

الاستمارة رقم (1) : الإطار العام لفصل الشؤون المناخية في دراسة تقييم
التأثيرات البيئية المقدمة إلى الوزارة.

**Form No. (1): Guidelines for the Preparation of Climate Affairs
Chapter to be Included in the Environmental
Impact Assessment (EIA) Report**

A. Definitions about Climate Affairs

The following words and expressions shall have the meaning assigned to each of them unless the context otherwise requires:-

1. **The Ministry:** The Ministry of Environment and Climate Affairs.
2. **The concerned directorate in the Ministry-** The Directorate General of Climate Affairs.
3. **Environmental impacts assessment study-**A study conducted to determine whether the source or area of work would have any adverse impacts on the environment including measures required to deal with such impacts.
4. **Adverse effects of climate change-** Change in the physical environment or Biota resulting from climate change which have significant deleterious effects on the composition , resilience or productivity of natural ecosystem or on human health and welfare.
5. **Climate change** - A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere observed over comparable time periods .
6. **The environment-**The setting in which human beings live, including living organisms such as animals and plants as well as the surrounding air,

water, soil and solid, liquid, gaseous or radioactive substances in addition to man-made stationary or non- stationary establishments.

7. **Sustainable development-** Linking environmental conditions with planning and development policy in order to satisfy needs and aspirations of the present generation without endangering future needs and requirements .
8. **Climate system-** The totality of the atmosphere, hydrosphere, biosphere, and geo-sphere and their interactions.
9. **The Convention-** The United Nations Framework Convention on Climate Change signed in 1992 and ratified by the Sultanate of Oman in accordance with the Royal Decree No. 119/1994 .
10. **The Protocol:** The Kyoto Protocol attached to The United Nations Framework Convention on Climate Change, signed in 1997 and ratified by the Sultanate of Oman in accordance with Royal Decree No. 107/2004 .
11. **Emissions-** The release of greenhouse gases and / or their precursors into the atmosphere over a specific area and period of time.
12. **Greenhouse gases-** Those gaseous constituents of the atmosphere , both natural and anthropogenic ,that absorb and re-emit infrared radiation to the atmosphere . Those gases include Carbon dioxide, Methane, Nitrous oxide, Hydro fluorocarbons, Per fluorocarbons and Sulphur hexafluoride .
13. **Sink-** Any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas from the atmosphere.
14. **Source-** Any process, activity which release a greenhouse gas, an aerosol or a precursor of a greenhouse gas into the atmosphere.
15. **Area of work-** A terrestrial, coastal or a float site in ports or in Exclusive Economic Zone of the Sultanate where one or more sources of pollution exist .

16. **The owner**- Any natural or juristic person owning or leasing a source or an area of work or being responsible for operation or management of the same.
17. **Mitigation**- The anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases.
18. **Adaptation**- Means initiatives and measures to reduce vulnerability of natural and human systems against climate change impacts.
19. **Adaptation benefits**- The avoided damage costs or the accrued benefits following the adoption and implementation of adaptation measures.
20. **All stages of the project**- Include preparation, planning, construction, operation, closure and after closure of the project .
21. **Energy efficiency**- The ratio of useful energy output of a system, conversion process or activity, to its energy input.
22. **Measures**- Technologies processes and practices that reduce greenhouse gas emissions or their effects below anticipated future levels.
23. **Ozone Depleting Substances**- Substances having the characteristic of chemical stability in the lower atmosphere, comprising one or more chlorine or bromine atoms or both and beginning a series of reactions in the stratospheric ozone layer causing depletion of the ozone.
24. **Renewable energy**- The continuing or repetitive currents of energy occurring in the natural environment, and includes solar energy, hydropower, wind, tide and waves, geothermal heat and biomass energy.
25. **Sea level rise**- Rise in the sea level due to global warming resulted from increase in the total mass of water due to the melting of snow and ice , and changes in water density due to an increase in ocean water temperature and salinity change .
26. **Vulnerability of climate change**- Vulnerability is the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is

a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity.

B. Proposed Structure of the Chapter

1- Contact details

Please Provide the Name of Responsible person/organization/consultant for climate affairs issues with your Company/Industry along with contact details such as telephone, fax and email.

2- Ozone Depleting Substances (ODS)

1. Specify the types and quantities of ODS to be used in all stages of the project.
2. Specify the numbers and kinds of equipments that contain ODS to be used in all stages of the project .
3. Identify any alternatives for ODS to be used in all stages of the project.
4. Specify the project plan for the usage of ODS alternatives and the avoidance of any ODS release to the atmosphere.
5. Describe the procedure to adhere to the requirements of the Regulations for the Control and Management of the Ozone Depleting Substances issued by Ministerial Decision No. 243/2005 .

3- Greenhouse Gas (GHG) Emissions¹

Please provide the GHG emissions from various activities required for the establishment of proposed industry. The inventory should be provided annually for the entire project life. The quantification methodologies including use of emission factors etc should be provided in detail. Please provide GHG estimation as per following.

¹ The initial year has been given as 2010 and GHG inventory is asked for next 25 years. Consultants can modify it according to their convenience. However they should report it for entire period of the project life.

3.1 GHG Emissions from the Energy Sources- Combustion of fuel from the proposed project

1. Stationary Combustion processes

Year	CO2	CH4	N2O
2010			
2010-2025			
Total			

2. Mobile Combustion

Year	CO2	CH4	N2O
2010			
2010-2025			
Total			

3. Fugitive Emissions from Oil & Natural Gas System

Year	CO2	CH4	N2O
2010			
2010-2025			
Total			

4. Others

Year	CO2	CH4	N2O
2010			
2010-2025			
Total			

5. Details of GHG Emission Calculation²

Type of activity	Methodology according to IPCC	Emission Factor	Quantity of fuel for combustion	Total Emissions

² Please provide information in detail and add separate sheets for additional information

Stationary Combustion processes				
Mobile Combustion				
Fugitive emissions from Oil & Natural Gas system				
Others				

3.2 GHG Emissions from Industrial Processes of the Proposed Plant/Industry

Year	CO2	CH4	N2O	SF6	HFC	PFC
2010						
2010-2025						
Total						

Details of GHG Emission Calculation³

Type of activity	Methodology according to IPCC	Emission Factor	Total Production	Total Emissions

3.3 GHG Emissions from Solvent Use in the Proposed Plant/Industry

Year	CO2	CH4	N2O	SF6	HFC	PFC
2010						
2010-2025						
Total						

³ Please provide information in detail and add separate sheets for additional information

Details of GHG Emission Calculation⁴

Type of activity	Methodology according to IPCC	Emission Factor	Quantity of Solvents	Total Emissions

3.4 GHG Emissions from Solid Waste generating from Plant/Industry Premises

Year	CH4	N2O
2010		
2010-2025		
Total		

Details GHG Emission Calculation⁵

Type of activity	Methodology according to IPCC	Emission Factor	Total waste quality	Total Emissions

3.5 GHG Emissions from Waste Water Treatment in the Plant/Industry Premises

Year	CH4	N2O
2010		
2010-2025		
Total		

⁴ Please provide information in detail and add separate sheets for additional information

⁵ Please provide information in detail and add separate sheets for additional information

Details of GHG Emission Calculation⁶

Type of activity	Methodology according to IPCC	Emission Factor	Total quantity of waste water	Total Emissions

3.6 Reporting total amount of GHG Emissions

Year	CO2	CH4	N2O	SF6	HFC	PFC
2010						
2010-2025						
Total						

4- Assessment of Climate Change Impacts and Vulnerabilities

Consultant should identify the climate change impacts over upcoming project. The cumulative impacts due to other industrial and infrastructural activities in the region should also be considered.

The expected vulnerabilities/disasters should be identified in case of storms, cyclones, high waves, floods, landslides, and dust storms.

Project proponents/Consultants are requested to make assessment using "Climate Affairs Risks Matrix" given below.

Climate Affairs Risks Matrix

Type of Risks	Frequency /degree of Vulnerability ⁷	Climate Impacts due to identified Vulnerability ⁸	Risk Magnitude ⁹	Remarks, if any
Natural Disasters such as cyclone, earthquake, high waves, landslides and				

⁶ Please provide information in detail and add separate sheets for additional information

⁷ Please assign 1, 2 and 3 for low, medium and high frequencies of vulnerability

⁸ Please assign 1, 2 and 3 for low, medium and high impacts due to identified vulnerabilities

⁹ Risk magnitude should be calculated multiplying frequency of vulnerability and climate impacts

dust storms				
Sea Level Rise				
Temperature Increase				
Heavy Rains				
Flash Flooding				

5- Climate Change Mitigation and Adaptation

5.1 Mitigation

1. Identify the new technologies and measures to minimize the energy consumption and improve the energy efficiency for all stages of the project.
2. Identify the potential usage of renewable energy for all stages of the project and explain the future visions of how to incorporate them into the project activities and how to eliminate the barriers, if exists, which prevent such action.
3. Further, consultant should explore the benefits of Clean Development Mechanism (CDM) under Kyoto Protocol.
4. Describe plantations, green cover, trees, etc. which suits to local environment and conditions in order to increase the area of GHG sinks.
5. Determine the percentage of the (GHG) sinks (green cover) compare to the total area of the project.

Total Area of the Industry	Proposed area for green cover/Plantation	Percentage of green cover to total area of industry

6. Attach the landscaping plan/design of proposed plantation/green cover

5.2 Climate Change Adaptation

Identify measures and tools for adaptation and mitigation of climate change impacts for all stages of the project and the surrounding environmental systems in case of

1. Storms, cyclones, high waves, floods, landslides, and dust storms.
2. Sea level change, sea level rise, drought, increase in temperature, change of wind patterns, and change of groundwater level.

6-Further Subjects and Comments (optional)

The investors, the project owner and the concerned consultant companies can use this item of the chapter to add - further subjects or information regarding the project if it is necessary.