



Development of a Guideline to Assess Industrial Boiler Fuels for Sustainable Boiler Operations

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Supporting Information

Text S1. Questionnaire-Development of a guideline to select boiler fuels
for sustainable boiler operations.

Section 01	
1.1 Name of the industry	
1.2 Location	
1.3 Type of the industry (production category)	
Section 02	
2.1 Fuel type of the boiler	Coal Furnace oil Diesel Electric Kerosene Firewood Processed waste Other.....
2.2 If the fuel is firewood, please select the type of firewood or mention the biomass type. Note: if you use a mixture of biomass, please mention the mixing ratios and whether you have calculated the calorific values and calculated value	Rubber Gliricidia Other.....
2.3 If the fuel is waste biomass, please select the type of waste biomass or mention the types of waste. Note: if you use a mixture of waste biomass, please mention the mixing ratios and whether you have calculated the calorific values and calculated calorific value	Paddy husk Sawdust Coconut husk Other.....
2.4 If the fuel is processed waste, please mention the type of processed waste. Example: fabric Note: if you use a mixture of processed waste, please mention the mixing ratios and whether you have calculated the calorific values and calculated calorific value	
Section 03	
Please provide the following details regarding the available boilers. Note: If you use more than one boiler, please mention the details separately for each boiler Example: Coal-fired boilers Electric boilers	
3.1 Number of boilers	
3.2 Capacity of the boiler/boilers	
3.3 Purpose of boiler/boilers	Heating Power generation
3.4 Initial investment cost	

3.5 Steam requirement per day for the production	
Section 04 Please attach the following details related to the mentioned criteria. Note: If you use more than one fuel, please provide details separate	
4.1 Monthly fuel consumption	
4.2 Monthly fuel cost	
4.3 Monthly operational and maintenance costs related to boilers	
Section 05 Please fill the following areas if the fuel type is biomass.	
5.1 Fuel feeding methods	Logs Chips Other.....
5.2 Source of feedstock supplying	Private suppliers Own plantations
Section 06	
6.1 Fuel storage conditions	Open storage without shelters Under shelters In a secondary containment Other.....
6.2 What are the safety practices you are following when handling and storing the fuel? Example: Availability of fire extinguishers in the storage area	
6.3 Available dust-arresting methodology/Air pollution control system	Multi cyclone Wet scrubbers Bag filters Other.....
6.4 Available reduction mechanisms for heat loss	
6.5 Available permits for operating the boiler. Example: Permit of forest department for operating a wood storage	
Section 07 Please mention the practical issues with fuel usage (current or faced issues) according to the below categories and mitigatory actions.	
7.1 Environmental issues Example: fuel spills when transporting and storage	
7.2 Planned Actions to mitigate the mentioned Environmental Issues	
7.3 Cost issues	
7.4 Planned actions to solve the mentioned cost issues	
7.5 Purchasing issues	
7.6 Planned Actions to Solve the mentioned Purchasing Issues	

7.7 Please specify other practical issues with fuel usage and planned actions to mitigate them	
Section 08	
How do you maintain your boilers?	Boiler efficiency reports Recordings on the maintenance of the boiler