

EGTEI – Expert Group on Techno-economic Issues

Clarifying the work of EGTEI on Technical annexes

Tiziano Pignatelli

Nadine Allemand

Mandate from UNECE addressed to EGTEI (ECE/EB.AIR/WG.5/2008/12/rev.1)

- (a) Initiate work on **proposals to revise annexes IV, V and VI** to the Gothenburg Protocol, specifying **limit values** for sulphur, nitrogen oxides and VOCs for stationary sources, as well as annex VIII for mobile sources;

Carry out preparatory technical work to address the requirement in article 3, paragraph 7, of the Protocol to consider **limit values for the VOCs content of products** not included in annex VI or VIII, with a view to adopting an annex;

Carry out work on drafting an annex on **limit values for emissions of PM (PM_{2.5} and PM₁₀)** from stationary sources;

The revised Technical Annexes

The Expert Group has revised the annexes (part A, only):

IV (*ECE/EB.AIR/WG.5/2009/17, Sulphur Oxides*)

V, (*ECE/EB.AIR/WG.5/2009/18, Nitrogen Oxides*)

VI, (*ECE/EB.AIR/WG.5/2009/19, NMVOC*)

VIII, (*ECE/EB.AIR/WG.5/2009/20, mobile sources*)

New(*) [VII] (*ECE/EB.AIR/WG.5/2009/21, Dust*)

New(*) XI (*ECE/EB.AIR/WG.5/2009/22, solvent content in products*)

The Expert Group cooperated with the European Commission (DG Enterprise) in compiling data for the revision of annex VIII

The list of activities covered by the existing technical annexes to the Gothenburg Protocol for sulphur, NO_x and VOCs has not been extended, as decided in 2007.

(*) Provisional numbering

The leading principles followed by the EGTEI experts during the work:

- 1) Introduce, as much as possible, flexibility to facilitate new ratifications of the Gothenburg Protocol
- 2) Provide, where appropriate, multiple technical options
- 3) Avoid any discussion on policy aspects pertinent to the negotiation process to be undertaken within WGS&R

Options for ELVs

Consistently with the leading principles enunciated above, the following 3 options, corresponding to 3 different ambition levels, have been formulated, as basis for the negotiation :

Option 1: ELV1, demanding but technically feasible option with the objective of achieving a high level of reduction. ELV1 is based upon a value ranging between the lower and upper BAT AEL (where available),

Option 2: ELV2, while technically demanding, pays greater attention to the costs of the measures for achieving reduction. ELV2 is based on the upper value of BAT AEL (where available),

Option 3: ELV 3, represents current practices based on the current legislation in a number of Parties to the Convention.

No preference is expressed by EGTEI because beyond its mandate

Technical annexe VII – dust - combustion installation

Fuel type	Thermal input [MWth]	Suggested ELV for dust [mg/Nm ³] ^{b/}							
		Option 1 ^{1/}			Option 2 ^{1/}			option 3 ^{1/}	
			Lower BAT AEL	Techniques		Upper BAT AEL	Techniques	Legislation	
Solid fuels	50-100	New plants: 10 (coal, lignite) 10 (biomass, peat)	Coal, lignite: 5 Peat, biomass: 5	Coal, lignite: ESP or FF Peat, biomass: ESP or FF	New plants: 20 (coal, lignite) 20 (biomass, peat)	Coal, lignite: 20 Peat, biomass: 20	Same as for option 1	New plants: 50 (coal, lignite) 50 (biomass, peat)	EU-LCPD:(licence after 2002): 50 EU-IED (permit before 2014): 30 EU-IED (permit after 2014): 20 UNECE-HMP: 50
		Existing plants: 15 (coal, lignite) 15 (biomass, peat)	Coal, lignite: 5 Peat, biomass: 5	Coal, lignite: ESP or FF Peat, biomass: ESP or FF	Existing plants: 30 (coal, lignite) 30 (biomass, peat)	Coal, lignite: 30 Peat, biomass: 30	Same as for option 1	Existing plants: 50 (coal, lignite) 50 (biomass, peat)	EU-LCPD:(licence before 2002; <500MW): 100 EU-LCPD:(licence after 2002): 50 EU-IED (permit before 2014): 30 EU-IED (permit after 2014): 20 UNECE-HMP: 50

Suggested ELV for dust [mg/Nm³]^{b/}

Thermal input [MWth]	Suggested ELV for dust [mg/Nm ³] ^{b/}							
	Option 1 ^{1/}			Option 2 ^{1/}			option 3 ^{1/}	
		Lower BAT AEL	Techniques		Upper BAT AEL	Techniques		Legislation
100-300	New plants: 10 (coal, lignite) 10 (biomass, peat)	Coal, lignite: 5 Peat, biomass: 5	Coal, lignite: ESP or FF in combination FGD (wet, sd or dsi) for PC ESP or FF for CFBC Peat, biomass: ESP or FF	New plants: 20 (coal, lignite) 20 (biomass, peat)	Coal, lignite: 20 Peat, biomass: 20	Same as for option 1	New plants: 30 (coal, lignite) 30 (biomass, peat)	EU-LCPD (licence after 2002): 30 EU-IED directive (permit before 2014): coal, lignite: 25; peat, biomass: 20 EU-IED (permit after 2014): 20 UNECE-HMP: 50
	Existing plants: 15 (coal, lignite) 10 (biomass, peat)	Coal, lignite: 5 Peat, biomass: 5	Coal, lignite: ESP or FF in combination FGD (wet, sd or dsi) for PC ESP or FF for CFBC Peat, biomass: ESP or FF	Existing plants: 25 (coal, lignite) 20 (biomass, peat)	Coal, lignite: 25 Peat, biomass: 20	Same as for option 1	Existing plants: 50 (coal, lignite) 50 (biomass, peat)	EU-LCPD:(licence before 2002; <500MW): 100 EU-LCPD:(licence after 2002): 30 EU-IED directive (permit before 2014): coal, lignite: 25; peat, biomass: 20 EU-IED (permit after 2014): 20 UNECE-HMP: 50

Suggested ELV for dust [mg/Nm³] ^{b/}

Thermal input [MWth]	Suggested ELV for dust [mg/Nm ³] ^{b/}							
	Option 1 ^{1/}			Option 2 ^{1/}			option 3 ^{1/}	
		Lower BAT AEL	Techniques		Upper BAT AEL	Techniques		Legislation
>300	New plants: 10 (coal, lignite) 10 (biomass, peat)	Coal, lignite: 5 Peat, biomass: 5	Coal, lignite (PC): ESP or FF in combination with FGD (wet) Coal, lignite (CFBC): ESP or FF	New plants: 10 (coal, lignite) 20 (biomass, peat)	Coal, lignite (PC): 10 Coal, lignite (CFBC): 20 Peat, biomass: 5	Same as for option 1	New plants: 30 (coal, lignite) 30 (biomass, peat)	EU-LCPD (licence after 2002,): 30 EU-IED (permit before 2014): 20 EU-IED (permit after 2014): 10; biomass, peat: 20 UNECE-HMP: 50
	Existing plants: 10 (coal, lignite) 10 (biomass, peat)	Coal, lignite: 5 Peat, biomass: 5	Coal, lignite (PC): ESP or FF in combination with FGD (wet) Coal, lignite (CFBC): ESP or FF	Existing plants: 20 (coal, lignite) 20 (biomass, peat)	Coal, lignite: 20 Peat, biomass: 20	Same as for option 1	Existing plants: 50 (coal, lignite) 50 (biomass, peat)	EU-LCPD (licence before 2002, <500 MW): 100; (licence before 2002, >500 MW): 50 EU-LCPD (licence after 2002,): 30 EU-IED (permit before 2014): 20 EU-IED (permit before 2014): 20 EU-IED (permit after 2014): 10; biomass, peat: 20 UNECE-HMP: 50

Activities covered by technical annexes

	SO ₂	NO _x	TSP	VOC
Sulphur content of fuels	Y			
Boilers in installations - 50 to 100 MW, 100 to 300, > 300 MW	Y	Y	Y	
Combustion turbines in installations > 50 MW		Y		
Stationary engines		Y		
Mineral oil refineries	Y	Y	Y	
Claus plants	Y			
FFC			Y	

Activities covered by technical annexes

	SO ₂	NO _x	TSP	VOC
Production of iron and steel				
Sinter plants		Y	Y	
Pelletization			Y	
Blast furnace			Y	
Basic oxygen steel making and casting			Y	
Electric steel making and casting			Y	
Ferrous metal processing				
Iron foundries			Y	
Hot and cold rolling mills			Y	
Non ferrous metal production and processing			Y	
Titanium dioxide	Y		Y	

Activities covered by technical annexes

	SO ₂	NO _x	TSP	VOC
Cement production		Y	Y	
Lime production			Y	
Glass production		Y	Y	
Wood processing			Y	
Paper pulp			Y	
Waste incineration				
Municipal waste			Y	
Hazardous waste and medical waste			Y	

Activities covered by technical annexes

	SO ₂	NO _x	TSP	VOC
Nitric acid production		Y		
Solvents in paints				Y
Storage and distribution of petrol				Y
Surface cleaning				Y
Dry cleaning				Y
Adhesive coatings				Y
Wood and plastic lamination				Y
Car, bus, trucks, truck cabin coating				Y
Coating in various industries				Y
Coal coating				Y
Printing activities				Y

PP Power plants (public power and district heat plants, industrial CHP plants)

PP_EX_WB Power & district heat plants: Exist. wet bottom boilers

PP_EX_OTH Power & district heat plants: Exist. other

PP_EX_OTH1 Power & district heat plants: Exist. other, grate firing

PP_EX_OTH2 Power & district heat plants: Exist. other, fluidized bed

PP_EX_OTH3 Power & district heat plants: Exist. other, pulverized

PP_NEW Power & district heat plants: New

PP_NEW1 Power & district heat plants: New, grate firing

PP_NEW2 Power & district heat plants: New, fluidized bed

PP_NEW3 Power & district heat plants: New, pulverized

IN Industrial combustion

IN_BO Industry: Combustion in boilers

IN_BO1 Industry: Combustion in boilers, grate firing

IN_BO2 Industry: Combustion in boilers, fluidized bed

IN_BO3 Industry: Combustion in boilers, pulverized

IN_OC Industry: Other combustion (used in emission tables)

IN_OC1 Industry: Other combustion, grate firing

IN_OC2 Industry: Other combustion, fluidized bed

IN_OC3 Industry: Other combustion, pulverized

CON_COMB Fuel production & conversion other than in power plants: Combustion

CON_COMB1 Fuel production & conversion: Combustion, grate firing

CON_COMB2 Fuel production & conversion: Combustion, fluidized bed

CON_COMB3 Fuel production & conversion: Combustion, pulverized

Residential, commercial, services, agriculture, etc.

DOM_MB_A Residential-Commercial: Medium boilers (<50MW) - automatic

DOM_MB_M Residential-Commercial: Medium boilers (<1MW) – manual

SM secondary measures for Power Plants

CYC Cyclone - power plants

ESP1 Electrostatic precipitator: 1 field – power plants

ESP2 Electrostatic precipitator: 2 fields - power plants

HED High efficiency deduster - power plants

SM secondary measures for industry combustion

IN_CYC Cyclone - industrial combustion

IN_ESP1 Electrostatic precipitator: 1 field - industrial combustion

IN_ESP2 Electrostatic precipitator: 2 fields - industrial combustion

IN_HED High efficiency deduster - industrial combustion

How to represent the ambition levels 1 and 2

Some BAT AELs already tested in GAINS (IPPC directive) :

Option 2 is the highest emission level

Option 1 is between the lowest and the highest emission levels

Suggested Solution :

Select the most appropriate reduction technology options, along with implementation rates, existing in GAINS potentially corresponding to option 1 and option 2

Next EGTEI Meeting

Nice, France, November, 5-6, 2009

Thank you for your attention !