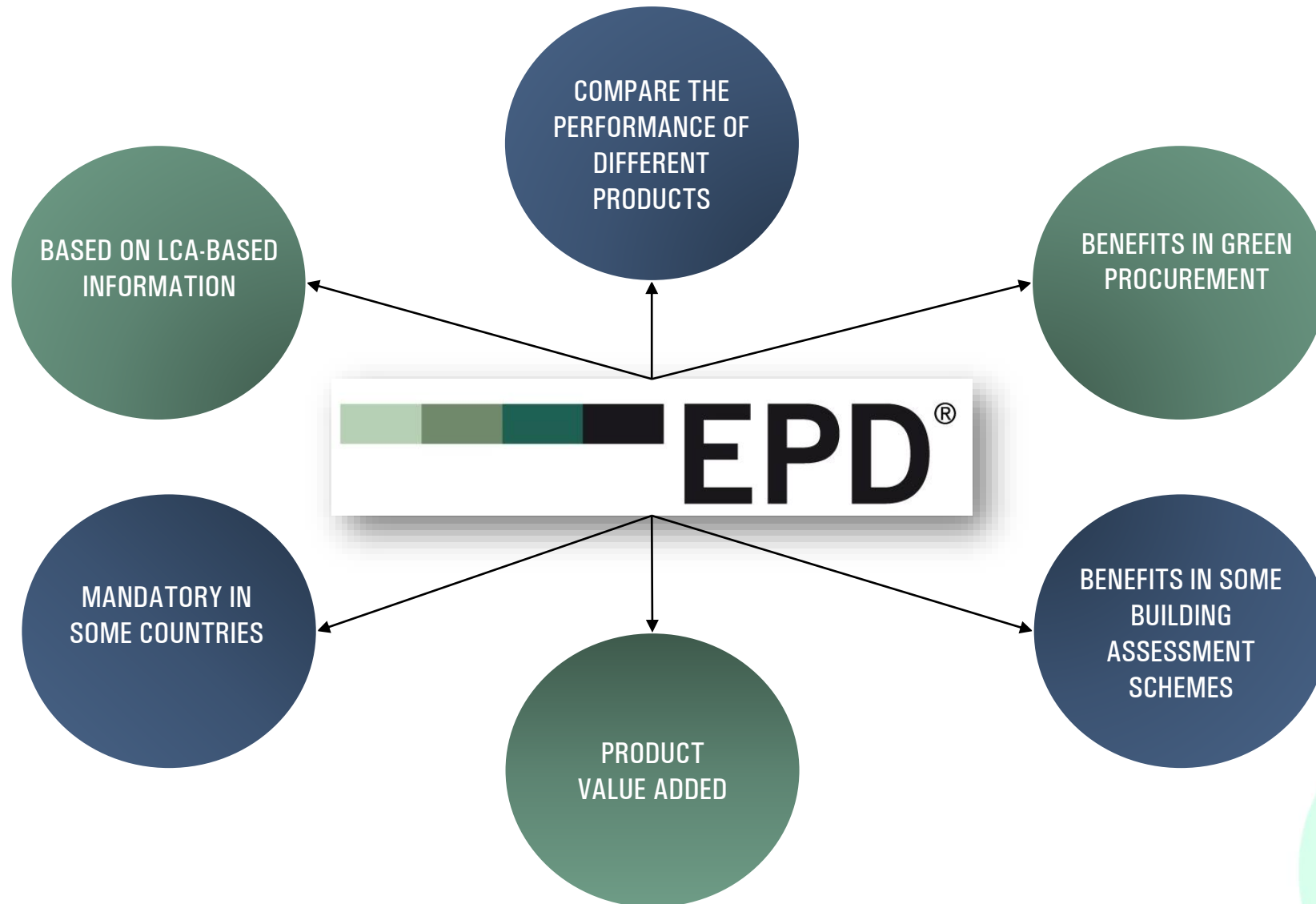
Information about the company
NLMK-Ural is a well-balanced metallurgical complex with a full production cycle from steel melting to manufacturing finished products. NLMK-Ural specializes in the production of continuously cast square billets, reinforcing bars and coils, wire rod. NLMK-Ural considers sustainable development as its social mission. The Company products are highly competitive and are in constant demand in the domestic and foreign markets.

Other environmental impacts
For the full EPD, see www.environdec.com and www.epdrussia.org.

Contact information
ural.nlmk.com
ns-a-nlmk-ural@nlmk.com
+7 (34397) 2-67-54

EPD PROGRAMME: THE INTERNATIONAL EPD® SYSTEM	REGISTRATION NO: S-P-01978	VALIDITY: 2015-03-25
PCR: 2012-02, V2.3	UN CPC: 41244, 41361	PCR REVIEW CONDUCTED BY: THE TECHNICAL COMMITTEE OF THE INTERNATIONAL EPD® SYSTEM
INDEPENDENT VERIFICATION OF THE DECLARATION AND DATA, ACCORDING TO ISO 14025- EXTERNAL VERIFIER: INDEPENDENT VERIFIER ANDRÉAS CROTEL, GREENSTRA		ACCREDITED / APPROVED BY: THE INTERNATIONAL EPD® SYSTEM
CLIMATE DECLARATIONS FROM DIFFERENT PROGRAMS MAY NOT BE COMPARABLE		
THIS CLIMATE DECLARATION ONLY ADDRESSES ONE IMPACT CATEGORY AND DOES NOT ASSESS OTHER POTENTIAL SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS ARISING FROM THE PROVISION OF THIS PRODUCT. THESE ASPECTS MAY BE OF EQUAL OR GREATER IMPORTANCE THAN THE IMPACT CATEGORY DISPLAYED.		

OUTPUT: EPDS AND CLIMATE DECLARATIONS APPLICABILITY



PROPOSAL: HOW COULD YOU MAKE THE ROAD GREENER?



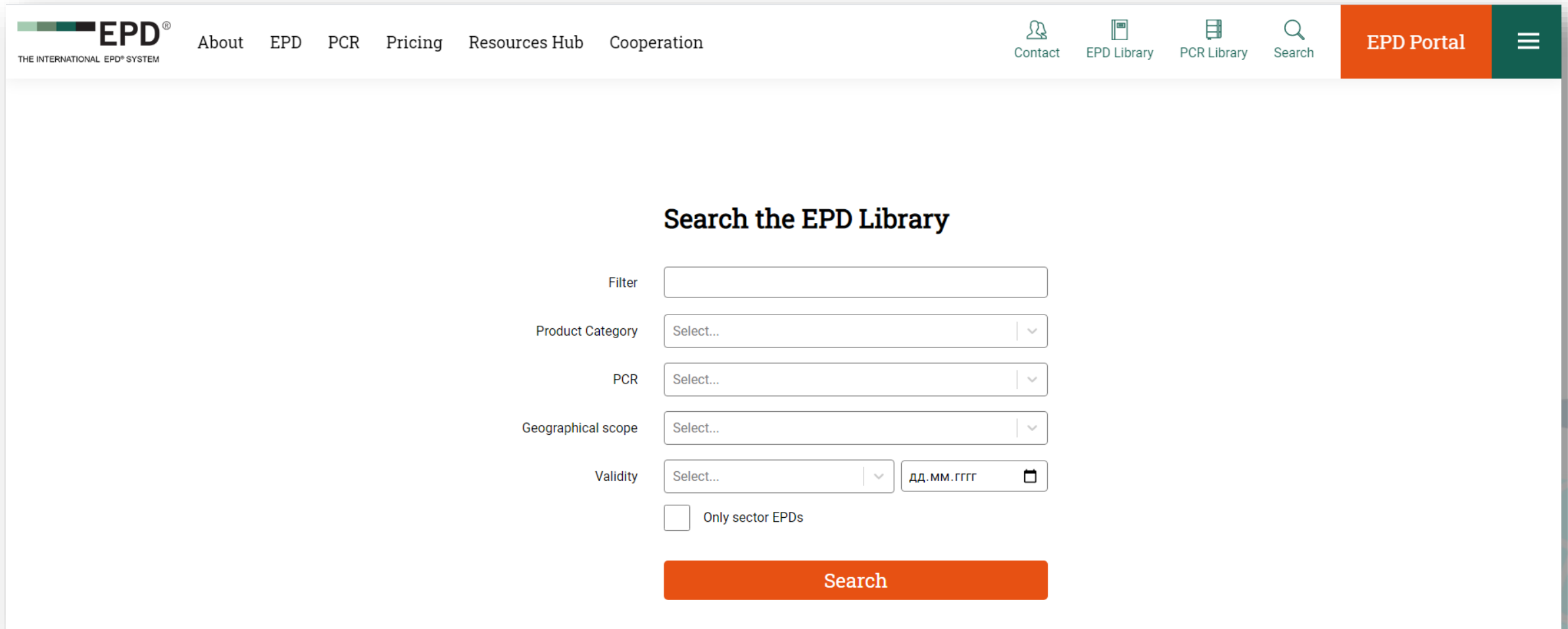
It is possible to reduce the environmental impact from the life cycle of a facility/project by:

- Using recycled materials in road construction
- Using alternative energy sources at the production stage
- Reducing resource intensity and improving energy efficiency during the operation phase of the roadway
- Selection of less carbon-intensive products
- Setting of criteria for suppliers selection according to their environmental performance
- In road construction, consider recycling/reuse of resources after the end of the roadway's service life



DIGITALIZATION ISSUES

All environmental declarations and PCRs are stored and can be accessed in a digital library at EPDPortal (<https://environdec.com/home>)



The screenshot shows the EPD Portal search interface. At the top, there is a navigation bar with the EPD logo and menu items: About, EPD, PCR, Pricing, Resources Hub, and Cooperation. On the right side of the navigation bar, there are icons for Contact, EPD Library, PCR Library, and Search, followed by a red 'EPD Portal' button and a green menu icon. The main content area is titled 'Search the EPD Library' and contains several search filters: a text input field for 'Filter', dropdown menus for 'Product Category', 'PCR', and 'Geographical scope', and a 'Validity' section with a dropdown menu and a date input field (DD.MM.YYYY). There is also a checkbox for 'Only sector EPDs' and a large orange 'Search' button at the bottom.

EPD®
THE INTERNATIONAL EPD® SYSTEM

About EPD PCR Pricing Resources Hub Cooperation

Contact EPD Library PCR Library Search

EPD Portal

Search the EPD Library

Filter

Product Category

PCR

Geographical scope

Validity DD.MM.YYYY

Only sector EPDs

Search

DIGITALIZATION ISSUES

One of the advantages of EPD is the ability to transfer the document to a machine-readable format.

All machine-readable EPDs can be downloaded from the ECO-platform website (<https://www.eco-platform.org/home.html>)

Environmental indicators								
Indicators of life cycle								
Indicator ↕	Direction ↕	Unit ↕	Production A1-A3	Transport A4	Installation A5	Maintenance B2	Transport C2	Disposal C4
Components for re-use (CRU)	Output	kg	0	0	0	0	0	0
Exported electrical energy (EEE)	Output	MJ	0	0	0	0	0	0
Exported thermal energy (ETE)	Output	MJ	0	0	0	0	0	0
Hazardous waste disposed (HWD)	Output	kg	0.000269	1.08E-7	0.00000201	0.00000578	3.61E-8	1.27E-7
Materials for energy recovery (MER)	Output	kg	0	0	0	0	0	0
Materials for recycling (MFR)	Output	kg	0	0	0	0	0	0
Use of net fresh water (FW)	Input	m ³	0.000429	0	0	0.005	0	0
Non hazardous waste dispose (NHWD)	Output	kg	0.227	0.0168	0.17	0.0473	0.0056	0.918
Use of non renewable primary energy (PENRE)	Input	MJ	952	0.209	3.45	9.5	0.0698	0.203
Use of non renewable primary energy resources used as raw materials (PENRM)	Input	MJ	38.5	0	0	0	0	0



Coordinating Informational Center
of CIS Member States on approximation of regulatory practices

Thank you for your interest!



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