

NRC workshop on Industrial Pollution

A review of the impact of the EU policy on Large Combustion Plants



Key purpose of the report:

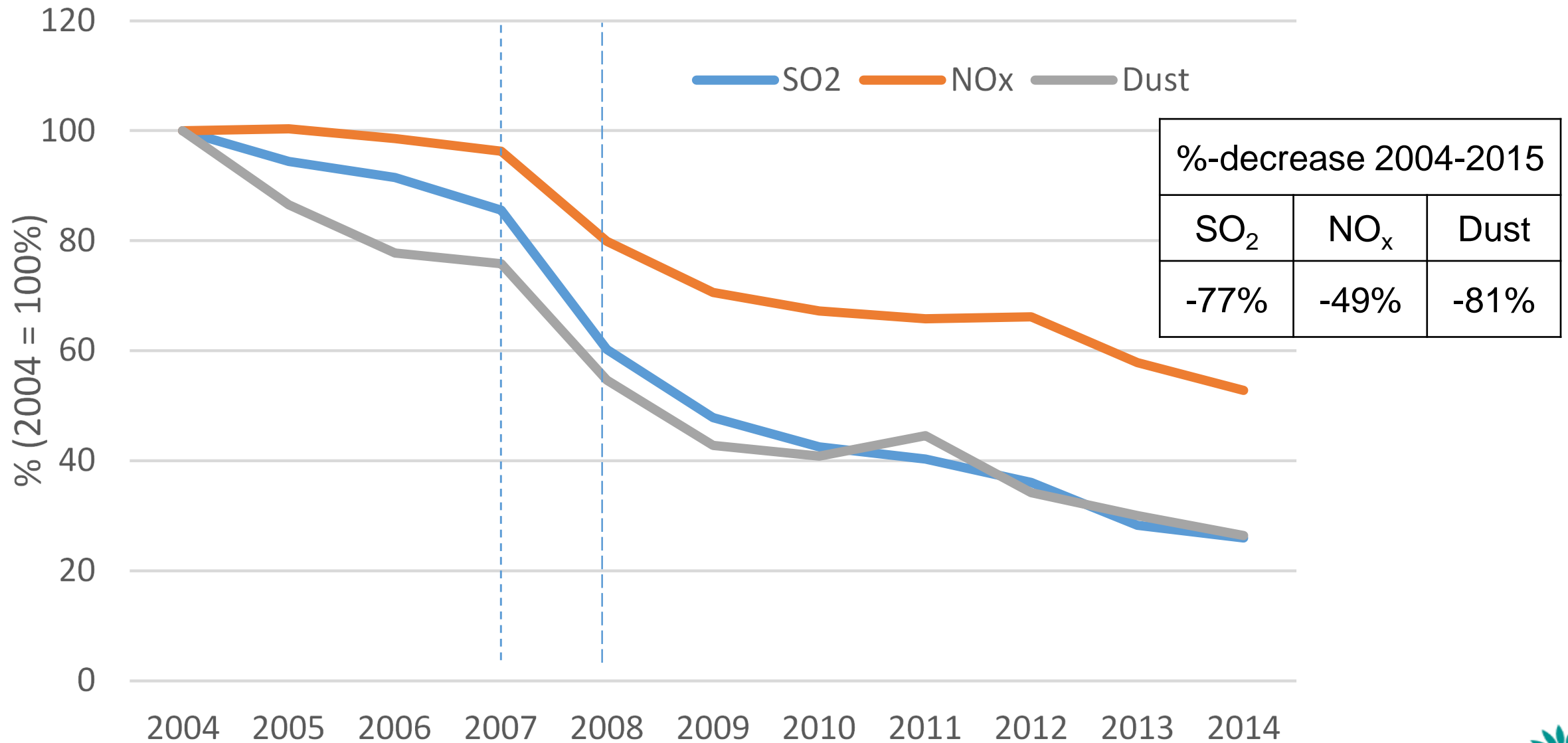
To assess the effectiveness of legislation applicable to LCPs, especially the LCP Directive

Report scope: EU-28, Member States, 2004-2015.

Presentation Outline:

1. Assessment methods
2. Preliminary findings

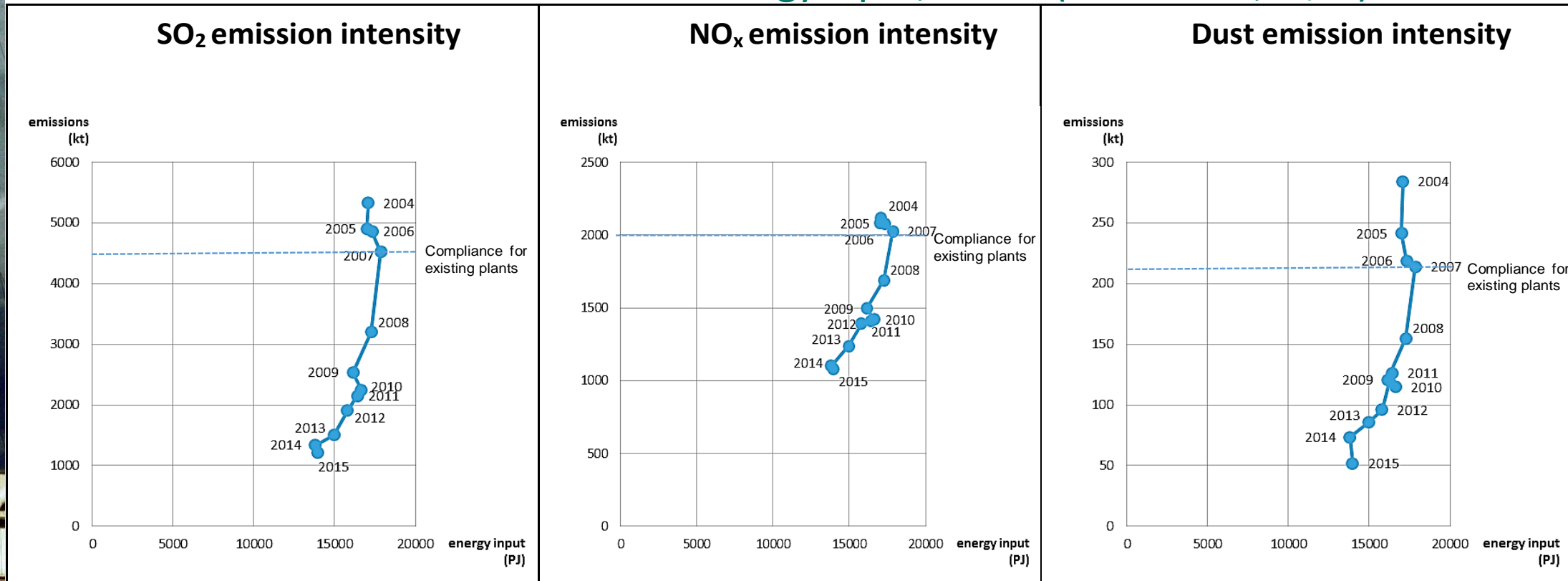
Indexed evolution of SO₂, NO_x and dust from LCPs (EU-28)



Approach 1: Detailed trend analysis

By LCP- ... fuel type; AP emissions; emission factor; per plants' emission intensity classes; for 3 groups of MS with comparable average national emission intensities.

- Trends in LCP emissions vs. LCP energy input, EU-28 (2004-2015, kt/PJ)



Key drivers for the change in LCP emissions...

- Change in demand for energy from LCPs
 - economic activity;
 - the energy intensity of activity;
 - [the degree of electrification of energy use];
 - generation [of electricity] from other (non-LCP) sources.
- Change in the fuel mix used in LCPs
- Changes in the efficiency of LCPs
- Responses to more stringent industrial emissions legislation, especially the LCPD, the IPPCD/IED and the NEC Directive



Approach 2: decomposition analysis

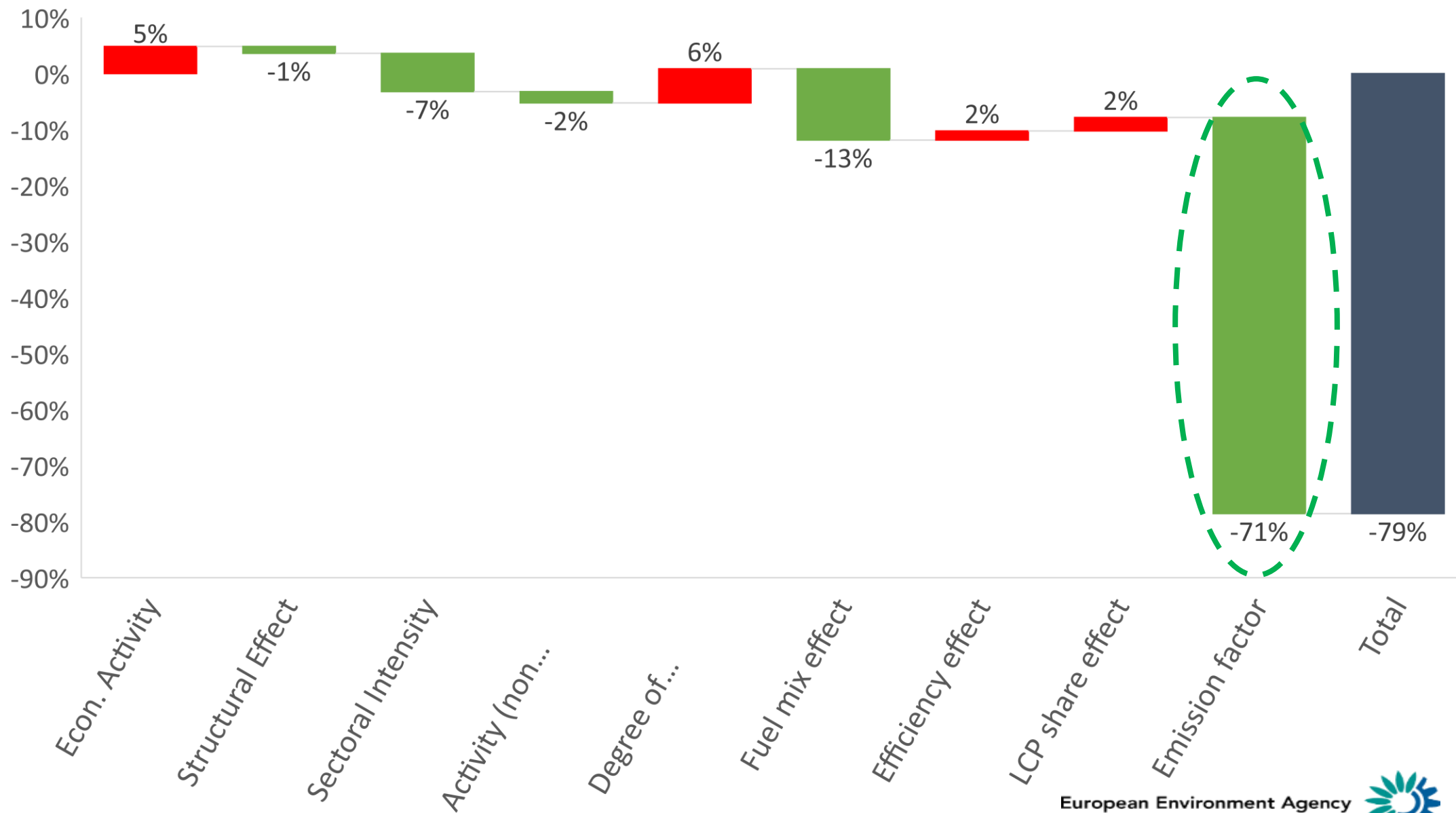
- Statistical technique that deconstructs an observed time series into a number of component series (that reconstruct the original by additions or multiplications).
- 2 separate identities (for observation and control)
 - Equation for electricity generating LCPs:

$$emissions_{i,x,LCP} = GDP \times \frac{GDP_i}{GDP} \times \frac{TFEC_i}{GDP_i} \times \frac{ElecC_i}{TFEC_i} \times \frac{ElecC_x}{ElecC} \times \frac{PEC_x}{ElecC_x} \times \frac{PEC_{x,LCP}}{PEC_x} \times \frac{emissions_{x,LCP}}{PEC_{x,LCP}}$$

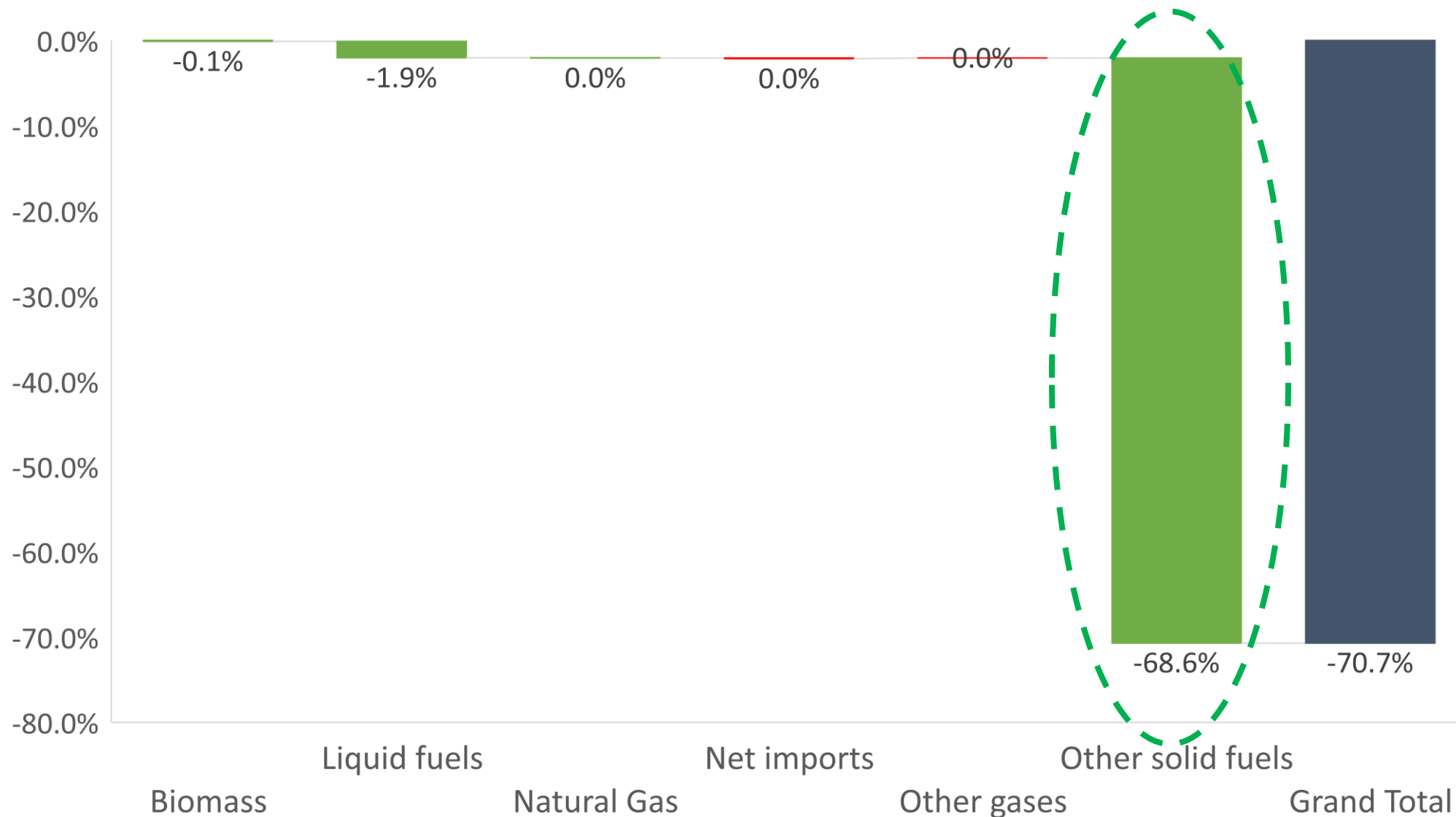
Factor number:	1	2	3	4	5	6	7	8
Factors denote a change over time (2004 - 2015) in ...	Econ Activity	Econ. Sectoral Structure	Sectoral Energy Intensity	Sectoral Degree of Electrification	Generation Type (Fuel-Mix)	Efficiency Effect	LCP share in Total Fuel Used for Elect. Gen.	LCP emission factor (per fuel type)



Preliminary findings: SO₂

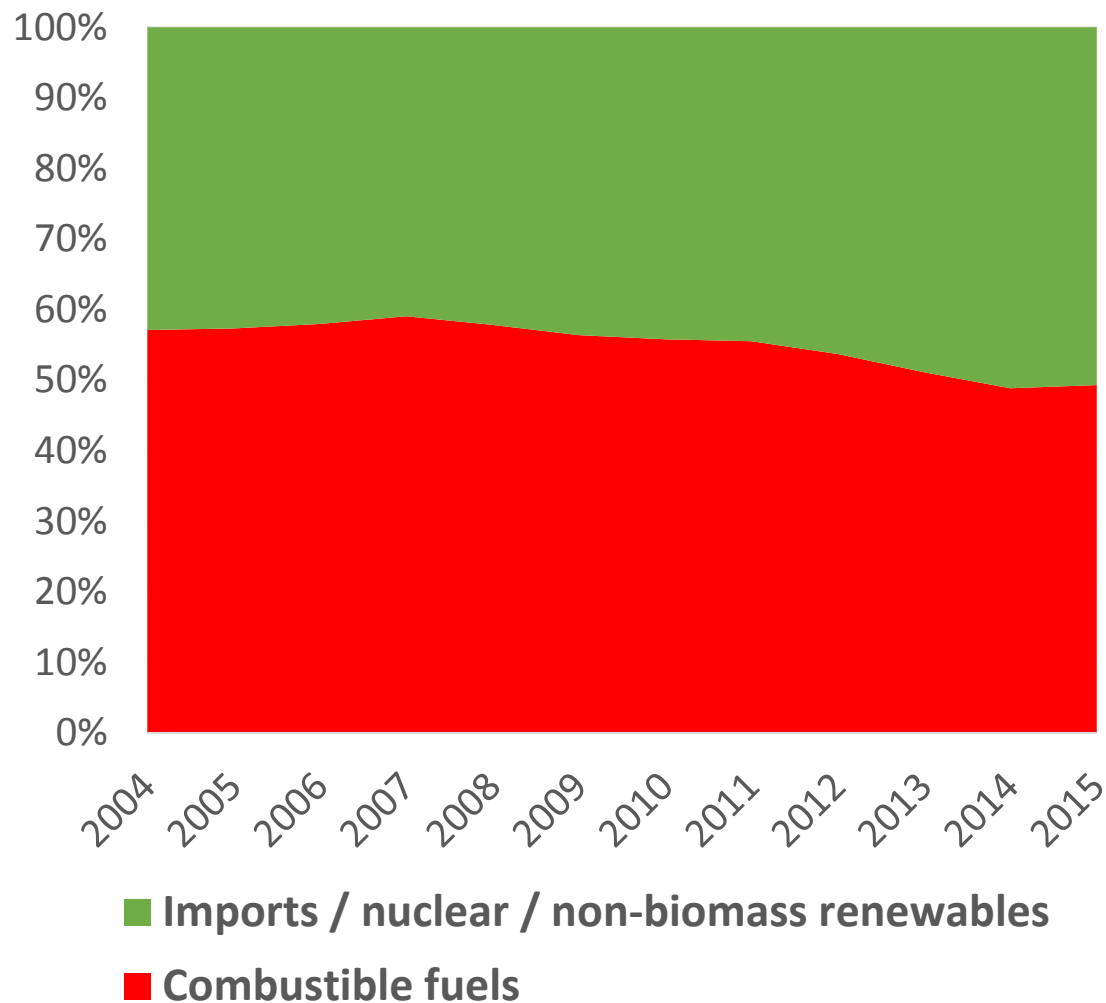


(level 2) Breakdown of mission factor by fuel changes

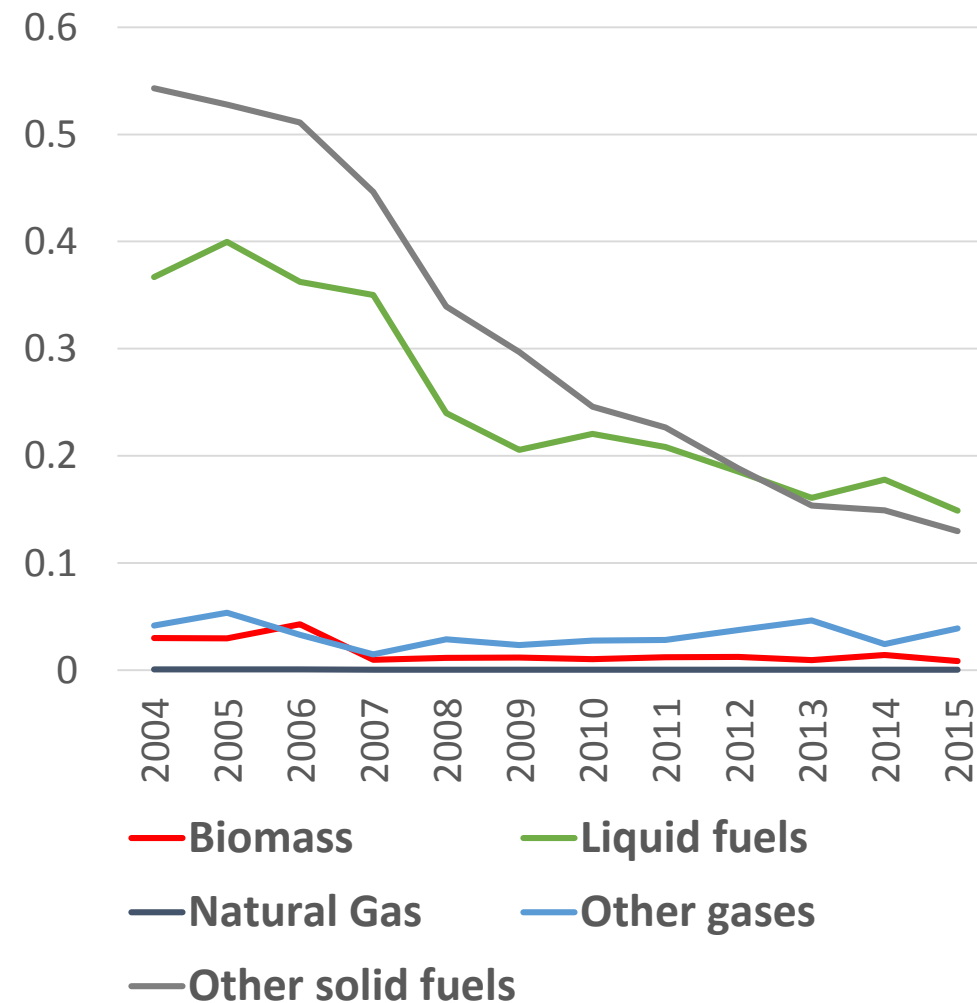


(level 3) Trend analysis

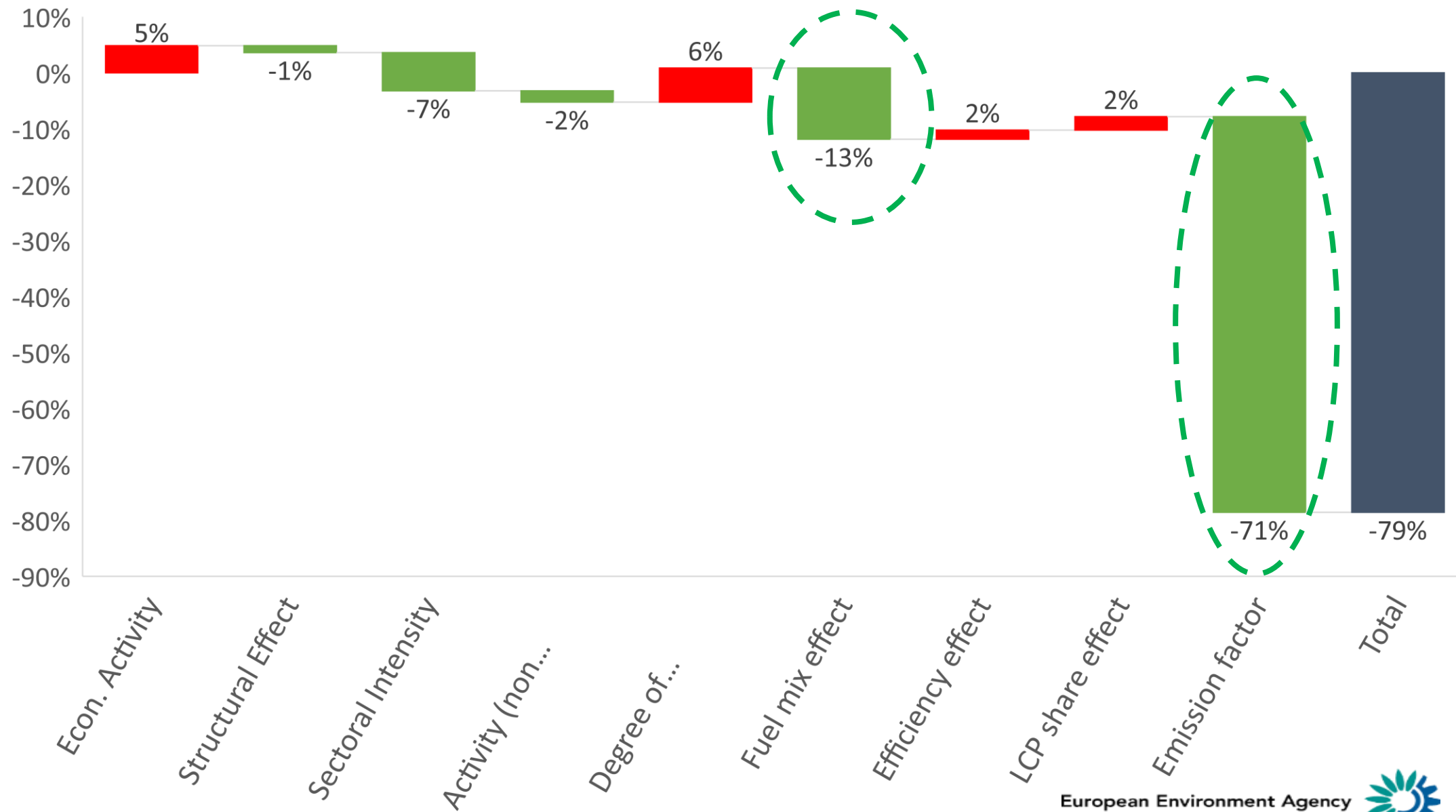
Combustible fuels versus other



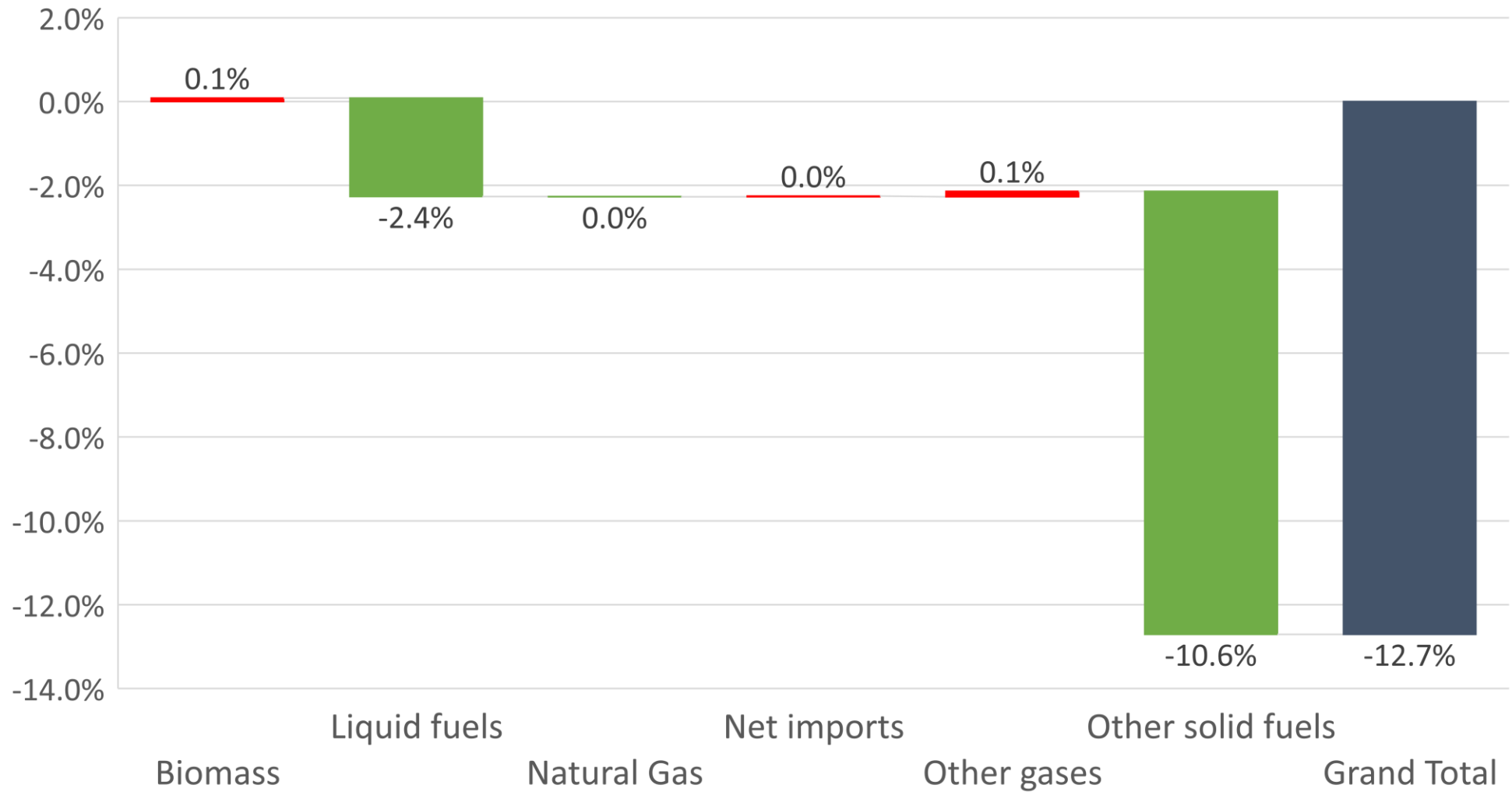
Emission factors by fuel type



Preliminary findings: SO₂



(level 2) Breakdown of Fuel Mix by fuel changes



Thank you !

Mihai Tomescu (Mihai.Tomescu@eea.europa.eu)

EEA, ACC3 Climate and Energy

%-change in emissions 2004-2015, attributable to each factor

