CO_2 - BALANCE | 2022

ADIPRO CHEMICALS

FOKUS ZUKUNFT

This balance sheet indicates the greenhouse gas emissions in 2022 of the following company:

>> Company: ADIPRO CHEMICALS

>> Contact person: MR.KUNAL KHANNA
kunal@adiprochemicals.com

The report is issued by Fokus Zukunft GmbH & Co. KG:

>> Date: 30.10.2023

>> Editor: Fokus Zukunft GmbH & Co. KG
Leutstettener Straße 28
82319 Starnberg
www.fokus-zukunft.com

Table of Contents

1. PROJECT OBJECTIVES

Fokus Zukunft was commissioned to prepare this greenhouse gas balance. The aim is to indicate greenhouse gas emissions according to their origin in order to identify possible drivers and reduction potentials. This is the basis for an operational climate protection strategy. Based on these results, fields of action in the area of climate protection and sustainability can be defined and implemented.

For this purpose, the survey period as well as the organizational and operational system boundaries were determined with the client. **The present greenhouse gas balance shows those emissions that arise in direct connection with the company's own value creation.** A detailed list of the emission sources taken into account can be found under 3. system boundaries and data quality / operational boundary.

The present emission report is in accordance with the **guidelines of the Greenhouse Gas Protocol** Corporate Standard (GHG Protocol).
The client provided Fokus Zukunft with the necessary company data.
A check of the data was not carried out by Fokus Zukunft and was not part of the service.

2. Basics of greenhouse gas balancing

The **Greenhouse Gas Protocol (GHG)** is the most widely used and recognized international standard for accounting for greenhouse gas emissions of companies. It was developed by the World Resources Institute (WRI) and the World Business Council on Sustainable Development (WBCSD). The GHG defines the **basic principles of relevance, completeness, consistency, transparency and accuracy** and is based on the principles of financial accounting.

The Greenhouse Gas Protocol also defines rules for the organizational delimitation of a greenhouse gas balance and for operational delimitation. The **division of emissions into three so-called "scopes"** is particularly relevant here: While **Scope 1** includes all emissions generated directly e.g. by combustion of the comany's activity, **Scope 2** emissions are associated with purchased energy (e.g. electricity, district heating). **Scope 3** in turn encompasses emissions from services and third-party services.

The **Kyoto Protocol lists seven greenhouse gases**: carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) as well as fluorinated greenhouse gases (F-gases): hydrogen-containing fluorocarbons (HFCs), perfluorinated hydrocarbons (PFCs), sulfur hexafluoride (SF_6) and nitrogen trifluoride (NF_3). In order to reduce the complexity, the effects of the **different gases are converted into CO_2 equivalents (CO_2e) depending on their damaging climate impact**.

The result of the emissions balance is therefore not to be understood as a direct carbon dioxide emission, but as a conversion into comparative values based on the most important anthropogenic greenhouse gas, carbon dioxide. The emission factors are taken i.a. from the data basis for emission inventories of DEFRA (Department for Environment, Food and Rural Affairs), the GEMIS database (Global Emissions Model of Integrated Systems, published by the International Institute for Sustainability Analysis and Strategies), the Ecoinvent Database, the database of the Federal Environment Agency (UBA) and the IPCC (Intergovernmental Panel on Climate Change). The databases used are listed in the appendix.

3. SYSTEM BOUNDARIES AND DATA QUALITY

The system boundaries determine the temporal, organizational and operational framework for the preparation of the greenhouse gas balance.
They are individually coordinated and defined with the customer.

>> Time frame:

Reference period:	from:	January 2022
	to:	December 2022

>> Organizational boundaries:

Corporations / locations included:	5	India Plant & Office, HongKong, Lagos Office, Nigeria Plant, United Arabics Emirates
Number of employees in the reference year:	66	

>> Operational boundaries:

The emissions categories included are assigned to Scopes 1 to 3 on the basis of the Greenhouse Gas Protocol.

Scope	Emissions Category	Data Quality
Scope 1	Heat consumption	Real and estimated values
Scope 1	Fuel consumption	Real and estimated values
Scope 1	Gas leakages	Real and estimated values
Scope 1	Direct emissions from industrial processes	Not relevant
Scope 2	Electricity consumption	Real and estimated values
Scope 2	District heating / cooling / Steam	Real and estimated values
Scope 3	Upstream energy-related emissions	Calculated based on consumption data
Scope 3	Business travel and hotel accommodation	Estimated values
Scope 3	Commuting and home office of employees	Real and estimated values
Scope 3	Water / Wastewater	Estimated values
Scope 3	Waste accumulation in operations	Estimated values
Scope 3	Paper consumption	Estimated values
Scope 3	Production consumables	Real and estimated values
Scope 3	Exchange logistics by third party	Real and estimated values
Scope 3	Capital goods	Real and estimated values

4. PRESENTATION OF TOTAL RESULTS

Results		
Overall, the company emitted in the reporting year	**3.129**	tons CO_2e
Emissions per employee	**47,41**	tons CO_2e
Partial result: Scope 1 and 2	**748,44**	tons CO_2e
Partial Result: Scope 3	**2.380,36**	tons CO_2e
CO_2e per km of business trip	**0,00**	kg CO_2e
CO_2e per employee commuting	**1,94**	tons CO_2e

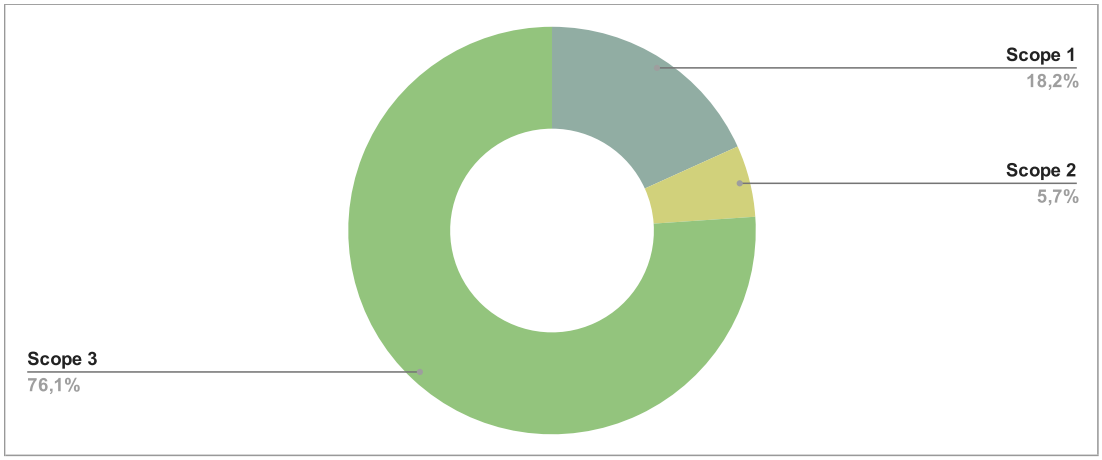
Compared to other companies of the size and branch, the emission value per employee is in the higher range.

Overview table of results

Classification	Emissions by category	[t CO_2e]	%-Share
Scope 1	Heat consumption	66,58	2,13%
	Fuel consumption	441,35	14,11%
	Gas leakages	62,64	2,00%
	Direct emissions from industrial processes	0,00	0,00%
	Sum	**570,57**	**18,24%**
Scope 2	Electricity consumption	177,87	5,69%
	District heating / cooling / Steam	0,00	0,00%
	Sum	**177,87**	**5,69%**
Scope 3	Upstream energy-related emissions	167,87	5,37%
	Business travel and hotel accommodation	110,34	3,53%
	Commuting and home office of employees	128,01	4,09%
	Wastewater / Waste accumulation in operations	7,46	0,24%
	Paper consumption	7,86	0,25%
	Hardware	5,84	0,19%
	Production consumables	28,32	0,91%
	Exchange logistics by third party	335,07	10,71%
	Capital goods	1.589,58	50,80%
	Sum	**2.380,36**	**76,08%**
Total		**3.128,80**	**100,00%**

The overview of the results of the **ADIPRO CHEMICALS** carbon footprint reveals that in particular the emission category **Business travel and hotel accommodation** has a large share in the overall balance. Also in the category **Capital goods** are significant amounts of greenhouse gas emissions.

Distribution of emissions on the overall balance



Comparison of the footprint

354

people in cause roughly the same amount of emissions each year as your company.

1.204

trees bind the calculated CO_2 emissions of your company over their entire life cycle.

14.899.041

kilometres can be driven by car to generate as much CO_2 as your company.

432

times one person flies around the world and emits as much CO_2 as your company causes.

5. REDUCTION TARGETS ACCORDING TO THE SCIENCE BASED TARGETS

What are the Science Based Targets?

The Science Based Targets (SBTs) are **reduction targets for relevant greenhouse gas emissions** that are calculated on a scientific basis. They were created in mid-2015 by the Science Based Targets Initiative as a result of a merger of the organizations CDP (Carbon Disclosure Project), WRI (World Resources Institute), WWF (World Wide Fund for Nature) and UNGC (United Nations Global Compact).

The Science Based Targets are **in line with the 1.5°C target of the Paris climate agreement** of 2015. Accordingly, the 195 signatory states have agreed to reduce global warming to below 2°C by 2050 (**if possible 1.5°C**) compared to pre-industrial times.

Since governments have limited influence, the Science Based Targets initiative can be a trend-setting element for achieving the climate goal in the future. Since companies in particular emit large amounts of greenhouse gases, these can make a decisive contribution to (global) climate protection with the help of an ambitious and structured objective. The overall goal of the Science Based Target initiative is to achieve a low-emission economy in the long term despite the steadily increasing population growth.

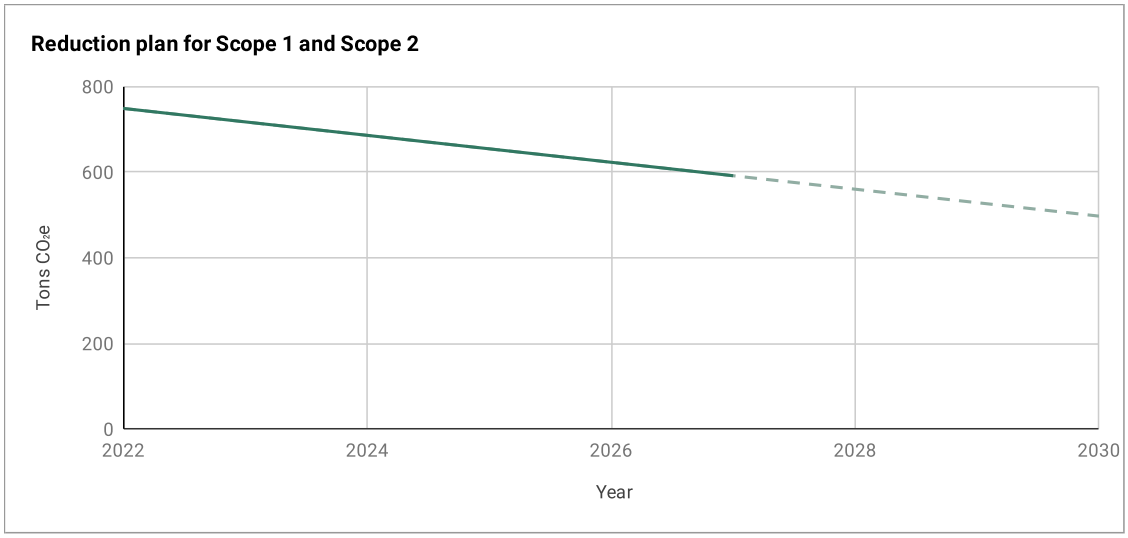
Based on the available greenhouse gas balance, the following absolute reduction scenarios can be derived for a period of 5 years.

Reduction targets

Target below 1.5°C

Example for 5-year time horizon	Base year 2022	Target year 2027	*% Reduction*
Scope 1 Emissions (Tons CO_2e)	748	591	*21 %*
Scope 2 Emissions (Tons CO_2e)			

According to the Science Based Target Initiative, a period of 5 to a maximum of 10 years must be selected; in the present case, an example period of 5 years was chosen. A linear reduction for the 1.5 degree target for Scope 1 and 2 emissions of 4.2 % per year results in a total reduction of 21 % for the reference period of 5 years. A reduction target for Scope 3 emissions requires individual consideration. We will be happy to support you in your individual climate strategy with emission reduction targets and suitable measures.



6. GENERAL SAVING POTENTIALS AND RECOMMENDATIONS

In order to achieve the potential reduction targets, effective savings measures should be derived. We recommend to elaborate a reduction plan with concrete saving measures that can measurably reduce the impact on the climate and establish a long-term corporate climate strategy. In addition to implementing saving measures, the emission balance can be offset with high-quality climate protection certificates.

The following table discloses the essential reduction potentials and savings measures through which the operational greenhouse gas emissions can be reduced. These are general suggestions that must be examined individually by each company. We would be happy to discuss your savings measures in more detail with you in the course of a climate strategy.

Emission category	Saving measures
Scope 1	
Stationary systems	**Short-term measures:** - Changeover to climate-neutral energy sources (e.g. climate-neutral natural gas) - Time switches for heating in the office and commercial premises **Medium to long-term measures:** - Acquisition of a new condensing boiler - Software for controlling energy management in buildings - Efficiency consulting possibly in connection with a certification of energy management according to ISO 50001 and DIN 16247 - Employee awareness for the use of the heating - Heat generation from renewable and biogenic energy sources
Fuel consumption	**Short-term measures:** - Fuel saving training for employees can reduce fuel consumption up to 10% **Medium to long-term measures:** - Vehicle directive: Specification of a certain limit (g CO_2e / km) when purchasing company cars - Successive conversion of the fleet to lower-consumption vehicles or vehicles with alternative powertrains (e.g. electric cars) - Conversion of in-house road transport to e-trucks and e-forklifts
Gas leakage (refrigerants)	**Short to medium term measures:** - Check for gas leakages in the pipes: prevention of gas emissions and increased efficiency - If possible, switch to more climate-friendly refrigerant
Scope 2	
Purchased electricity	**Short to medium term measures:** - Total conversion to electricity from 100% renewable energies - Automatic light shutdown after business hours or power strips with on / off function - Employee awareness regarding the consequent switching off of electrical devices **Long-term measures:** - Efficiency consulting possibly in connection with a certification of energy management according to ISO 50001 and DIN 16247 - Increase share of self-generated electricity
Scope 3	
Business trips	**Short to medium term measures:** - Replacement of short distance flights by rail - Increased use of video conferencing - Offsetting emissions from unavaoidable flights: option for unavoidable business trips - Travel guidelines / recommendation e.g. short distance flights below 800 km should be avoided
Commuting to work	**Medium to long-term measures:** - Incentives to create carpools can be, for example, the creation of carpool parking spaces on attractive parking spaces on the company's premises - Job tickets for the use of public transport - Offer of e-bikes and bicycles for commuting
Sewage / waste	**Short to medium term measures:** - Separation system for waste on all floors - Reduction of waste by integrating recycling processes
Paper	**Short to medium term measures:** - Switch to recycled paper - Use of 100% FSC or PEFC certified paper - Digitization of processes to reduce paper consumption

Regularly repeating the balancing process is an effective way to verify a constant reduction of greenhouse gas emissions. This makes it possible to monitor the efficiency of savings measures and the degree of achievement of corporate climate targets.

7. DETAILED RESULTS ACCORDING TO SCOPES

7.1 Scope 1 - Direct emissions of the company

Total CO_2e(t):	570,6

Stationary systems

Source	Amount	Unit	Emission factor (kg CO_2e/ Unit)	CO_2e(t)
Natural gas	2.695	cubic metre	2,03	5,47
Heating oil light	20.760	litres	2,67	55,46
LPG	3.600	litres	1,57	5,65
Sum CO_2e(t): Stationary systems				**66,58**

Fuel consumption in the company

Source	Amount	Unit	Emission factor (kg CO_2e/ Unit)	CO_2e(t)
Petrol	65.350	litre	2,42	158,15
Diesel	99.900	litre	2,67	266,73
Electricity	45.000	kWh	0,37	16,47
Sum CO_2e(t): Fuel consumption in the company				**441,35**

Fleet composition

Number of cars	28
Number of transporters	4
Number of trucks	10
Number of stacker lift trucks	3
Total vehicles	**45**

Gas leakage (refrigerants)

Refrigerants	Amount	Unit	Emission factor (kg CO_2e/ Unit)	CO_2e(t)
R410A	30,00	kilogram	2.088	62,64
Sum CO_2e(t): Refrigerants				**62,64**

Direct emissions from industrial processes

No direct emissions from industrial processes occurred in the reference year.

7.2 Scope 2 - Indirect emissions from purchased energy

Total CO_2e(t):	177,9

Purchased electricity

Source	Consumption	Unit	Emission factor (kg CO_2e/ Unit)	CO_2e(t)
Conventional electricity HONG KONG	25.000	kWh	0,710	17,75
Conventional electricity INDIA OFFICE	2.988	kWh	0,708	2,12
Conventional electricity INDIA PLANT	108.006	kWh	0,708	76,47
Conventional electricity LAGOS OFFICE & PL/	150.000	kWh	0,402	60,30
Conventional electricity UAE	45.000	kWh	0,472	21,24
Sum CO_2e(t): Purchased electricity				**177,87**

Note:
For the calculation of indirect energy emissions the market based approach was used.

The location-based approach takes into account the most recent country-specific emission factor for calculating the emissions generated by purchased energy, depending on the type of energy. The market-based approach takes into account the energy supplier-specific emission factor and is to be understood independently of the development of national emission factors.

District heating / cooling / Steam

No district heating was purchased in the reference year.
No district cooling was purchased in the reference year.
No steam was obtained in the reference year.

7.3 Scope 3 - Other indirect emissions from upstream processes

Total CO_2e(t):	2.380,4

Upstream energy-related emissions

Source	Amount	Unit	Emission factor (kg CO_2e/ Unit)	CO_2e(t)
Heating oil	20.760	litres	0,46	9,48
Natural gas	2.695	cubic metres	0,27	0,73
LPG for heating	3.600	litres	0,40	1,43
Diesel	99.900	litres	0,57	56,94
Petrol	65.350	litres	0,46	30,06
Conventional electricity HONG KONG	25.000	kWh	0,17	4,13
Conventional electricity INDIA OFFICE	2.988	kWh	0,29	0,86
Conventional electricity INDIA PLANT	108.006	kWh	0,29	31,24
Conventional electricity LAGOS	150.000	kWh	0,17	24,90
Conventional electricity UAE	45.000	kWh	0,10	4,54
Externally charged electricity, vehicle fleet	45.000	kWh	0,08	3,56
Sum CO_2e(t): Upstream energy-related emissions				**167,87**

Note:
These emissions relate to the upstream chain in the provision of energy, which arises from the manufacture of energy conversion equipment and the production and transportation of fuels. The balance sheet item is reduced in parallel with saving measures in Scope 1 and Scope 2.

Business travel and hotel accommodation

Transportation	Amount	Unit	Emission factor (kg CO_2e/ Unit)	CO_2e(t)
Air travel, long distance	125.222	kilometres	0,18	22,99
Air travel, medium-haul	114.000	kilometres	0,19	22,01
Air travel, short distance	245.784	kilometres	0,25	60,43
Public transport	100	kilometres	0,08	0,01
Taxi rides / rental vehicles / private cars	36	kilometres	0,15	0,01
Sum CO_2e(t): Business travel				**105,45**

Hotel accommodation	Amount	Unit	Emission factor (kg CO_2e/ Unit)	CO_2e(t)
3 stars hotel	67	accommodations	16,9	1,13
4 stars hotel	129	accommodations	21,0	2,71
5 stars hotel	22	accommodations	47,6	1,05
Sum CO_2e(t): Hotel accommodation				**4,89**

Sum CO_2e(t): Business travel and hotel accommodation	**110,34**

Note:

The calculated emissions from air travel are multiplied by the Radiative Forcing Index (RFI) of 1.9 to reflect the increased impact of air traffic emissions in the atmosphere (cf. DEFRA, 2012 and Ministry of Environment New Zealand, 2019).

Commuting and home office of employees

Transportation	Amount	Unit	Emission factor (kg CO_2e/ Unit)	CO_2e(t)
Train	316.800	kilometres	0,04	11,24
Public transport	901.120	kilometres	0,08	69,04
Car, medium-sized vehicle	234.080	kilometres	0,16	38,61
Car, luxury class	44.000	kilometres	0,21	9,12
Sum CO_2e(t): Employees commuting				**128,01**

Note:

Only the number of employees without company cars was taken into account here.
Greenhouse gas emissions caused by visitor and customer traffic are not part of this balance.

Waste and water

Source	Amount	Unit	Emission factor (kg CO_2e/ Unit)	CO_2e(t)
Fresh water	475	cubic metre	0,34	0,16
Waste water	366	cubic metre	0,49	0,18
Sum CO_2e(t): Water				**0,34**

Source (waste category)	Amount	Unit	Emission factor (kg CO_2e/ Unit)	CO_2e(t)
Paper / cardboard / cardboard packaging	23	tons	76,35	1,722
Light packaging / plastic	3	tons	1.312,00	3,949
Residual waste	4	tons	330,36	1,321
Wood waste	1	tons	14,72	0,015
Scrap metal	3	tons	34,00	0,102
Electronic waste	3	kilogram	1,53	0,005
Sum CO_2e(t): Waste				**7,11**

Sum CO_2e(t): Waste and water	**7,46**

Office and production consumables

Office consumables (paper)	Amount	Unit	Emission factor (kg CO_2e/ Unit)	CO_2e(t)
Paper, fresh fibre	4.735	kilogram	0,92	4,35
Paper, recycling	660	kilogram	0,74	0,49
Emissions from printing (cartridge and ink) on the office paper:				*3,02*
Sum CO_2e(t): Office consumables (paper)				**7,86**

Note:
Toner and cartridge consumption is estimated on the basis of the paper consumed and then calculated using corresponding emission factors. An average life expectancy of 5,000 sheets was assumed for the cartridge with an ink consumption of 260 grams. Usual paper consumption is calculated based on black/white toners, other print jobs are calculated with color toners.

Consumables production	Amount	Unit	Emission factor (kg CO_2e/ Unit)	CO_2e(t)
Cleaning Agents	1.200	kilogram	3,30	3,96
DETERGENTS				
Chemicals	10.000	tons	2,00	19,97
ADDITIVES				
Lubricating Greases / Oils	96	litre	1,04	0,10
ENGINE OIL				
Cleaning Agents	1.300	litre	3,30	4,29
PMS				
Sum CO_2e(t): Consumables production				**28,32**

Sum CO_2e(t): Office and production consumables	**42,02**

Third party exchange logistics

Category	Mode of transport	Amount	Unit	Emission factor (kg CO_2e/ Unit)	CO_2e(t)
Exchange logistics	Vessel	24.370.560	Tonkilometre	0,01	175,47
	Truck	1.596.000	Tonkilometre	0,10	159,60
			Completeness of coverage:	100%	335,07
			Projection:	**100%**	**335,07**
Sum CO_2e(t): Third party exchange logistics					**335,07**

Capital goods

Capital good	Category	Amount in EUR	Compl. of cov.	CO_2e(t)
BOILERS, TANKS	Machines	400.714		482,87
FACTORY BUILDINGS, OFFICE, WARESHOUSE	Buildings	528.571		622,85
VEHICLES & TRUCKS, FORKLIFT	Vehicles	471.429		429,10
LAPTOPS & PRINTERS	Hardware / Electronics	28.571		39,49
FURNITURES & FIXTURES	Others	14.286		15,27
Sum CO_2e(t): Capital goods				**1.589,58**

Note:
The emissions generated by the capital goods were estimated using an input-output model (see Quantis). If the completeness of coverage was less than 100 %, the maximum 20 % remaining amounts of the capital goods were extrapolated linearly.

APPENDIX

Databases used

The emission factors on which the balance sheet is based are taken from the following databases and sources:

DEFRA 2020	
DEFRA 2021	
DEHOGA 2016	
DIN EN 16258:2013	
Ecoinvent 3.6	partly incl. own calculations
Ecoinvent 3.7	partly incl. own calculations
Ecoinvent 3.8	
GEMIS 4.9	
GEMIS 5.0	partly incl. own calculations
GLEC 2.0	
HIGG Index	
IEA 2023	
Quantis	
UBA 2017/2018	
UBA 2021	partly incl. own calculations
UBA Österreich 2019	