



EEF VAN DONGEN

**ECLAIR – Emission  
CompiLation for AIR quality**

# Priority to most relevant emissions

Under development !

- Point sources: large combustion plants & medium industries  
(direct emissions or activity)



- Individual heating: household appliances & district heating  
(types & consumption per dwellings, census)



- Traffic sources: flow (average daily traffic) & fleet  
(total emissions, fleet & traffic counting)



# QGIS plugin (under development)

The screenshot displays the QGIS desktop environment. The top menu bar includes 'Project', 'Edit', 'View', 'Layer', 'Settings', 'Plugins', 'Vector', 'Raster', 'Database', 'Web', 'Mesh', 'Processing', and 'Help'. The toolbar below contains various icons, with the 'Eclair!' icon highlighted by a red rectangle. The main workspace shows a 'News' section with a Ukrainian flag and a message titled 'QGIS for Peace'. A dialog box titled 'ECLAIR' is open, also highlighted with a red rectangle. It features tabs for 'Database Settings', 'Import Data', 'Edit Data', 'Export Data', 'Analyse Emissions', and 'Visualize Emissions'. The 'Database Settings' tab is active, showing the text 'Eclair is currently connected to database: Database not set yet.' and two buttons: 'Choose existing database to edit' and 'Create and connect to new database'. The status bar at the bottom indicates 'Value tool is enabled' and 'New QGIS version available: Visit <https://download.qgis.org> to get your copy of version 3.28.10'.



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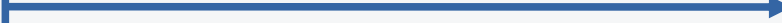
# Data structure for pointsources

## Pointsource

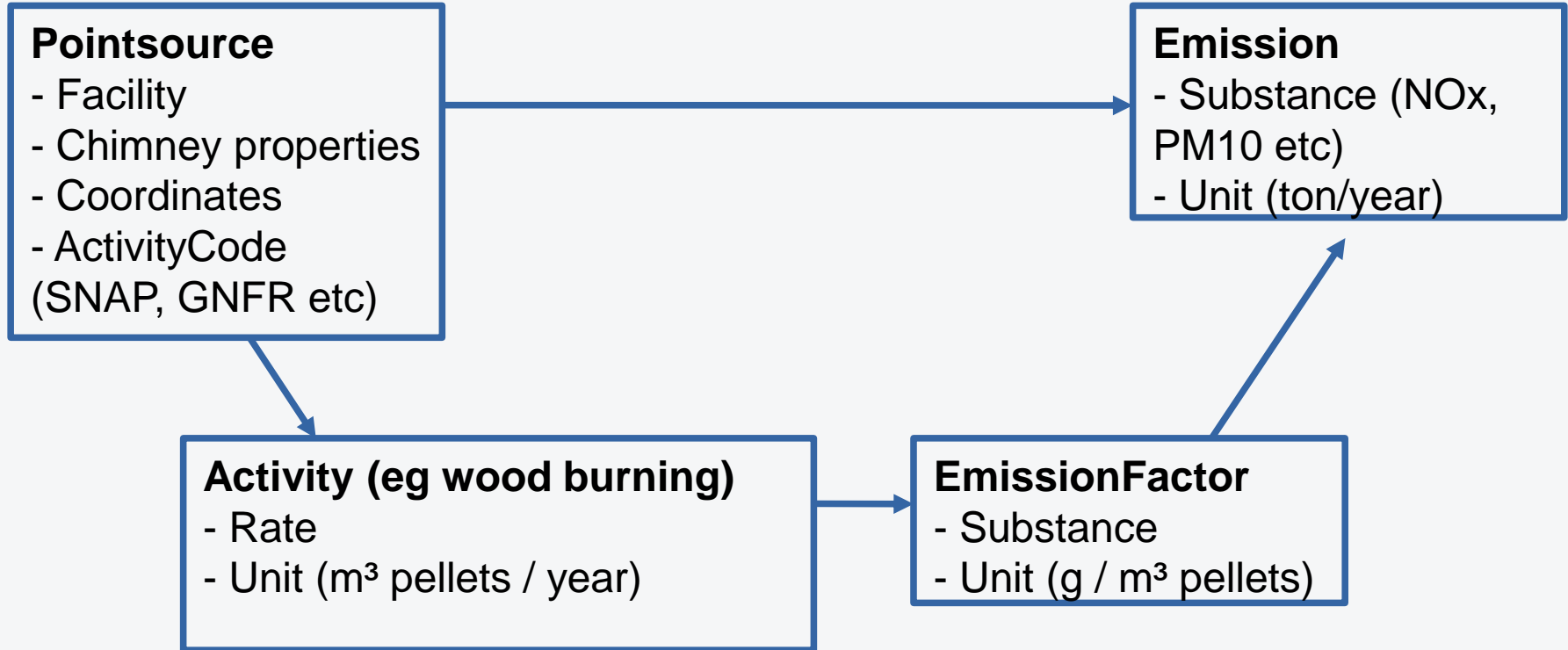
- Facility
- Chimney properties
- Coordinates
- ActivityCode  
(SNAP, GNFR etc)

## Emission

- Substance (NOx,  
PM10 etc)
- Unit (ton/year)



# Data structure for pointsources and activities



# Time variation

ID	typeday	monday	tuesday	wednesday	thursday	friday	saturday	sunday							
<u>officehours</u>	00-01	0	0	0	0	0	0	0							
	01-02	0	0	0	0	0	0	0							
	02-03	0	0	0	0	0	0	0							
	03-04	0	0	0	0	0	0	0							
	04-05	0	0	0	0	0	0	0							
	05-06	0	0	0	0	0	0	0							
	06-07	0	0	0	0	0	0	0							
	07-08	0	0	0	0	0	0	0							
	08-09	0	0	0	0	0	0	0							
	09-10	1	1	1	1	1	1	0							
	10-11	1	1	1	1	1	1	0							
	11-12	1	1	1	1	1	1	0							
	12-13	1	1	1	1	1	1	0							
	13-14	1	1	1	1	1	1	0							
	14-15	1	1	1	1	1	1	0							
	15-16	1	1	1	1	1	1	0							
	16-17	1	1	1	1	1	1	0							
	17-18	0	0	0	0	0	0	0							
	18-19	0	0	0	0	0	0	0							
	19-20	0	0	0	0	0	0	0							
	20-21	0	0	0	0	0	0	0							
	21-22	0	0	0	0	0	0	0							
	22-23	0	0	0	0	0	0	0							
	23-24	0	0	0	0	0	0	0							
<u>month</u>	<u>January</u>	1	1	1	1	1	1	0,5	0	0,5	1	1	1	1	1

Gives **weight** to emissions, yearly total emission as specified in import.

# Format data import

Kavadarci\_pointsources.xlsx - LibreOffice Calc

File Edit View Insert Format Styles Sheet Data Tools Window Help

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K29 fx Σ = 0,35

	A	B	C	D	E	F	G
1	facility_id	facility_name	source_name	lat	lon	timevar	activitycode_code
2	132-001	Еуроникел Индустри	Еуроникел Индустри1	41,437341	21,943786		1.A.2.a
3	132-001	Еуроникел Индустри	Еуроникел Индустри2	41,437341	21,943786		1.A.2.a
4	132-001	Еуроникел Индустри	Еуроникел Индустри3	41,437341	21,943786		1.A.2.a
5	132-001	Еуроникел Индустри	Еуроникел Индустри4	41,437341	21,943786		1.A.2.a
6	132-001	Еуроникел Индустри	Еуроникел Индустри5	41,437341	21,943786		1.A.2.a
7	132-001	Еуроникел Индустри	Еуроникел Индустри6	41,437341	21,943786		1.A.2.a
8	132-001	Еуроникел Индустри	Еуроникел Индустри7	41,437341	21,943786		1.A.2.a
9	132-001	Еуроникел Индустри	Еуроникел Индустри8	41,437341	21,943786		1.A.2.a
10	132-002	Лавер Трейд	Лавер Трейд	41,434606	21,921838		2.A.5.b
11	132-003	Енерго Максисем-Бет Ба	Енерго Максисем-Бет База Раец	41,43903	21,837183		2.A.5.b
12	132-004	Серта Компани-Кавадарци	Серта Компани-Кавадарци	41,441203	22,018134		1.A.2.e
13	132-005	Нова Инжениринг Форум	Нова Инжениринг Форум	41,426781	21,946141		1.A.2.a

PointSource Activity EmissionFactor Timevar ActivityCode CodeSet

Find Find All Formatted Display Match Case

Sheet 1 of 6 PageStyle\_PointSource Swedish (Sweden) Average: 0,35; Sum: 0,35 100%

# Format data import

## Point source

- Facility
- Chimney properties
- Coordinates
- Activity Code (SNAP, GNFR etc)

Kavadarci\_pointsources.xlsx - LibreOffice Calc

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0,35

	C	D	E	F	G
	source_name	lat	lon	timevar	activitycode_code
5	132-001	Еуроникел Индустри1	41,437341	21,943786	1.A.2.a
6	132-001	Еуроникел Индустри2	41,437341	21,943786	1.A.2.a
7	132-001	Еуроникел Индустри3	41,437341	21,943786	1.A.2.a
8	132-001	Еуроникел Индустри4	41,437341	21,943786	1.A.2.a
9	132-001	Еуроникел Индустри5	41,437341	21,943786	1.A.2.a
10	132-001	Еуроникел Индустри6	41,437341	21,943786	1.A.2.a
11	132-001	Еуроникел Индустри7	41,437341	21,943786	1.A.2.a
12	132-001	Еуроникел Индустри8	41,437341	21,943786	1.A.2.a
13	132-002	Лавер Трейд	41,434606	21,921838	2.A.5.b
14	132-003	Енерго Максимем-Бет База Раец	41,43903	21,837183	2.A.5.b
15	132-004	Серта Компани-Кавадарци	41,441203	22,018134	1.A.2.e
16	132-005	Нова Индустриел Форм	41,436781	21,946141	1.A.2.a

PointSource Activity EmissionFactor Timevar ActivityCode CodeSet

Find Find All Formatted Display Match Case

Sheet 1 of 6 PageStyle\_PointSource Swedish (Sweden) Average: 0,35; Sum: 0,35 100%



# Format data import

## Point source

- Facility
- Chimney properties
- Coordinates
- Activity Code (SNAP, GNFR etc)

## Activity (eg wood burning)

- Rate
- Unit (m<sup>3</sup> pellets / year)

Kavadarci\_pointsources.xlsx - LibreOffice Calc

File Edit View Insert Format Styles Sheet Data Tools Window Help

0,35

	C	D	E	F	G
	source_name	lat	lon	timevar	activitycode_code
5	Еуроникел Индустри1	41,437341	21,943786		1.A.2.a
6	Еуроникел Индустри2	41,437341	21,943786		1.A.2.a
7	Еуроникел Индустри3	41,437341	21,943786		1.A.2.a
8		41,437341	21,943786		1.A.2.a
9		41,437341	21,943786		1.A.2.a
10		41,434606	21,921838		2.A.5.b
11		41,43903	21,837183		2.A.5.b
12	Серта Компани-Кавадарци	41,441203	22,018134		1.A.2.e
13	Нова Индустриал Фабрика	41,426781	21,946141		1.A.2.a

PointSource Activity EmissionFactor Timevar ActivityCode CodeSet

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Sheet 1 of 6 PageStyle\_PointSource Swedish (Sweden) Average: 0,35; Sum: 0,35 100%

# Format data import

Kavadarci\_pointsources.xlsx - LibreOffice Calc

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**Pointsource**

- Facility
- Chimney properties
- Coordinates
- ActivityCode (SNAP, GNFR etc)

**EmissionFactor**

- Substance
- Unit (g / m<sup>3</sup> pellets)

**Activity (eg wood burning)**

- Rate
- Unit (m<sup>3</sup> pellets / year)

	D	E	F	G
	lon	timevar	activitycode	code
437341	21,943786		1.A.2.a	
437341	21,943786		1.A.2.a	
437341	21,943786		1.A.2.a	
41,437341	21,943786		1.A.2.a	
41,437341	21,943786		1.A.2.a	
41,437341	21,943786		1.A.2.a	
41,437341	21,943786		1.A.2.a	
41,437341	21,943786		1.A.2.a	
41,434606	21,921838		2.A.5.b	
41,43903	21,837183		2.A.5.b	
41,441203	22,018134		1.A.2.e	
41,426781	21,946141		1.A.2.a	

PointSource Activity EmissionFactor Timevar ActivityCode CodeSet

Find Find All Formatted Display Match Case

Sheet 1 of 6 PageStyle\_PointSource Swedish (Sweden) Average: 0,35; Sum: 0,35 100%

# Format data import

## Pointsource

- Facility
- Chimney properties
- Coordinates
- ActivityCode (SNAP, GNFR etc)

## EmissionFactor

- Substance
- Unit (g / m<sup>3</sup> pellets)

## Activity (eg wood burning)

- Rate
- Unit (m<sup>3</sup> pellets / year)

The screenshot shows a spreadsheet application with a menu bar (File, Edit, View, Insert, Format, Style) and a toolbar. A small inset window displays a calendar for the year 2010. The main spreadsheet has columns labeled D, E, F, and G. The data in these columns is as follows:

D	E	F	G
437341	21,943786	timevar	activitycode_code
437341	21,943786		1.A.2.a
437341	21,943786		1.A.2.a
41,437341	21,943786		1.A.2.a
41,437341	21,943786		1.A.2.a
41,437341	21,943786		1.A.2.a
41,437341	21,943786		1.A.2.a
41,437341	21,943786		1.A.2.a
41,437341	21,943786		1.A.2.a
41,43903	21,837183		2.A.5.b
41,441203	22,018134		1.A.2.e
41,426781	21,946141		1.A.2.a

At the bottom of the spreadsheet, there are tabs for PointSource, Activity, EmissionFactor, Timevar, ActivityCode, and CodeSet. A search bar at the bottom left contains the text "Find". The status bar at the bottom shows "Sheet 1 of 6", "PageStyle\_PointSource", "Swedish (Sweden)", "Average: 0,35; Sum: 0,35", and "100%".

# Format data import

Kavadarci\_pointsources.xlsx - LibreOffice Calc

File Edit View Insert Format Styles Sheet Data Tools Window Help

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codeset_slug	activitycode	label
GNFR	A	PublicPower
GNFR	B	Industry
SNAP	01	Combustion in the production and transformation of energy
NFR	1.A.1.a	Public Electricity and Heat production
SNAP	1.3	Residential Heating

name	slug
Generalised NFR	GNFR
Selected Nomenclature for Air Pollution	SNAP
Nomenclature for Reporting	NFR

5	132-001	Еуроникел Индустри4	Еуроникел Индустри4			
6	132-001	Еуроникел Индустри5	Еуроникел Индустри5			
7	132-001	Еуроникел Индустри6	Еуроникел Индустри6			
8	132-001	Еуроникел Индустри7	Еуроникел Индустри7			
9	132-001	Еуроникел Индустри8	Еуроникел Индустри8			
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11	132-003	Енерго Максимем-Бет Ба	Енерго Максимем-Бет База Ращ	41,43903	21,837183	2.A.5.b
12	132-004	Серта Компани-Кавадарци	Серта Компани-Кавадарци	41,441203	22,018134	1.A.2.e
13	132-005	Нова Инженеринг Фонд	Нова Инженеринг Фонд	41,426781	21,946141	1.A.2.a

PointSource Activity EmissionFactor Timevar ActivityCode CodeSet

Find Find All Formatted Display Match Case

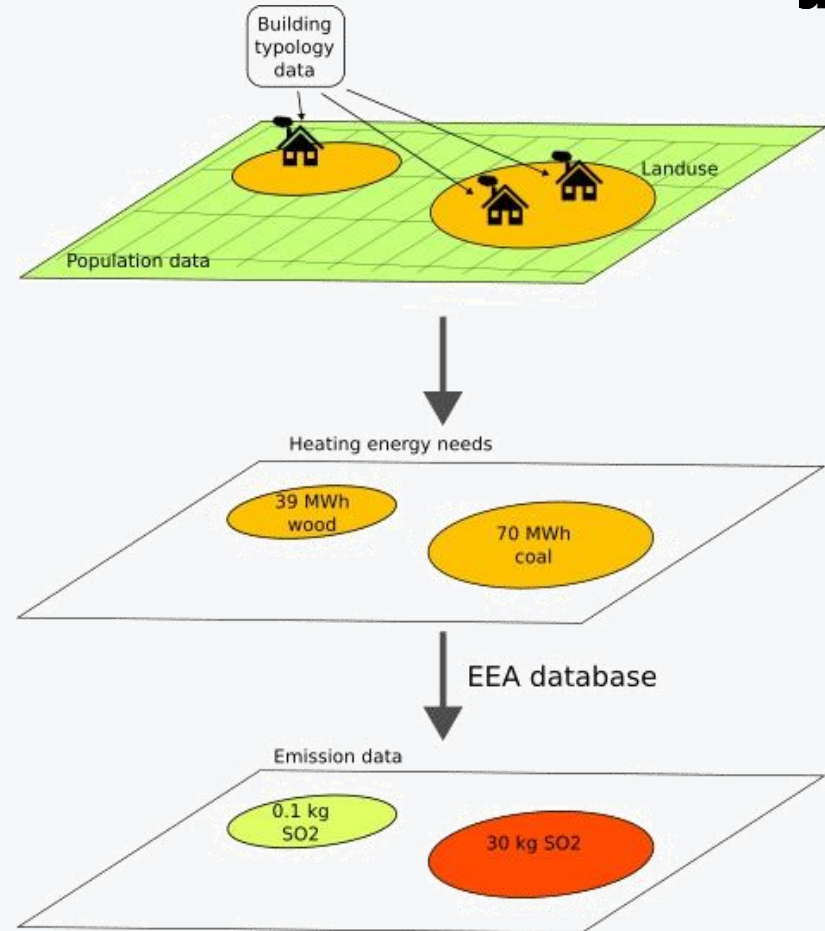
Sheet 1 of 6 PageStyle\_PointSource Swedish (Sweden) Average: 0,35; Sum: 0,35 100%

**Let's try!**



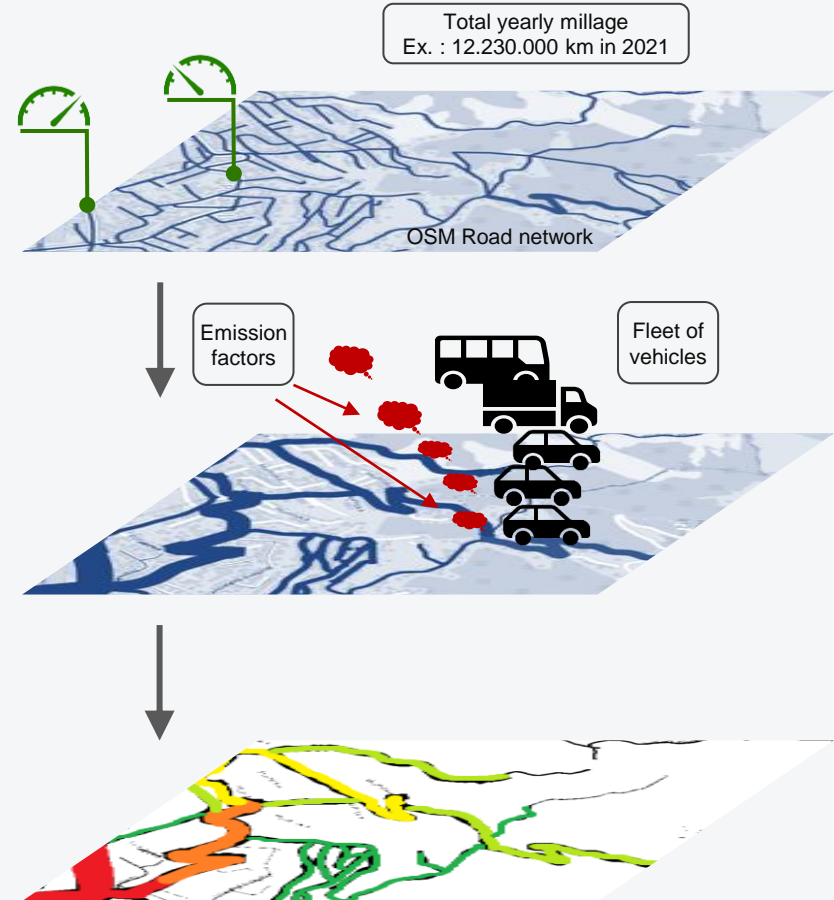
# Household heating

1. Geographic distribution of appliances according to:
  - urban areas
  - type of building
  - population density
  - building typology & energy use
2. Conversion to heating energy use:
  - by type of appliances
  - by fuel
  - by area
3. Conversion to area emissions:
  - using EEA emission factors
  - using local emission factors



# Traffic

1. Geographic distribution of traffic flow according to:
  - road network (Open Street Map)
  - few traffic measurements (large roads)
  - total traffic work in area (vehicles/year/km)
2. Total aggregated emissions (ex. Copert) from:
  - vehicles fleet composition
  - yearly millage
  - emission factors
3. Geographic distribution of emissions





QUESTIONS, COMMENTS?

**THANK YOU !**