EXPORT CREDIT GUARANTEES OF THE FEDERAL REPUBLIC OF GERMANY

Hermes Cover

Questionnaire for the oleochemical industry (sector-related questions)

The completion of this questionnaire is voluntary. However, replying to the relevant questions as completely as possible will facilitate and speed up the assessment of the environmental and social impacts of the project for which the German export supplies or services offered for cover are intended. This – together with the questionnaire not related to a particular sector, the completion and submission of which should also be considered in order to speed up the assessment procedure – can replace the description of the environmental and social impacts in the memorandum.

The questionnaire provides guidance on what information may be important for this sector. It is based on the World Bank/IFC General Environmental Health and Safety (EHS) Guidelines and the IFC EHS Guidelines for Oleochemicals Manufacturing. Additional information on the applicable standards can be found at AGA Portal.

This is a list of possible questions. Depending on the individual case only some of them, or perhaps also additional information, may become relevant in the course of the application procedure. Because of the specific features of each project further clarification may be required.

CONTENT

A. Oleochemicals manufacturing

A.1. Process and resources consumption

- What will be manufactured and what process will be used? Please give a technical description of the individual process steps.
- Does a production-related connection with other (planned) facilities exist (e.g. power generation, harbour facilities)?
- How is the planned plant supplied with energy? What fuels are used?
- How is the planned plant supplied with raw materials?
- How are the finished goods removed?
- How is protection of the environment guaranteed in connection with the transport, storage, handling and
- Please state the resources consumption after the project's completion in accordance with the table below.

Resource and Energy Consumption			
Input per Unit Product	**Unit**	**Industry Benchmark**	**Project Value**
Water Use			
Fatty Acid / Glycerin Production	m³/t product	0,6 – 0,8	
Biodiesel Production	m³/t product	1,6 – 2,0	
Energy			
Fatty Acid / Glycerin Production	Per ton raw material	550kg (vapor @ 30 bar) + 200kg (vapor @10 bar) + 45 kWh	
Biodiesel Production	Per ton product	600kg (vapor @ 5 bar) + 1.2*106 kJ + 40 kWh	
Source: IFC EHS Guidelines (2007) OLEOCHEMICALS MANUFACTURING, table 3, page 9			

A.2. Air emissions

- Please state the expected maximum values for air emissions after the project's completion for all process steps in accordance with the table below. Occasionally, not all pollutants listed in the table are emitted or others specific to the project have to be added. Please inform us if that is the case.

Air Emissions Levels for Oleochemicals Manufacturing Plants			
Pollutant	**Unit**	**Guideline Value**	**Project Value**
VOCs	mg/Nm³	100[(a)]	
Notes: a) At 273 K (0 °C) and 101.3 kPa (1 atmosphere).			
Source: IFC EHS Guidelines (2007) OLEOCHEMICALS MANUFACTURING, table 1, page 9			

- Please also state the (expected) emission values (in particular greenhouse gas emissions (CO_2eq), dust (PM), sulfur dioxide (SO_2) and nitrogen oxides (NO_x) in mg/Nm³) for any steam and power generation. In the case of plants with a capacity of more than 50 $MW_{thermic}$ please use the questionnaire *Conventional Energy* as guideline.

- Please describe what measures are taken to avoid/reduce emissions from the site.

- What limit values for ambient air quality are applicable in the buyer's country (please make a table available)? Please state the relevant expected emission levels. Please comment on any changes in the ambient air quality before and after the project implementation. If there are no national limit values, please use the table below.

WHO Ambient Air Quality Guidelines[1,2]					
	Averaging Period	**IFC Guideline Value [µg/m³]**	**Guideline Value Host country**	**Project Value (baseline status) [µg/m³]**	**Project Value (after implementation) [µg/m³]**
Sulfur dioxide (SO_2)	24-hour	125 (Interim target-1) 50 (Interim target-2) 20 (guideline)			
	10 minute	500 (guideline)			
Nitrogen dioxide (NO_2)	1-year	40 (guideline)			
	1-hour	200 (guideline)			
Particulate Matter (PM_{10})	1-year	70 (Interim target-1) 50 (Interim target-2) 30 (Interim target-3) 20 (guideline)			
	24-hour	150 (Interim target-1) 100 (Interim target-2) 75 (Interim target-3) 50 (guideline)			
Particulate Matter ($PM_{2.5}$)	1-year	35 (Interim target-1) 25 (Interim target-2) 15 (Interim target-3) 10 (guideline)			
	24-hour	75 (Interim target-1) 50 (Interim target-2) 37.5 (Interim target-3) 25 (guideline)			
Ozone	8-hour daily maximum	160 (Interim target-1) 100 (guideline)			

Notes:
[1] World Health Organization (WHO). Air Quality Guidelines Global Update, 2005. PM 24-hour value is the 99th percentile.
[2] Interim targets are provided in recognition of the need for a staged approach to achieving the recommended guidelines.

Source: WORLD BANK/IFC GENERAL EHS GUIDELINES 2007, table 1.1.1, page 4

- Please describe the on-site monitoring of air emissions as well as ambient air quality levels.

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A.3. Fresh water and effluents

- How much (fresh) water is used on site? Is the water recirculated?
- Where and how is the water withdrawn?
- What wastewater streams are generated?

Wastewater Generation			
Output per Unit Product	**Unit**	**Industry Benchmark**	**Project Value**
Process Wastewater(1)			
Fatty Acid / Glycerin Production	m^3/t raw material	<0,1(2)	
Biodiesel Production	m^3/t product	0,9 – 1,3	
Notes: 1. Cooling water not included. The 90-95 percent of cooling water should be recycled 2. Based on one ton raw material consisting of 900 kg of fatty acids and 100 kg of glycerin			
Source: IFC EHS Guidelines (2007) OLEOCHEMICALS MANUFACTURING, table 4, page 10			

- How are effluents treated on site? Please also state whether effluents are discharged into a public sewage treatment system or into surface water bodies (river, lake, sea). If there are discharges, please provide information on the quantities of the wastewater streams (e.g. m^3/h or l/s).
- If wastewater is discharged directly into a surface water body, please state the values of the wastewater's pollution level in mg/l (table "Effluents Levels for Oleochemicals Manufacturing Plants"). Occasionally, not all pollutants listed in the table are emitted or others specific to the project have to be added. Please inform us if that is the case.

Effluents Levels for Oleochemicals Manufacturing Plants			
Pollutant	**Unit**	**Guideline Value**	**Project Value**
pH	S.U.	6 – 9	
BOD_5	mg/L	40	
COD	mg/L	150	
Total Nitrogen	mg/L	30	
Total Phosphorous	mg/L	5	
Oil and Grease	mg/L	10	
Total Suspended Solids (TSS)	mg/L	50	
Source: IFC EHS Guidelines (2007) OLEOCHEMICALS MANUFACTURING, table 2, page 9			

- Please describe the measures planned to avoid/reduce/treat wastewater.
- Please describe the on-site monitoring of the effluent values.
- How and where are the effluents discharged? Please explicitly comment on the temperature rise at the point of discharge, describe possible effects of the discharge on the ecology of the water bodies and provide information on the condition and size of the water body (e.g. flow values, flow rate). Please give also details on protection measures.
- What national standards are applicable for the discharge of sanitary sewage? How is the sewage treated before it is discharged? Please state the expected values of the pollution levels in the sewage. If there are no national limit values, please use the table below.

Indicative Values for Treated Sanitary Sewage Discharges[1]			
Pollutants	**Units**	**Guideline Value**	**Project Value**
pH	pH	6-9	
BOD	mg/L	30	
COD	mg/L	125	
Total nitrogen	mg/L	10	
Total phosphorus	mg/L	2	
Oil and grease	mg/L	10	
TSS	mg/L	50	
Total coliform bacteria	MPN[2]/100 ml	400[1]	
Notes: [1] Not applicable to centralized, municipal, wastewater treatment systems which are included in EHS Guidelines for Water and Sanitation. [2] MPN = Most Probable Number			
Source: WORLD BANK/IFC GENERAL EHS GUIDELINES 2007, table 1.3.1., page 30			

A.4. Waste

- What relevant waste products are generated on site?

Waste Generation			
Output per Unit Product	**Unit**	**Industry Benchmark**	**Project Value**
Solid Waste			
Fatty Acid / Glycerin Production	kg/t raw material	5 (spent catalysts) 10 (distillation residues)	
Biodiesel Production	kg/t product	50 (potassium phosphates)	
Source: IFC EHS Guidelines (2007) OLEOCHEMICALS MANUFACTURING, table 4, page 10			

- What measures are taken to avoid, treat and dispose of the waste (solid/liquid) generated and where/how is it deposited?
- Please give also details on possible waste incineration processes (type and quantity of waste, incineration temperature, etc.).

A.5. Noise

- How far is the nearest residential area away?
- Are noise mitigation measures necessary or planned? If so, what measures?
- Please state the noise impact (existing background noise level and additional noise emissions of the project) on the nearest receptors (industrial estates and residential areas) in dB(A) for day and night after completion of the project in accordance with the table below.

Noise Level Guidelines[1]				
	One Hour LA_{eq} (dBA)			
Receptor	**Guideline Value Daytime (07:00-22:00)**	**Project Value Daytime (07:00-22:00)**	**Guideline Value Nighttime (22:00-07:00)**	**Project Value Nighttime (22:00-07:00)**
Residential; institutional; educational[2]	55		45	
Industrial; commercial	70		70	
Notes: [1] Guidelines values are for noise levels measured out of doors. Source: Guidelines for Community Noise, WHO, 1999. [2] For acceptable indoor noise levels for residential, institutional, and educational settings refer to WHO (1999).				
Source: WORLD BANK/IFC GENERAL EHS GUIDELINES 2007, table 1.7.1, page 53				

- Do the project's noise emissions lead to an increase of the background noise level at the nearest receptors by more than 3 dB(A)?

A.6. Occupational health and safety

- How were the relevant occupational health and safety hazards identified and assessed (e.g. Hazard Identification Study – HAZID, Hazard and Operability Study – HAZOP or Quantitative Risk Assessment – QRA)?
- What safety measures and/or control systems are planned to prevent accidents from happening and to guarantee safety and health (in particular with regard to the handling of hazardous chemicals as well as fire and explosions) at the workplace?
- What average and maximum noise exposure is to be expected at the workplaces? What safety measures are taken at workplaces where the noise exposure exceeds 85 dB(A)?
- How are subcontractors integrated into the health and safety measures on site?
- If the project consists in the modernisation or expansion of an existing plant, please make accident statistics for the past two years available to us.
- Is the occupational safety performance benchmarked against international, published guidelines (e.g. TLV Occupational Exposure guidelines, ACGIH Biological Exposure Indices, NIOSH Pocket Guide to Chemical Hazards, OSHA Permissible Exposure Limits or EU Indicative Occupational Exposure Limit Values)?

A.7. Health and safety oft he population

- What measures are taken to minimize impacts and possible risks for adjacent communities in particular with regard to the handling of hazardous materials, the avoidance of leakages, fire and explosions, waste disposal, traffic management, emergency planning, cooperation with local rescue teams?

B. Additional information

Additional information on the **Common Approaches**, our **environmental, social and human rights due diligence** and the **applicable standards** can be found at:

https://agaportal.de/main-navigation/schnellzugriff-aga-konsortium/verantwortung

The **World Bank/IFC EHS Guidelines** can be found on the website:

http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/our+approach/risk+management/ehsguidelines.