Malé Declaration 2nd emissions inventory workshop

AIT, Bangkok, 26th – 28th February 2007

Session 3 – Compiling Emissions from Large Point Sources (LPS)

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Malé Declaration on Control and Prevention of Air Pollution and Its Likely Transboundary Effects for South Asia

Source distinction

Outdoor air pollution sources are often divided into:

- **Point sources**
  (emissions from stacks, e.g. power plants and industries)
- **Line sources**
  (e.g. emission from traffic along a road or a street)
- **Area sources**
  (e.g. residential heating and other small sources distributed over an area)

Emissions from Large Point Sources (LPS)

Air pollution models include separate accounting for large point sources (LPS) emissions because:

- **the mass and volume of emissions are very large;**
- **emissions generally enter the atmosphere at a greater height than those from area sources;**
- **emission controls are often available (and cost-effective) for LPS**

What are Large Point Sources (LPS)

Large emitters, often having a single stack, whose location can be identified by geographical co-ordinates (grid reference), e.g.

- **Power plants (coal-, oil- or gas-powered)**
- **Metal smelters**
- **Oil refineries**
- **Large industrial boilers**

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Air Pollution from stationary sources Azerbaijan

Source: HDR Azerbaijan 1999


PM emissions from smelter, Peru

Emissions from Large Point Sources (LPS) – *EMEP/Corinair criteria*

In the EMEP/Corinair methodology, point sources are:

- **Power plants with thermal input capacity >=300 MW**
- **Oil refineries**
- **Sulphuric acid plants**
- **Nitric acid plants**
- **Integrated iron/steel works with production capacity >3 Mt/yr**
- **Paper pulp plants with production capacity >100 kt/yr**
- **Large vehicle paint plants with production capacity >100000 vehicles/yr**
- **Airports with >100000 LTO cycles/yr**
- **Other plants emitting >=1000 t/yr SO_2, NO_x or VOC**

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Emissions from Large Point Sources (LPS) – *Plant-specific data to be compiled*

In the Workbook, LPS are inventoried in two main groups, *"Fuel Combustion"* sources and *"Process (non-combustion) and Fugitive"* sources. The following plant-specific data are required for both types of LPS:

- ***Sectoral information*** **(sector, sub-sector, sub-sub sector etc.)**
- ***Locational information*** **(latitude, longitude, province)**
- ***Stack details*** **(stack height and emitted stack gas volume/yr)**
- ***Emission controls*** **(type and efficiency for each pollutant)**
- ***Measured pollutant emissions or plant-specific emission factor*** **(where available)**

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Emissions from Large Point Sources (LPS) – *Plant-specific data to be compiled*

The following plant-specific data are also required:

For "Fuel Combustion" LPS:

- ***Fuel details*** **(type, annual consumption, Net Calorific Value, S content and S retention in ash [for SO_2] and ash content [for PM_{10}])**

For "Process (non-combustion) and Fugitive" LPS emission sources:

- ***Process activity rates*** **(annual rate of production or, for oil refining, throughput of crude oil)**

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Emissions from Large Point Sources (LPS) - *temporal aspects*

Power stations:

- ***A temporal profile (e.g. % emissions per month) will be desirable for each station (reflecting any seasonal increase in demand).***

Other LPS (Oil refineries, metal smelters etc.)

- ***These often operate continuously but may be subject to periodic shut-downs (for example, due to breakdown or planned maintenance).***

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Emissions from Large Point Sources (LPS) - *Data collection*

LPS data may be obtained from:

- **Questionnaires/surveys sent to individual plant operators**
- **Site visits**
- **Databases held in relevant Government departments**
- **Pollutant Release and Transfer Register (PRTR) (being developed in some countries)**

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Emissions from Large Point Sources (LPS) - *Data collection*

Questionnaires/surveys:

- **commonly used to obtain facility-specific data**
- **should be tailored to specific types of sources with similar processes** and list all parameters required including air pollutants to be inventoried, and for which year(s) (2000 and 2005?).
- **are labour intensive** (therefore allocate sufficient staff and resources to design, mail, process, administer and analyze the results of each survey).

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Emissions from Large Point Sources (LPS)

Large Point Sources

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GO **Sheet 8.2 Large point source process (non-combustion) and fugitive emissions, general plant-specific details**

- GO Sheet 8.2.1 Large point source process (non-combustion) emissions, sulphur dioxide (SO2).
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Emissions from Large Point Sources (LPS) - *The workbook*

Sheet 8.1 Large point source combustion emissions, general plant-specific details

BACK TO MENU

Sector	Sub-sector	Sub-sub sector	Name of facility [and LPS code no.]	Location: Map grid reference Latitude	Location: Map grid reference Longitude	Location: $1^{o}x1^{o}$ grid code	Location: Province	A Stack height [if known] (m)	B Emitted stack gas volume [if known] (10^6 m^3/yr)
Combustion in Energy Industries	Public Electricity and Heat Production[a]		Facility (a) [LPS 1]						
			Facility (b) [LPS 2]						
			etc.						
	Petroleum Refining[a]		Facility (a)						
			Facility (b)						
			etc.						
	Manufacture of Solid Fuels and Other Energy	Coke ovens	Facility (a)						
			Facility (b)						
			etc.						
		Patent fuel, BKB	Facility (a)						
			Facility (b)						
			etc.						
		Gas works	Facility (a)						
			Facility (b)						
			etc.						
		Charcoal poduction	Facility (a)						
			Facility (b)						
			etc.						
		Other own use	Facility (a)						
			Facility (b)						
			etc.						
Combustion in Manufacturing Industries	Iron and Steel		Facility (a)						
			Facility (b)						
			etc.						

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Emissions from Large Point Sources (LPS) - *The workbook*

Sheet 8.1.2 Large point source combustion emissions - nitrogen oxides (NO_x)

BACK TO MENU

Sector	Sub-sector	[Sub-sub sector]	Name of facility [and LPS code no.]	A Uncontrolled NO_x emission factor[a] (kg/TJ)	B NO_x emission control efficiency (%)	C Controlled NO_x emission factor (kg/TJ)	D NO_x emissions estimated using emission factor (Tonnes) [Fuel use (TJ) x C/1000]	E Measured NO_x conc. in stack gases. (mg/m^3)	F NO_x emissions estimated from stack gas conc. (Tonnes) [Stack gas vol (10^6 m_3/yr) x E/1000]
Combustion in Energy Industries	Public Electricity and Heat Production		Facility (a) [LPS 1]			0	0		0
			Facility (b) [LPS 2]			0	0		0
			etc.			0	0		0
	Petroleum Refining		Facility (a)			0	0		0
			Facility (b)			0	0		0
			etc.			0	0		0
	Manufacture of Solid Fuels and Other Energy	Coke ovens	Facility (a)			0	0		0
			Facility (b)			0	0		0
			etc.			0	0		0
		Patent fuel, BKB	Facility (a)			0	0		0
			Facility (b)			0	0		0
			etc.			0	0		0
		Gas works	Facility (a)			0	0		0
			Facility (b)			0	0		0
			etc.			0	0		0
		Charcoal poduction	Facility (a)			0	0		0
			Facility (b)			0	0		0
			etc.			0	0		0
		Other own use	Facility (a)			0	0		0
			Facility (b)			0	0		0
			etc.			0	0		0
Combustion in	Iron and Steel		Facility (a)			0	0		0

Emissions from Large Point Sources (LPS) - *The workbook*

Sheet 8.2 Large point source process (non-combustion) and fugitive emissions, general plant-specific details

BACK TO MENU

Industrial process sector	Product/process (please specify)	Name of facility [and LPS code no.]	Location			A Stack height [if known] (m)	B Emitted stack gas volume [if known] (10^6 m^3/yr)	C Activity rate (tonnes product per year)[a]
			Map grid reference		$1^o x 1^o$ grid code			
			Latitude	Longitude				
Mineral products		Facility (a) [LPS #]						
		Facility (b) [LPS #]						
		etc.						
Chemicals		Facility (a)						
		Facility (b)						
		etc.						
Metal production		Facility (a)						
		Facility (b)						
		etc.						
Pulp, Paper and print		Facility (a)						
		Facility (b)						
		etc.						
Food and drink		Facility (a)						
		Facility (b)						
		etc.						
Oil refining[a]		Facility (a)						
		Facility (b)						
		etc.						
Coke production		Facility (a)						
		Facility (b)						
		etc.						

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Emissions from Large Point Sources (LPS) - *The workbook*

Sheet 8.2.2 Large point source process (non-combustion) emissions, nitrogen oxides (NO_x).

BACK TO MENU

Process/sector	Name of facility [and LPS code no.]	A Uncontrolled NO_x emission factor (kg/t product)	B Type of NO_x emission control	C NO_x emission control efficiency (%)	D Controlled NO_x emission factor (kg/t product)	E NO_x emissions (Tonnes) [Activity rate x D/1000]	F Total NOx emissions for process/ sector (Tonnes)
Chemicals	Facility (a)				0	0	
	Facility (b)				0	0	
	etc.				0	0	0
Metal production	Facility (a)				0	0	
	Facility (b)				0	0	
	etc.				0	0	0
Pulp, Paper and print	Facility (a)				0	0	
	Facility (b)				0	0	
	etc.				0	0	0
Oil refining	Facility (a)				0	0	
	Facility (b)				0	0	
	etc.				0	0	0
Coke production	Facility (a)				0	0	
	Facility (b)				0	0	
	etc.				0	0	0

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Emissions from Large Point Sources (LPS) - *The workbook*

Sheet 9 Summary sheet - Annual emissions of each pollutant by source sector

Sector	Sub-sector	Total emissions (kilotonnes pollutant per year (kt/yr))							LPS emissions (kilotonnes pollutant per year (kt/yr))							[1]Area source (total minus LPS) emissions (kilotonnes pollutant per year (kt/yr))						
		SO_2	NO_x	CO	NMVOC	NH_3	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	NMVOC	NH_3	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	NMVOC	NH_3	PM_{10}	$PM_{2.5}$
1. Combustion in the Energy Industries	Public Electricity and Heat	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Petroleum Refining	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Manufacture of Solid Fuels and Other Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2. Combustion in Manufacturing Industries and construction	Iron and Steel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Non-ferrous metals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Non-metallic minerals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Chemicals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Pulp, Paper and print	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mining and Quarrying	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Other (Please specify in sheet 1.1.1a, 1.1.1b or 1.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Autoproduction of electricity/heat	0.00	0.00	0.00	0.00	0.00	0.00	0.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Remainder (Non-specified)	0.00	0.00	0.00	0.00	0.00	0.00	0.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00
3. Transport	Civil Aviation (Simple--not used if Detailed used)	0.00	0.00	0.00	0.00	0.00	0.00	0.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Civil Aviation (Detailed)	0.00	0.00	0.00	0.00	0.00	0.00	0.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Road transport (Simple--not used if Detailed used)	0.00	0.00	0.00	0.00	0.00	0.00	0.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Road transport (Detailed)		0.00	0.00	0.00	0.00	0.00	0.00									0.00	0.00	0.00	0.00	0.00	0.00
	Railways	0.00	0.00	0.00	0.00	0.00	0.00	0.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Navigation	0.00	0.00	0.00	0.00	0.00	0.00	0.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Pipeline transport	0.00	0.00	0.00	0.00	0.00	0.00	0.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Non-specified transport	0.00	0.00	0.00	0.00	0.00	0.00	0.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00
4. Combustion in Other Sectors	Commercial/Institutional	0.00	0.00	0.00	0.00	0.00	0.00	0.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Residential	0.00	0.00	0.00	0.00	0.00	0.00	0.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Agriculture/Forestry/Fishing	0.00	0.00	0.00	0.00	0.00	0.00	0.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Non-specified "Other sectors"	0.00	0.00	0.00	0.00	0.00	0.00	0.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00
5. Fugitive emissions from fuels	Production of coke				0.00	0.00	0.00	0.00				0.00		0.00	0.00				0.00		0.00	0.00
	Oil exploration and crude oil production and transport				0.00														0.00			
	Oil refining	0.00	0.00	0.00	0.00				0.00	0.00	0.00	0.00				0.00	0.00	0.00	0.00			
	Distribution and handling of gasoline				0.00														0.00			
	Production and distribution of natural gas.				0.00														0.00			
	Flaring during oil and gas extraction		0.00	0.00	0.00												0.00	0.00	0.00			
6. Industrial processes	Mineral products	0.00		0.00	0.00		0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00		0.00	0.00		0.00	0.00
	Chemicals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Metals	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00
	Pulp and paper	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00
	Food and drink				0.00		0.00	0.00				0.00		0.00	0.00				0.00		0.00	0.00
	Major construction site activities (Fugitive PM only)						0.00	0.00													0.00	0.00
7. Solvent and other product use					0.00														0.00			
8. Agriculture	Manure management					0.00														0.00		
	Application of N-containing fertilizers		0.00			0.00											0.00			0.00		
	Savanna burning	0.00	0.00	0.00	0.00	0.00	0.00	0.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Burning of agricultural crop residues	0.00	0.00	0.00	0.00	0.00	0.00	0.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00
9. Vegetation fires and Forestry	On-site burning of forests and grasslands	0.00	0.00	0.00	0.00	0.00	0.00	0.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00
10. Waste	Waste incineration	0.00	0.00	0.00	0.00	0.00	0.00	0.00								0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Latrines					0.00														0.00		
Total anthropogenic		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note 1: 'Area' source emissions will of course, include all those point source emissions which have not been inventoried separately as LPS emissions.

Emissions from Large Point Sources (LPS) - *The workbook*

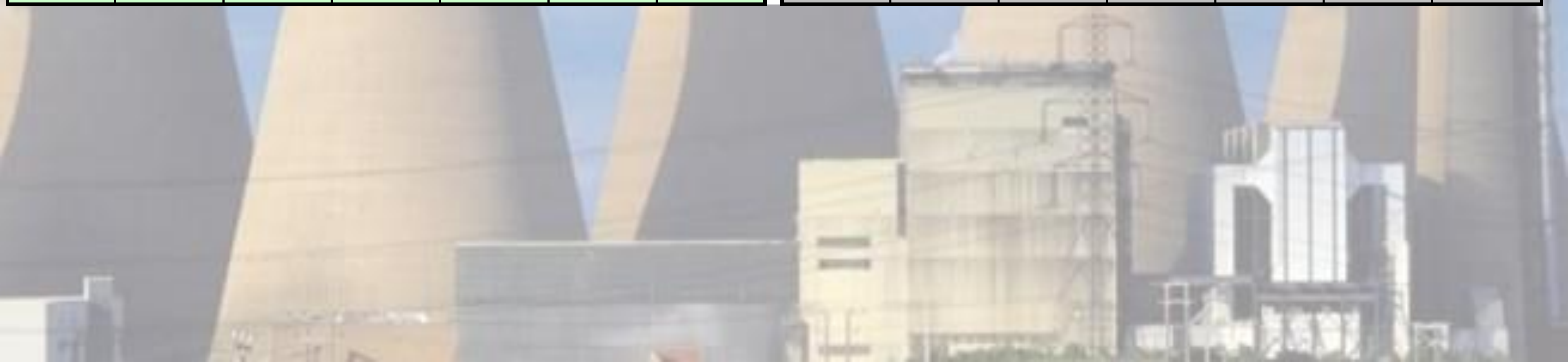
Sheet 9 Summary sheet - Annual emissions of each pollutant by source sector

Sector	Sub-sector	Total emissions (kilotonnes pollutant per year (kt/yr))						
		SO_2	NO_x	CO	NMVOC	NH_3	PM_{10}	$PM_{2.5}$
1. Combustion in the Energy Industries	Public Electricity and Heat	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Petroleum Refining	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Manufacture of Solid Fuels and Other Energy	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2. Combustion in Manufacturing Industries and construction	Iron and Steel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Non-ferrous metals	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Non-metallic minerals	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Chemicals	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Pulp, Paper and print	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mining and Quarrying	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Other (Please specify in sheet 1.1.1a, 1.1.1b or 1.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Autoproduction of electricity/heat	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Remainder (Non-specified)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3. Transport	Civil Aviation (Simple--not used if Detailed used)	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Emissions from Large Point Sources (LPS) - *The workbook*

Total emissions (kilotonnes pollutant per year (kt/yr))						
SO_2	NO_x	CO	NMVOC	NH_3	PM_{10}	$PM_{2.5}$
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00

LPS emissions (kilotonnes pollutant per year (kt/yr))						
SO_2	NO_x	CO	NMVOC	NH_3	PM_{10}	$PM_{2.5}$
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00



Emissions from Large Point Sources (LPS) - *The workbook*

To avoid double-counting, emissions inventoried for LPS are subtracted from the total emissions calculated in the first part of the summary table to give the remaining 'Area source' emissions for that sector.

LPS emissions (kilotonnes pollutant per year (kt/yr))						
SO_2	NO_x	CO	NMVOC	NH_3	PM_{10}	$PM_{2.5}$
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00

[1]Area source (total minus LPS) emissions (kilotonnes pollutant per year (kt/yr))						
SO_2	NO_x	CO	NMVOC	NH_3	PM_{10}	$PM_{2.5}$
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00

Compiling emissions for Large Point Sources (LPS)

Exercise 1:

1. Filling in workbook with dummy data *(see notes)*
2. Plenary session – *sharing problems encountered etc.*

Emissions from Large Point Sources (LPS) - *The workbook*

Sheet 8.1 Large point source combustion emissions, general plant-specific details

BACK TO MENU

Sector	Sub-sector	Sub-sub sector	Name of facility [and LPS code no.]	Location: Map grid reference Latitude	Location: Map grid reference Longitude	Location: $1^{o}x1^{o}$ grid code	Location: Province	A Stack height [if known] (m)	B Emitted stack gas volume [if known] (10^6 m^3/yr)
Combustion in Energy Industries	Public Electricity and Heat Production[a]		Facility (a) [LPS 1]						
			Facility (b) [LPS 2]						
			etc.						
	Petroleum Refining[a]		Facility (a)						
			Facility (b)						
			etc.						
	Manufacture of Solid Fuels and Other Energy	Coke ovens	Facility (a)						
			Facility (b)						
			etc.						
		Patent fuel, BKB	Facility (a)						
			Facility (b)						
			etc.						
		Gas works	Facility (a)						
			Facility (b)						
			etc.						
		Charcoal poduction	Facility (a)						
			Facility (b)						
			etc.						
		Other own use	Facility (a)						
			Facility (b)						
			etc.						
Combustion in Manufacturing Industries	Iron and Steel		Facility (a)						
			Facility (b)						
			etc.						

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Compiling emissions for Large Point Sources (LPS)

Exercise 2:

1. Inserting extra LPS into the workbook *(see notes)*
2. Plenary session – *sharing problems encountered etc.*