

FIFTH INTERIM REPORT

Cost-effective Control of Acidification and Ground-Level Ozone

Part B: Ozone Scenarios ADDENDUM

Fifth Interim Report to the
European Commission, DG-XI

*Markus Amann, Imrich Bertok, Janusz Cofala,
Frantisek Gyarfas, Chris Heyes,
Zbigniew Klimont, Marek Makowski,
Wolfgang Schöpp, David Simpson, Sanna Syri*

May 1998



International Institute for Applied Systems Analysis A-2361 Laxenburg Austria

Telephone: +43 2236 807 Telefax: +43 2236 71313 E-Mail: info@iiasa.ac.at

Cost-effective Control of Acidification and Ground-level Ozone

Part B: Ozone Scenarios - ADDENDUM

May 1998

This addendum to the Fifth Interim Report evaluates the results of selected central emission reduction scenarios along their excess-days of certain air quality criteria. Section 1 presents the number of days with ozone above 60 ppb, Section 2 the number of days with ozone above 90 ppb.

The analysis was carried out with the full EMEP model, taking the emission levels optimized with the RAINS model. All scenarios were calculated for the meteorological conditions of five years. Two series of maps present the highest and the second highest occurrence of excess days for these five years (1989, 1990, 1992, 1993 and 1994), respectively.

A corrigendum to Table 6.2 of Part B of the Fifth Interim Report is provided on Page 9.

1 Days Exceeding the 60 ppb Threshold

Although the AOT60 as it was used for the optimization runs in the RAINS model is a convenient index to model, it might be a difficult one to interpret and to link with generally understandable notions. A better measure in this respect is obviously the number of days on which the WHO criterion is exceeded. While the WHO criterion is defined in relation to the running eight hours averages of the one hour mean concentrations, the EMEP model delivers ozone concentrations only at 12 and 18 GMT each day. The following maps display the number of days on which the EMEP model calculates ozone concentrations above 60 ppb for at least one of these points.

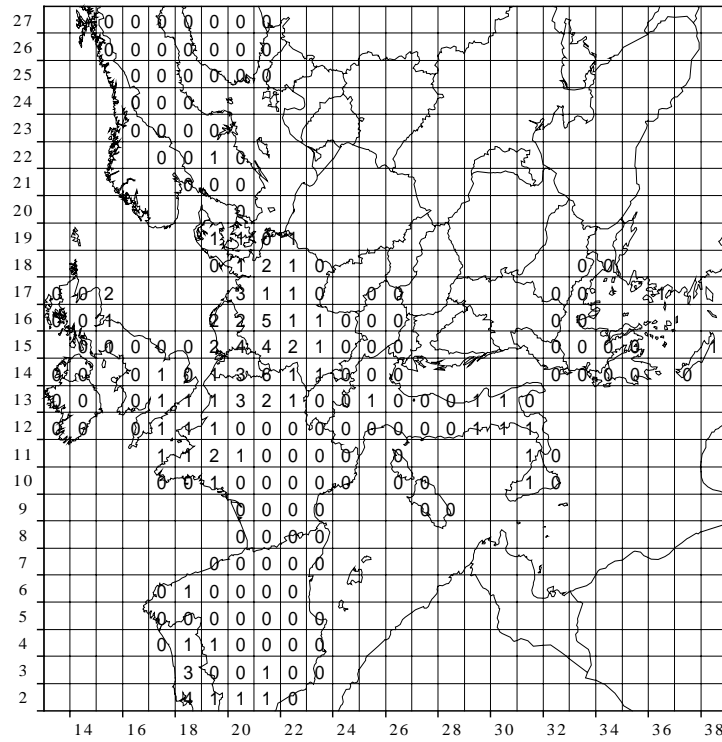


Figure 2.3: Number of days with ozone above 90 ppb for the emissions of the E3/2 scenario, highest occurrence from the meteorological conditions of five years

CORRIGENDUM

Please replace Table 6.2 of Part B with the following page:

Table 6.2: Emissions and control costs (above the costs of the REF scenario) for the 'Post Kyoto' scenarios E6/1 and E6/2. Percentage changes relate to the year 1990. Control costs in million ECU/year.

	NO _x emissions								VOC emissions								Costs		
	REF (Low CO ₂)		E6/1		above REF (low CO ₂)		E6/2		REF (Low CO ₂)		E6/1		E3/2(BAU)		E6/2		above REF (low CO ₂)		
	kt	Change	kt	Change	kt	Change	kt	Change	kt	Change	kt	Change	kt	Change	kt	Change	kt	Change	E6/1
Gap closure	-		60%/35%		REF (low CO ₂)		65%/40%		-		60%/35%		60%/35%		65%/40%				
AOT limits	-		3.0/10.0		3.0/10.0		2.5/9		-		3.0/10.0		3.0/10.0		2.5/9				
Austria	87	-63%	85	-64%	87	-63%	85	-64%	270	-63%	270	-38%	270	-38%	270	-38%	4	4	
Belgium	176	-50%	103	-71%	204	-43%	87	-75%	188	-50%	96	-71%	108	-68%	95	-72%	573	807	
Denmark	133	-51%	133	-51%	133	-51%	133	-51%	86	-51%	86	-47%	86	-47%	86	-47%	0	0	
Finland	145	-48%	145	-48%	170	-39%	145	-48%	107	-48%	107	-50%	107	-50%	107	-50%	0	0	
France	830	-48%	564	-65%	528	-67%	508	-68%	1177	-48%	922	-57%	916	-57%	812	-62%	1235	2910	
Germany	1113	-59%	1062	-61%	1128	-58%	812	-70%	1408	-59%	954	-68%	998	-66%	881	-70%	1546	4030	
Greece	339	-14%	284	-28%	255	-35%	294	-25%	205	-14%	186	-39%	175	-43%	195	-36%	103	62	
Ireland	62	-40%	62	-40%	73	-29%	62	-40%	45	-40%	45	-59%	46	-59%	45	-59%	0	0	
Italy	1040	-49%	877	-57%	924	-55%	766	-62%	1063	-49%	1053	-44%	993	-47%	861	-54%	185	771	
Luxembourg	11	-50%	5	-77%	5	-77%	5	-77%	8	-50%	6	-68%	6	-68%	5	-74%	39	46	
Netherlands	208	-61%	208	-61%	270	-50%	208	-61%	195	-61%	141	-71%	153	-68%	136	-72%	217	345	
Portugal	190	-9%	145	-30%	135	-35%	141	-32%	144	-9%	126	-42%	127	-41%	126	-42%	85	98	
Spain	862	-26%	697	-40%	802	-31%	567	-51%	669	-26%	669	-36%	669	-36%	662	-37%	67	323	
Sweden	198	-43%	198	-43%	198	-43%	198	-43%	195	-43%	195	-55%	195	-55%	195	-55%	0	0	
UK	1108	-60%	1108	-60%	1186	-58%	1108	-60%	1276	-60%	845	-68%	876	-67%	764	-71%	988	1652	
EU-15	6502	-50%	5676	-56%	6098	-53%	5119	-61%	7036	-50%	5701	-57%	5725	-57%	5240	-61%	5042	11048	

