



Welcome to my presentation of our  
**Scanning Concepts**



# Paper to XBRL Solutions



## Part 1

High-end AI based scanning  
solution

# I. General features and process

Use of Artificial Intelligence to scan intelligently PDF-formatted documents using optical character recognition, OCR.



Key feature is extraction of a unique cluster of non-financial (ESG) along with related financial data and KPIs.



Automated conversion into a digital format.



Current use is identification of financial data and information in pdf documents and creation of digital equivalents in XBRL format.



Sources of data and information in standardized formats (financial statements) or customized extensions or changes (periodic reporting to banks).

Intelligent identification of multi-dimensional content and data in tables or text .



'Learning system' improves and speeds up the extraction with each use.

Efficiency increase and cost decrease over recurring periods and a large number of issuers.





Use of diverse XBRL/iXBRL taxonomies (IFRS, US GAAP, other national EU GAAP) to create digital equivalents.

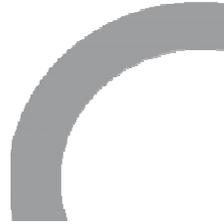
Individual taxonomy extensions, et al. to address particular needs (banks)

XBRL/iXBRL allows to prepare any kind of human readable reports in diverse format:

- \* initial (custom) format (bank report, ...)
- \* standardized format (with open-source converters like Arelle)
- \* a spreadsheet (xls) or
- \* any other format required



Current use case: financial risk analyses



Our concept :

Use of this Scan Solution to extract ESG data and information to create digital equivalents.



More flexible approach and solution as for financial data because :

- \* current large number and variety of ESG reporting standards
- \* no widely accepted XBRL taxonomy

Wide range of determination and presentation of ESG data and information is given for the time being.



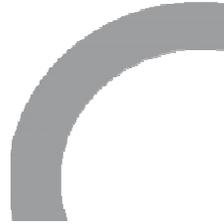


Our approach:

Collaboration with German business groups/companies of different sizes  
und industries ...

... representing the full bandwidth of ESG reporting needs  
and approaches.

Discussions to appreciate their current and future data reporting needs.





Use of **SASB** draft XBRL taxonomy for ESG data for the intelligent scan demonstration.

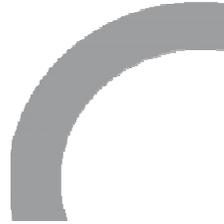
Our platform however uses an extensible **hybrid ESG taxonomy** following the guidelines of the European Single Electronic Format (ESEF) and the European Single Access Point (ESAP) for structured data formats.

This hybrid taxonomy can be linked with any existing financial (IFRS, national GAAP, ...) or future ESG XBRL taxonomy (EU CSRD, ISSB, ...). or with other structured formats in use in the financial sector.

Thus it could easily be linked to **SASB** as well.



Or it may be linked to **other structured formats** being in use in the **financial sector**.





## II. A four step approach

There may be a company (issuer) wishing to provide selected ESG data confidentially to its bank (user) or publicly being it required or optionally.



For our demonstration, we have taken the **BASF** public reports 2020.

# AI based scanning solution – the steps

Step 1 Identifying source documents and context

Selection of data and information

Selection of XBRL taxonomies

Step 2 Automated extraction of relevant data and context information

Creation of an XBRL file

Step 3 Conversion in human readable formats

Step 4 Network integration with public key – subject to the a separate prestentation!

## Our demo candidate

Selected candidate: BASF group

Largest chemical group globally. Listed in Germany.

Integrated reports. Reports in 2020 considered global best-in-class.

Engaged in diverse ESG groups and activities (WEF, Value Balancing Alliance, ...)

See also Appendix A to our submission document.

## Identifying source documents and context

Any kind of report file may be taken for processing.



\* could be an annual report, sustainability report or other printed or electronic document using images (jpg, ...)

\* could be prepared annually or more frequently (quarterly, on demand)

Additional context information as relevant or required

# Selected report: Integrated annual report 2020



## Context information

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### **Financial reporting**

IFRS

### **ESG reporting**

SASB

GRI

CDP

### **XBRL Taxonomy**

IFRS/ESEF

### **ESG Ratings/Scorings**

MSCI ESG

CDP

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### **Audit**

2020 group f/s IFRS

### **Assurance**

Reasonable

2020 selected ESG KPIs

Non-financial declaration

Limited

2020 ESG disclosures

Specific audits

2020 TfS compliance

2020 JV (human rights)

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## Selection of data and information



The application requires a selection of financial and non-financial data and the relevant periods to be extracted.

For our demonstration a limited set of data was selected and presented as a user defined table.

## Selected financial and ESG data and KPIs (Input table - user defined)

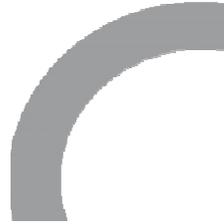
 <b>BASF</b> <small>We create chemistry</small>	Standard	Item	XBRL taxonomy	Industry segment	Indicator / KPI	Metric	2020	2019	2018 (Base year)
<b>Context Info</b>				Chemicals					
<b>Financial</b>	IFRS " "		'ITI-2021-by-fs " "		Revenue Research and development cost Number of employees y/e	€ Mio. € Mio. #			
<b>Environmental</b>	SASB GRI "	110a.1 305-2 305-3	SASB n/a = custom "		Scope 1 emissions Scope 2 emissions Scope 3 emissions	metric tonnes CO <sup>2</sup> e metric tonnes CO <sup>2</sup> e metric tonnes CO <sup>2</sup> e			
<b>KPIs</b>	GRI	305-4	n/a = custom		GHG Emissions Intensity	scope 1+2 metric t CO <sup>2</sup> e/metric t sales products			



Solely for demonstration purposes:

To facilitate a correct identification of selected data we present in the following the relevant pages and tables of the reports.

The relevant data are marked with arrows.



# Identification of selected financial data

## Ten-Year Summary

Million €

	2011	2012 <sup>a</sup>	2013 <sup>b</sup>	2014	2015	2016	2017	2018	2019	2020
<b>Statement of income</b>										
Sales	73,497	72,129	73,973	74,328	70,449	57,550	61,223 <sup>c</sup>	60,220 <sup>d</sup>	59,316	59,149
Income from operations (EBIT)	8,590	6,142	7,160	7,629	6,248	6,272	7,587 <sup>c</sup>	5,974 <sup>d</sup>	4,201	-191
Income before income taxes	8,970	5,977	8,000	7,203	5,548	5,395	6,882 <sup>c</sup>	5,233 <sup>d</sup>	3,302	-1,562
Income after taxes from continuing operations	-	-	-	-	-	-	5,592	4,116 <sup>d</sup>	2,546	-1,471
Income after taxes from discontinued operations	-	-	-	-	-	-	760	803 <sup>c</sup>	5,045	396
Income after taxes	8,603	5,067	5,113	5,492	4,301	4,255	6,352	4,979	8,491	1,075
Net income	6,180	4,019	4,792	5,155	3,967	4,056	6,070	4,707	6,401	-1,000
Income from operations, before depreciation and amortization (EBITDA)	11,593	10,009	10,432	11,043	10,849	10,526	10,766 <sup>c</sup>	8,970 <sup>d</sup>	8,185	6,494
EBIT before special items	8,447	6,647	7,077	7,357	6,729	6,309	7,648 <sup>c</sup>	6,281 <sup>d</sup>	4,643	3,560
<b>Capital expenditures, depreciation and amortization</b>										
Additions to property, plant and equipment and intangible assets	3,646	5,263	7,226	7,265	6,013	7,258	4,364	10,735	4,097	4,809
of which property, plant and equipment	3,199	4,084	6,428	6,309	5,742	4,377	4,028	5,040	3,842	4,075
Depreciation and amortization of property, plant and equipment and intangible assets	3,407	3,267	3,272	3,417	4,401	4,251	4,202	3,760 <sup>c</sup>	4,146	6,686
of which property, plant and equipment	2,618	2,584	2,631	2,770	3,600	3,691	3,586	3,155 <sup>c</sup>	3,408	5,169
<b>Number of employees</b>										
At year-end	111,141	110,782	112,206	113,202	112,435	113,630	115,490	122,404	117,628	110,302
Annual average	110,403	109,969	111,844	112,644	112,249	111,076	114,333	118,371	119,200	116,973
<b>Personnel expenses</b>										
	8,576	8,963	9,285	9,224	9,982	10,165	10,610	10,659	10,924	10,576
<b>Research and development expenses</b>										
	1,605	1,732	1,849	1,804	1,953	1,963	1,843 <sup>c</sup>	1,994 <sup>d</sup>	2,158	2,086

selected →

selected →

selected →

<sup>a</sup> We have applied International Reporting Standards (IFRS 10 and 11) as well as International Accounting Standard 19 (revised) since January 1, 2013. Figures for 2012 have been restated, no restatement was made for 2011 and earlier.  
<sup>b</sup> Figures for 2013 have been adjusted to reflect the disposition of the natural gas trading business disposal group.  
<sup>c</sup> Figures for 2017 were restated with the presentation of the oil and gas activities as discontinued operations.  
<sup>d</sup> Figures for 2018 were restated with the presentation of the construction chemicals activities as discontinued operations.

# Identification of selected ESG data

**Energy and climate protection**

protection and have done so since since 2004. BASF achieved a score of A- in COP's 2020 climate change questionnaire, again attaining Leadership status. Companies on the Leadership level are distinguished by factors such as the completeness and transparency of their reporting. They selected approaches in managing the opportunities and risks associated with climate change as well as strategies to achieve company-wide emission reduction goals.

Climate protection is a shared global task. We support various international initiatives and are selected members of them. For instance, we are committed to an ambitious climate policy as part of the Business 20 (B20) – the central dialog platform between business and politics in the G20 group of countries. In 2020, we helped draft climate protection recommendations for the G20 Summit in Saudi Arabia as a member of the B20's taskforce on Energy, Sustainability & Climate. BASF also supports the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). In 2020, we contributed to the TCFD report on climate-related scenario analyses as a member of a TCFD advisory group. Since the 2019 reporting year, BASF's annual report has included an overview showing the sections and subsections in which TCFD-relevant information can be found (see page 19).

For more information on climate protection, see [BASF climate strategy principles](#).

**Global target and measures**

We want to achieve CO<sub>2</sub>-neutral growth until 2030. In other words, we aim to maintain total greenhouse gas emissions from our production sites (excluding emissions from sale of energy to third parties) and our energy purchases at the 2018 level (21.9 million metric tons of CO<sub>2</sub> equivalents) while increasing production. In 2020, the emissions reported under this target amounted to 20.8 million metric tons of CO<sub>2</sub> equivalents, an increase of 3.5% compared with the previous year (2019: 20.1 million metric tons of CO<sub>2</sub> equivalents). The decline in emissions due to measures to increase energy efficiency and optimize processes as well as lower production volumes were more than offset by the integration of the polyamide business acquired from Solvay in January 2020 and the fact that there were fewer shutdowns of large-scale, emission-intensive plants.

**BASF Group's greenhouse gas emissions according to the Greenhouse Gas Protocol\***

Metric: million tons of CO <sub>2</sub> equivalents	2020	2019	2018 (baseline)
<b>BASF operations</b>			
<b>Scope 1<sup>1</sup></b>			
CO <sub>2</sub> (carbon dioxide)	15,960	15,856	17,025
N <sub>2</sub> O (nitrous oxide)	0.603	0.598	0.677
CH <sub>4</sub> (methane)	0.025	0.027	0.027
HFC (hydrofluorocarbons)	0.032	0.062	0.091
<b>Scope 2<sup>2</sup></b>			
CO <sub>2</sub>	3,279	3,319	4,067
<b>Total</b>	<b>20,805</b>	<b>20,077</b>	<b>21,887</b>
<b>Offsetting</b>	0	0	0
<b>Total after offsetting</b>	<b>20,805</b>	<b>20,077</b>	<b>21,887</b>
<b>Sale of energy to third parties (Scope 1)<sup>3</sup></b>			
CO <sub>2</sub>	0,868	0,759	0,773
<b>Total</b>	<b>21,674</b>	<b>20,836</b>	<b>22,660</b>
<b>Use of biomass<sup>4</sup></b>			
CO <sub>2</sub>	0,024	0,004	n/a

\* BASF emits, operates, or third party indirect emissions from the purchase of energy. Scope 1 emissions encompass both direct emissions from production and generation of steam and electricity, as well as direct emissions from the generation of steam and electricity for sale. Scope 2 emissions comprise indirect emissions from the purchase of energy by BASF's sites.  
 † Emissions of N<sub>2</sub>O, CH<sub>4</sub>, and HFC have been translated into CO<sub>2</sub> emissions using the Global Warming Potential, or GWP, factor. GWP factors are based on the Intergovernmental Panel on Climate Change (IPCC) 2007, working paper 2013, HFC, PFC, NF<sub>3</sub> and SF<sub>6</sub> Global Warming Potentials are calculated using the GWP factors of the individual components.  
 ‡ The comparative figure for 2019 has been adjusted to reflect similar data.  
 § Market-based approach. Under the location-based approach, Scope 2 emissions were 2,652 million metric tons of CO<sub>2</sub> in 2020 and 3,342 million metric tons of CO<sub>2</sub> in 2019.  
 ¶ Includes sales to BASF Group companies, as a result, emissions reported under Scope 2 can be considered twice in some cases.  
 †† Emissions are reported according to Scope 1 and Scope 2 in accordance with the Greenhouse Gas Protocol.

**2030 target**  
CO<sub>2</sub>-neutral growth:  
Annual greenhouse gas emissions compared with baseline 2018  
(BASF operations excluding sale of energy to third parties, including offsetting)

**constant**

## Selection of XBRL taxonomies

To run the application the relevant XBRL taxonomies must be selected.

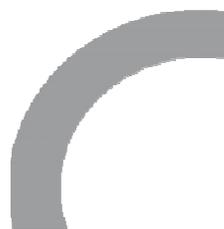
As addressed before this could be any existing or future taxonomy in use for financial data on one and ESG data on the other hand.



Our demo candidate BASF as a listed German group uses IFRS for its financial reporting, thus the IFRS taxonomy is used.

Please note:

The process of identifying IFRS figures and information was not included in our demo process as being an existing conversion currently used for EU public interest companies to file according the European Single Electronic Format (ESEF).





# XBRL taxonomy for selected IFRS figures

Concept name	Preferred label	Standard label	Documentation label
[110000] General information about financial statements	<a href="http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-110000">http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-110000</a>		
DisclosureOfGeneralInformationAboutFinancialStatementsExplanatory	Disclosure of general information about financial statements	Disclosure of general information about financial statement	The entire disclosure for general information about financial sta
[210000] Statement of financial position, current/non-current	<a href="http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-210000">http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-210000</a>		
StatementOfFinancialPositionAbstract	Statement of financial position [abstract]	Statement of financial position [abstract]	
[220000] Statement of financial position, order of liquidity	<a href="http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-220000">http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-220000</a>		
StatementOfFinancialPositionAbstract	Statement of financial position [abstract]	Statement of financial position [abstract]	
[310000] Statement of comprehensive income, profit or loss, by functi	<a href="http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-310000">http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-310000</a>		
IncomeStatementAbstract	Profit or loss [abstract]	Profit or loss [abstract]	
Revenue	Revenue	Revenue	The income arising in the course of an entity's ordinary activitie
[320000] Statement of comprehensive income, profit or loss, by nature	<a href="http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-320000">http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-320000</a>		
IncomeStatementAbstract	Profit or loss [abstract]	Profit or loss [abstract]	
[410000] Statement of comprehensive income, OCI components preser	<a href="http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-410000">http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-410000</a>		
StatementOfComprehensiveIncomeAbstract	Statement of comprehensive income [abstract]	Statement of comprehensive income [abstract]	
[420000] Statement of comprehensive income, OCI components preser	<a href="http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-420000">http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-420000</a>		
StatementOfComprehensiveIncomeAbstract	Statement of comprehensive income [abstract]	Statement of comprehensive income [abstract]	
[510000] Statement of cash flows, direct method	<a href="http://xbrl.ifrs.org/role/ifrs/ias_7_2021-03-24_role-510000">http://xbrl.ifrs.org/role/ifrs/ias_7_2021-03-24_role-510000</a>		
StatementOfCashFlowsAbstract	Statement of cash flows [abstract]	Statement of cash flows [abstract]	
[520000] Statement of cash flows, indirect method	<a href="http://xbrl.ifrs.org/role/ifrs/ias_7_2021-03-24_role-520000">http://xbrl.ifrs.org/role/ifrs/ias_7_2021-03-24_role-520000</a>		
StatementOfCashFlowsAbstract	Statement of cash flows [abstract]	Statement of cash flows [abstract]	
[710000] Statement of changes in net assets available for benefits	<a href="http://xbrl.ifrs.org/role/ifrs/ias_26_2021-03-24_role-710000">http://xbrl.ifrs.org/role/ifrs/ias_26_2021-03-24_role-710000</a>		
StatementOfChangesInNetAssetsAvailableForBenefitsAbstract	Statement of changes in net assets available for benefits [abs	Statement of changes in net assets available for benefits [abs	
[800100] Notes - Subclassifications of assets, liabilities and equities	<a href="http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-800100">http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-800100</a>		
SubclassificationsOfAssetsLiabilitiesAndEquitiesAbstract	Subclassifications of assets, liabilities and equities [abstrac	Subclassifications of assets, liabilities and equities [abstrac	
[800200] Notes - Analysis of income and expense	<a href="http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-800200">http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-800200</a>		
AnalysisOfIncomeAndExpenseAbstract	Analysis of income and expense [abstract]	Analysis of income and expense [abstract]	
ResearchAndDevelopmentExpense	Research and development expense	Research and development expense	The amount of expenditure directly attributable to research or d
[800300] Notes - Statement of cash flows, additional disclosures	<a href="http://xbrl.ifrs.org/role/ifrs/ias_7_2021-03-24_role-800300">http://xbrl.ifrs.org/role/ifrs/ias_7_2021-03-24_role-800300</a>		
StatementOfCashFlowsAbstract	Statement of cash flows [abstract]	Statement of cash flows [abstract]	
[800400] Notes - Statement of changes in equity, additional disclosure	<a href="http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-800400">http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-800400</a>		
StatementOfChangesInEquityAbstract	Statement of changes in equity [abstract]	Statement of changes in equity [abstract]	
[880000] Notes - Additional information	<a href="http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-880000">http://xbrl.ifrs.org/role/ifrs/ias_1_2021-03-24_role-880000</a>		
DisclosureOfAdditionalInformationExplanatory	Disclosure of additional information [text block]	Disclosure of additional information [text block]	The disclosure of additional information that is not presented e
NumberOfEmployees	Number of employees	Number of employees	The number of personnel employed by the entity at a date.

selected

selected

selected

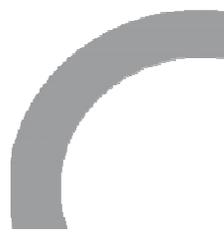




As relates to reporting on ESG the BASF currently uses GRI and SASB within its integrated reports plus it files a questionnaire according to CDP standards, which includes the fulfilment of TCFD.

The only taxonomy currently existing as a comprehensive set is a SASB (draft) taxonomy. Thus we used this one within our demonstration.

As relates to Greenhouse Gas (GHG) Emissions, this taxonomy only includes Scope 1.





## XBRL taxonomy for selected ESG figures



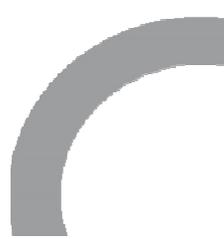
Topic	Code	Accounting metric	Category
GHG emissions	TR-AF-110a.1	Gross global Scope 1 emissions	quantitative; metric tons CO <sub>2</sub> e



As relates to the remaining ESG indicators/KPIs selected for our demonstration (Scopes 2 and 3 GHG Emissions, emission intensity, each according GRI) a customised extension or a hybrid taxonomy must be used.

The same applies to individually required financial or further ESG metrics where no taxonomy is currently available.

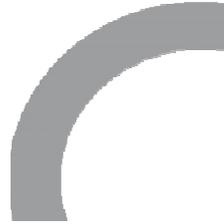
As soon as globally accepted taxonomies would be available (ISSB, EU Sustainable Finance Taxonomy, EU/EFrag and CSRD, etc.) the scan application could easily be adapted.





Please note:

The use of hybrid tags was not presented within the scan demonstration. We refer to the network presentation, where this is included.





# ESG standards subject to a hybrid taxonomy

## GRI and Global Compact Index

The guidelines organize topic-specific standards into three categories: economic, environmental and social. Within the specific standard disclosures, each indicator is allocated to the material topics.

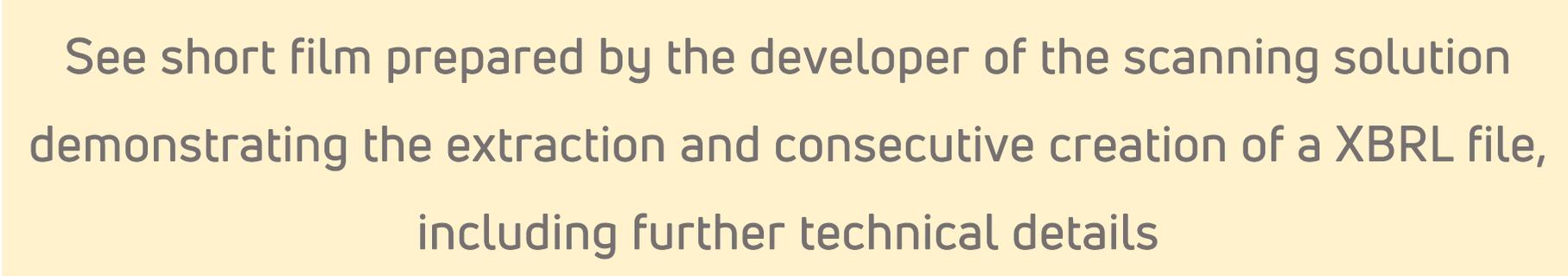
Topic-specific Standards	Link	Page	Comment	Global Compact Principles	€
<b>305: Emissions</b>					
	<a href="#">About This Report</a>	5-6			
	<a href="#">Energy and climate protection: Strategy</a>	130-131			
	<a href="#">Table: BASF Group's greenhouse gas emissions according to the Greenhouse Gas Protocol</a>	131			
→ 305-1	Direct (Scope 1) GHG emissions		<a href="#">Graphic: Greenhouse gas emissions along the BASF value chain in 2020</a>	134	7, 8
			<a href="#">Additional key indicators for energy and climate protection in BASF operations</a>	133	
→ 305-2	Energy indirect (Scope 2) GHG emissions		<a href="#">Energy and climate protection: Table: BASF Group's greenhouse gas emissions according to the Greenhouse Gas Protocol</a>	131	7, 8
			<a href="#">Graphic: Greenhouse gas emissions along the BASF value chain in 2020</a>	134	
→ 305-3	Other indirect (Scope 3) GHG emissions		<a href="#">Energy and climate protection: Graphic: Greenhouse gas emissions along the BASF value chain in 2020</a>	134	7, 8
→ 305-4	GHG emissions intensity		<a href="#">Energy and climate protection: Graphic: Specific greenhouse gas emissions from BASF operations</a>	131	8
			<a href="#">Table: Additional key indicators for energy and climate protection in BASF operations</a>	133	



Automated extraction of relevant data  
and context information

&

Creation of an XBRL file



See short film prepared by the developer of the scanning solution  
demonstrating the extraction and consecutive creation of a XBRL file,  
including further technical details



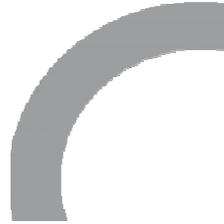


The scanning solution intelligently extracts data as well as contextual information being presented in the source document together with the search term used.

For scanning demonstration purposes, the extraction process was performed for Scope 1 and Scope 3 GHG Emissions.



It may be noted, that at current the application runs only in German, but an extension to English is envisaged, other languages may follow if needed.

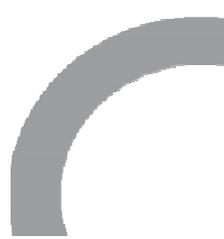




As our example below demonstrates regarding Scope 1 GHG Emissions, there may be several components involved.

To conclude a figure for **Scope 1 Emissions** for the BASF Group, the application must combine the six identified gases into a final total.

Below we present the same extraction as relates to **Scope 3 GHG Emissions**, while here there is only one figure to be identified and extracted.



# Scope 1 extraction

**CLASS und EXTR Mouseover**

Gütekriterien	Inhalt (Tabelle)	Classifier	Extractor
Extraktoren	[[PAGE_1]] C02-		sasb_GlobalSco

[[PAGE\_1]] C02-Aquivalente) konstant halten. Im Jahr 2020 betragen die im Rahmen dieser Zielsetzung betrachteten Emissionen 20,8 Millionen Tonnen C02-Aquivalente und sind somit im Vergleich zum Vorjahr um 3,5 % gestiegen (2019 J 20,1 Millionen Tonnen C02-Aquivalente). Rückläufige Emissionen infolge von Maßnahmen zur Erhöhung der Energieeffizienz und zur Prozessoptimierung sowie durch ein reduziertes Produktionsvolumen wurden überkompensiert - zum einen durch die Integration des im Januar 2020 akquirierten Polyamidgeschäfts von Solvay, zum anderen durch eine geringere Anzahl an Abstellungen von emissionsintensiven Großanlagen. Treibhausgasemissionen der BASF-Gruppe nach Greenhouse Gas Protocol a Millionen Tonnen C02-Aquivalente 2020 2019 2020 2018 (Basisjahr) 2018 (Basisjahr) Scope 1 b C02 (Kohlendioxid) (2020: 16,860,00) (2019: 15,855,00) (2018: 17,025,00) Scope 1 b N20 (Lachgas) (2020: 0,609) (2019: 0,598) (2018: 0,677) Scope 1 b CH4 (Methan) (2020: 0,025) (2019: 0,023) (2018: 0,027) Scope 1 b HFC (Fluorkohlenwasserstoffe) (2020: 0,032) (2019: 0,082) (2018: 0,091) 31.12.2016 Aktiva 2016 2015 EUR EUR

**CLASS und EXTR Mouseover**

Gütekriterien	Inhalt (Tabelle)	Classifier	Extractor
Extraktoren	[[PAGE_1]] C02-		sasb_GlobalSco

**Extraktoren und Classifier:**

- Extr\_sasb\_GlobalScopeONEEmissions\_twoZoneNINE;0,082 - Häufigkeit: 1
- Extr\_sasb\_GlobalScopeONEEmissions\_twoZtwoZ;0,609 - Häufigkeit: 1
- Extr\_sasb\_GlobalScopeONEEmissions\_twoZtwoZ;0,032 - Häufigkeit: 1
- Extr\_sasb\_GlobalScopeONEEmissions\_twoZtwoZ;0,025 - Häufigkeit: 1
- Extr\_sasb\_GlobalScopeONEEmissions\_twoZoneNINE;0,023 - Häufigkeit: 1
- Extr\_sasb\_GlobalScopeONEEmissions\_twoZoneEIGHT;0,027 - Häufigkeit: 1
- Extr\_sasb\_GlobalScopeONEEmissions\_twoZoneNINE;0,598 - Häufigkeit: 1
- Extr\_sasb\_GlobalScopeONEEmissions\_twoZoneEIGHT;0,677 - Häufigkeit: 1
- Extr\_sasb\_GlobalScopeONEEmissions\_twoZtwoZ;16,860,00 - Häufigkeit: 1
- Extr\_sasb\_GlobalScopeONEEmissions\_twoZoneEIGHT;0,091 - Häufigkeit: 1
- Extr\_sasb\_GlobalScopeONEEmissions\_twoZoneEIGHT;17,025,00 - Häufigkeit: 1
- Extr\_sasb\_GlobalScopeONEEmissions\_twoZoneNINE;15,855,00 - Häufigkeit: 1

**2019**

**2020**

**2018**

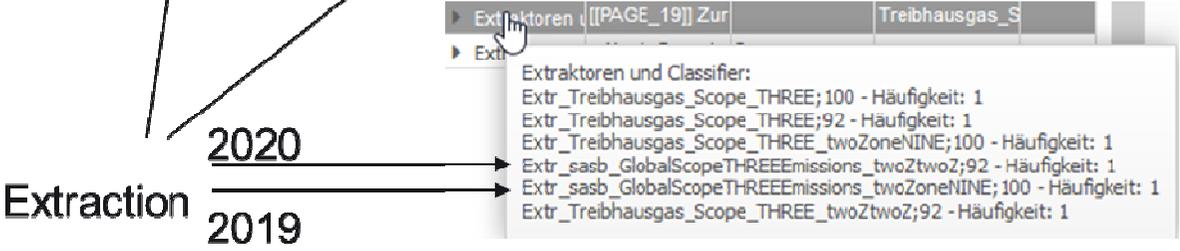
**Extraktion**

# Scope 3 extraction

CLASS und EXTR Mouseover ⓘ

Gütekriterien	Inhalt (Tabelle)	Classifier	Extractor
▶ Extraktoren	Einsatz von Bio		Treibhausgasen
▶ Extraktoren	[[PAGE_9]] Derz	Summe	Treibhausgas_S
▶ Extraktoren	sonstige anorga	Summe	

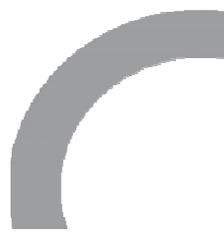
[[PAGE\_19]] Zur Energieversorgung unserer Standorte sind wir auch auf lokal verfügbare Energieträger angewiesen. Die Nutzung erneuerbarer Energien beziehen wir generell in unsere Entscheidungsprozesse ein, insbesondere beim Zukauf von Strom. Zudem leistet unsere Forschung einen Beitrag zur Steigerung der Effizienz von Technologien zur Nutzung erneuerbarer Energiequellen. CO2-Bilanz und Klimaschutzprodukte --Berichterstattung über Treibhausgasemissionen entlang der gesamten Wertschöpfungskette --BASF-Klimaschutzprodukte vermeiden Treibhausgasemissionen durch ihren Einsatz beim Kunden -- Ermittlung des CO2-Fußabdrucks unserer Produkte zur Erhöhung der Transparenz Für unsere Kunden BASF veröffentlicht bereits seit 2008 jährlich eine umfassende CO2-Bilanz. Darin berichten wir alle Emissionen entlang der Wertschöpfungskette - von der Rohstoffgewinnung über die Produktion bis hin zur Entsorgung. Zudem zeigen wir anhand von ausgewählten Klimaschutzprodukten auf, welche Emissionen durch die Nutzung dieser Produkte vermieden werden. Die Treibhausgasemissionen, die gemäß der Definition des Greenhouse-Gas-Protocol-Standards vor und nach unserer Geschäftstätigkeit in der BASF-Wertschöpfungskette entstehen (Scope 3), betragen im Jahr 2020 rund 92 Millionen Tonnen CO2-Äquivalente (2019 100 Millionen Tonnen CO2-Äquivalente). Zur Ermittlung der transportbedingten Emissionen hat BASF im Jahr 2020 eine neue digitale Anwendung implementiert, die eine Transportleistung von rund 68 Milliarden Tonnenkilometern für Transporte innerhalb von BASF und zu den BASF-Kunden nach Distanz und Transportmittel ausgewertet hat. Mit unseren Klimaschutzprodukten bieten wir unseren Kunden Lösungen an, die gegenüber Vergleichsprodukten über ihren gesamten Lebenszyklus hinweg betrachtet Treibhausgasemissionen vermeiden.





The scanning solution creates one XBRL file for each of the taxonomies used. This could contain 1 file for IFRS data, 1 file for SASB data, 1 file for hybrid data.

For demonstration purposes solely the data file for Scope 1 GHG Emissions according to the SASB taxonomy was created – see next.





# Scope 1 XBRL extraction based on SASB

```
</xbrli:context>
<xbrli:context id="id42g7020b90244dfada01580abdfc529_D20180101-20181231">
  <xbrli:entity>
    <xbrli:identifier scheme="http://www.sec.gov/CIK">1234567890</xbrli:identifier>
  </xbrli:entity>
  <xbrli:period>
    <xbrli:startDate>2018-01-01</xbrli:startDate>
    <xbrli:endDate>2018-12-31</xbrli:endDate>
  </xbrli:period>
</xbrli:context>
<sasb:GlobalScope1Emissions unitRef="t" contextRef=
  "i5c09790c71b94a78b7ac203a86e8037a_D20200101-20201231" decimals="3" sign="-" scale="-2" >17526
</sasb:GlobalScope1Emissions>
<sasb:GlobalScope1Emissions unitRef="t" contextRef=
  "id42f7020b90244dfada01580aadfc533_D20190101-20191231" decimals="3" sign="-" scale="-2" >16558
</sasb:GlobalScope1Emissions>
<sasb:GlobalScope1Emissions unitRef="t" contextRef=
  "id42g7020b90244dfada01580abdfc529_D20180101-20181231" decimals="3" sign="-" scale="-2" >17820
</sasb:GlobalScope1Emissions>
<sasb-dei:NameOfReportingEntityOrOtherMeansOfIdentification contextRef=
  "i5c09790c71b94a78b7ac203a86e8037a_D20200101-20201231">BASF 2020
</sasb-dei:NameOfReportingEntityOrOtherMeansOfIdentification>
</xbrli:xbrl>
```



## Conversion in human readable formats

The machine readable XBRL file created may be converted into diverse types of human readable formats and files.

This applies as well to any kind of hybrid taxonomy based file.

These may be pdf reports, charts or spreadsheets depending on user needs.

We refer to the presentation of the network platform.

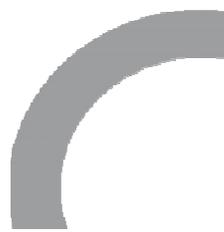




When using a standard taxonomy like SASB in our demonstration, an open source platform like ARELLE could be used to create a presentation.

The resulting presentation is based on the SASB tree structure, which could be further integrated into individual sustainability reports.

Such presentation as well as any other structure could be further integrated into individual sustainability reports.





# SASB taxonomy based presentation (Arelle)

arelle - xbrl\_SASB\_BASF\_2020\_diSCIS\_aktuell\_Bsp.xml

File Tools Help

DTS Properties

Fact Table Fact List Presentation Dimension Formulae

Concept	2018-12-31	2019-12-31	2020-12-31
Resource Transformation - Chemicals (RT-CH)			
sasb:ChemicalsIndustryAbstract			
sasb:ChemicalsIndustryAccountingMetricsAbstract			
sasb:GreenhouseGasEmissionsDisclosureAbstract			
sasb:GreenhouseGasEmissionsDisclosureTextBlock			
sasb:RTCH110a1Abstract			
sasb:GlobalScope1EmissionsPercentageCoveredByRe			
sasb:GlobalScope1Emissions	17,820,000	16,558,000	17,526,000
sasb:RTCH110a2Abstract			
sasb:AirQualityDisclosureAbstract			
sasb:EnergyManagementDisclosureAbstract			
sasb:WaterManagementDisclosureAbstract			
sasb:HazardousWasteManagementDisclosureAbstract			
sasb:CommunityRelationsDisclosureAbstract			
sasb:WorkforceHealthAndSafetyDisclosureAbstract			
sasb:ProductDesignForUsephaseEfficiencyDisclosureAbstrac			
sasb:SafetyAndEnvironmentalStewardshipOfChemicalsDiscl			
sasb:GeneticallyModifiedOrganismsDisclosureAbstract			
sasb:ManagementOfLegalAndRegulatoryEnvironmentDisclo			
sasb:OperationalSafetyEmergencyPreparednessAndRespons			
sasb:ChemicalsIndustryActivityMetricsAbstract			
Resource Transformation - Containers & Packaging (RT-CP)			



Other ways of presenting the data could be made, for example using a user-defined output table in Spreadsheet format (xls) for integration in (environmental) risk assessments or Integrated Reports.



## Output table – user defined (xls)

BASF Group	Standard	Item	XBRL taxonomy	Industry segment	Indicator / KPI	Metric	2020	2019	2018 (Base year)
<b>Context Info</b>				Chemicals					
<b>Financial</b>	IFRS		'ITI-2021-by-fs		Revenue	€ Mio.			
	"		"		Research and development cost	€ Mio.			
	"		"		Number of employees y/e	#			
<b>Environmental</b>	SASB	110a.1	SASB		Scope 1 emissions	metric tonnes CO <sup>2</sup> e	17.526	16.558	17.820
	GRI	305-2	n/a = custom		Scope 2 emissions	metric tonnes CO <sup>2</sup> e			
	"	305-3	"		Scope 3 emissions	metric tonnes CO <sup>2</sup> e			
<b>KPIs</b>	GRI	305-4	n/a = custom		GHG Emissions Intensity	scope 1+2 metric t CO <sup>2</sup> e/metric t sales products			