COUNCIL OF THE EUROPEAN UNION

Brussels, 23 December 2013 (OR. en)

18170/13 ADD 6

ENV 1236
ENER 601
IND 389
TRANS 694
ENT 357
SAN 557
PARLNAT 326
CODEC 3089

COVER NOTE

From:	Secretary-General of the European Commission, signed by Mr Jordi AYET PUIGARNAU, Director
date of receipt:	20 December 2013
To:	Mr Uwe CORSEPIUS, Secretary-General of the Council of the European Union
No. Cion doc.:	SWD(2013) 532 final
Subject:	Commission Staff Working Document: Executive Summary of the Impact Assessment Accompanying the documents Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and he Committee of the Regions a Clean Air Programme for Europe, Proposal for a Directive of the European Parliament and of the Council on the limitation of emissions of certain pollutants into the air from medium combustion plants, Proposal for a Directive of the European Parliament and of the Council on the reduction of national emissions of certain atmospheric pollutants and amending Directive 2003/35/EC, Proposal for a Council Decision on the acceptance of the Amendment to the 1999 Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution to Abate Acidification, Eutrophication and Ground-level Ozone

Delegations will find attached document SWD(2013) 532 final.

Encl.: SWD(2013) 532 final

EUROPEAN
COMMISSION

Brussels, 18.12.2013
SWD(2013) 532 final

COMMISSION STAFF WORKING DOCUMENT

EXECUTIVE SUMMARY OF THE IMPACT ASSESSMENT

Accompanying the documents

Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and he Committee of the Regions a Clean Air Programme for Europe

Proposal for a Directive of the European Parliament and of the Council on the limitation of emissions of certain pollutants into the air from medium combustion plants

Proposal for a Directive of the European Parliament and of the Council on the reduction of national emissions of certain atmospheric pollutants and amending Directive 2003/35/EC

Proposal for a Council Decision on the acceptance of the Amendment to the 1999 Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution to Abate Acidification, Eutrophication and Ground-level Ozone

{COM(2013) 917 final}
{COM(2013) 918 final}
{COM(2013) 919 final}
{COM(2013) 920 final}
{SWD(2013) 531 final}

COMMISSION STAFF WORKING DOCUMENT

EXECUTIVE SUMMARY OF THE IMPACT ASSESSMENT

Accompanying the documents

Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and he Committee of the Regions a Clean Air Programme for Europe

Proposal for a Directive of the European Parliament and of the Council on the limitation of emissions of certain pollutants into the air from medium combustion plants

Proposal for a Directive of the European Parliament and of the Council on the reduction of national emissions of certain atmospheric pollutants and amending Directive 2003/35/EC

Proposal for a Council Decision on the acceptance of the Amendment to the 1999 Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution to Abate Acidification, Eutrophication and Ground-level Ozone

1. PROBLEM DEFINITION

1.1. Policy context

Air pollution causes substantial environment and health impacts. In 2010, annual premature mortalities amounted to over 400000 and 62% of the EU area was exposed eutrophication, including 71% of Natura 2000 ecosystems. Total external costs of the health impacts are in the range €330-940bn. Direct economic damage includes €15bn from lost workdays, €4bn healthcare costs, €3bn crop yield loss and €1bn damage to buildings.

To address these, a body of air pollution policy has been developed in the EU and internationally. An ex-post review has been conducted on the main elements of the EU policy: the 2005 Thematic Strategy on Air Pollution, the Ambient Air Quality Directives[1] (AAQDs), the National Emission Ceilings Directive[2] (NECD), and a range of legislation controlling pollution at source.

The policy has brought about a substantial reduction in emissions between 1990 and 2010 which has broadly solved the EU acid rain (acidification) problem.[3] The main health impacts, from particulate matter, have been reduced by around 20% between 2000 and 2010.[4]

1 2008/50/EC and 2004/107/EC
2 2001/81/EC
3 The emission reductions are due to EU legislation on sulphur emissions from large combustion plants (LCPs), and to the low sulphur road transport fuel requirements that also enabled the use of catalytic converters from Euro 4 onwards.
4 Premature deaths from particulate matter pollution were 379 420 in 2010, and from ozone 26 500.

The overall structure of air quality policy is coherent, but a better match must be ensured between source controls, ceilings and ambient air quality standards to ensure effective compliance.

1.2. Key outstanding problems

Despite these gains there are substantial remaining impacts. Air pollution is the number one environmental cause of death in the EU, responsible for ten times more premature deaths than road traffic accidents,[5] as well as substantial impacts on health and resulting productivity losses.

For ecosystems the main outstanding problem is eutrophication. Three quarters of the EU's most valuable ecosystems are threatened, jeopardising the €200-300bn annual benefits from the Natura 2000 network.

Connected with these are two specific problems. First, there are substantial breaches of air quality standards, with a third of EU's Air Quality Management Zones exceeding the limit values for particulate matter (PM_{10}) and a quarter for nitrogen dioxide (NO_2).

Second, even with full compliance with existing EU legislation the EU is not on track to achieve its long-term objective. Projections show that there will still be 340 000 premature deaths from $PM_{2,5}$ and ground-level ozone in 2020.

1.3. The underlying drivers

Exceedance of air quality standards

Diesel emissions drive the NO_2 and NO_x compliance problems

While NO_x emission limit values for diesel passenger cars were tightened by a factor of 4 from 1993 to 2009 (Euro 1 to Euro 5), estimated average NO_x emissions in real driving conditions have slightly increased. This is the single most significant driver of current non-compliance.

Small scale combustion and concentrated local pollution drive the worst PM compliance problems

Domestic solid fuel combustion drives the cases where local pollution most exceeds the limit values, while certain geographical locations combine a high concentration of emitters with a topography that prevents effective dispersion.[6]

Poor co-ordination between national and local action, and lack of capacity at regional and local level, has made compliance more difficult and costly

Public authorities often acted late to bring air pollution down. Part of the problem is lack of capacity to develop, implement and monitor plans to cut pollution. Co-ordination between NECD national programmes and AAQD action plans could be improved.

5 EUROSTAT statistics report the number of traffic fatalities in the range of 35 000 in the year 2010 across the EU 27.

6 E.g. some of the main population centres in Europe remain in non-compliance: Milan, Madrid, Barcelona, London and others.

The EU is not on track to achieve its long-term air quality objective

The remaining health impacts after 2020 are driven by a range of sectors

All the main sectors contribute to either PM or ozone concentrations and must be addressed. The cost-effective reduction potential is greatest for those sectors which have reduced least (e.g. agriculture, medium-scale combustion, non-road mobile machinery and international shipping).[7]

Agricultural ammonia emissions drive the remaining environmental impacts

Agriculture is responsible for 90% of ammonia emissions and is the primary driver of eutrophication. There is a large untapped potential to achieve cost-effective reductions, many of which would benefit farmers.

Sustained background pollution means that local action alone cannot effectively reduce impacts

There is a substantial background[8] component to the main problems which is beyond the control of local competent authorities. A part is national and can be addressed at that level, but the transboundary share is high (above 50% for $PM_{2,5}$ and 60% for NH_3).[9]

1.4. How the problem will develop

Compliance for PM_{10} and NO_2 will improve substantially by 2020. The persisting problems are mainly in hotspots (e.g. Rome, Lisbon), and areas where the use of coal for residential heating is still common (e.g. PL, BG, CZ, SK), where the high population density implies correspondingly large population exposure. All Member States are projected to comply with their NEC ceilings by 2020.

The baseline assumes that the introduction of Euro 6 standards will fully control real world NO_x emissions from light-duty diesel from 2017 onwards.[10] This is crucial for compliance by 2020.

Even with full compliance, health impacts will reduce by only around a fifth by 2025, and eutrophication hardly at all.

2. ANALYSIS OF SUBSIDIARITY

The legal base is Article 192(1) of the Treaty. EU action continues to be necessary because of the persisting transboundary nature of air pollution, and because of the contribution of products which must be controlled at EU level for internal market reasons.

[7] Particularly in countries that have not yet declared sulphur and/or NOx control areas.

[8] Measured pollution levels are the sum of contributions originating from specific local sources (such as industrial sites or urban traffic) and background pollution, which in turn is composed both of regional sources and long-range sources.

[9] Estimates from the European Monitoring and Evaluation Programme (EMEP).

[10] Euro 6 compliance is included in the baseline because the level of ambition is set in the adopted legislation; the implementing measure is a technical delivery mechanism.

Health and environmental benefits of pollution reduction are balanced against costs, to ensure that action is proportionate. The optimal distribution of emission reduction between Member States and the EU is also examined.

3. OBJECTIVES

The long-term strategic objective is to attain air quality levels that do not give rise to significant negative impacts on, or risks for, human health and the environment. There are two general objectives:

- To ensure compliance with present air quality policies, and coherence with international commitments, by 2020 at the latest.
- To achieve substantial further reduction in health and environmental impacts in the period up to 2030.

4. POLICY OPTIONS, ASSESSMENT OF IMPACTS AND COMPARISON OF OPTIONS FOR THE FIRST (2020) OBJECTIVE

4.1. Options considered

The baseline will deliver the reductions required by the revised Gothenburg Protocol. Five further options were considered to resolve the compliance problems: new EU source legislation; tightened National Emission Ceilings (beyond Gothenburg); strengthened EU support for Member State action; promotion of tighter international controls; and amending the AAQD.

4.2. Assessment of Impacts

The **baseline** will ensure broad compliance with air quality standards, if the real world emissions problem for light-duty diesels is solved by the introduction of Euro 6. Of the remaining compliance problems, 13-19% of zones are within 5µg/m3 of the limit value, and only 6-8% above that (depending on pollutant).**Further Member State action to reduce local air pollution** should be able to address the first category fairly easily. For the second, domestic combustion (the main PM issue) can be regulated by restricting solid fuel combustion plus support for fuel-switching, (e.g. through the structural funds), while NO_2 pollution can be tackled by access restrictions for diesel vehicles. **Adoption of new source legislation, and further tightening of the National Emission Ceilings** would not effectively target the local sources driving residual non-compliance. Thus these options are taken up for the 2025-30 analysis.

4.3. Comparison of Options

The baseline delivers widespread compliance and the remaining problems until 2020 are due to local pollution sources. These can be effectively tackled by local action, supported at EU level by capacity-building and funding for structural changes such as fuel-switching. There is no rationale for relaxing the AAQD given that compliance can be achieved.

5. POLICY OPTIONS, ASSESSMENT OF IMPACTS AND COMPARISON OF OPTIONS FOR THE SECOND (2025-30) OBJECTIVE

5.1. Options considered

In addition to the baseline, five options were considered, as presented in Table 1 below.

Table 1: Policy options considered for the period 2025-30

Option 1	Option 6A	Option 6B	Option 6C	Option 6D	Option 6E
Baseline	25% gap closure for PM 2.5 between baseline and MTFR	50% gap closure for PM 2.5 between baseline and MTFR	75% gap closure for PM 2.5 between baseline and MTFR	100% gap closure for PM 2.5 between baseline and MTFR	Compliance with WHO guideline values (>100% gap closure for PM 2.5)

The focus is on PM health impacts, because these are most damaging, and can be monetised and so easily compared with costs. But PM controls also affect the pollutants causing ozone, eutrophication and acidification, and thus the options will also deliver reductions in those.

Achieving option 6E, compliance with WHO guideline values, would not be possible by 2030 without structural as well as technical changes. The potential to achieve it in the long-term is taken up later.

5.2. Assessment of Impacts

The full Impact Assessment presents analysis for both 2025 and 2030; for brevity only the 2025 results are presented here.

5.2.1. Health and environment impacts

The percentage reductions in health and environmental impact versus 2005 are presented in Table 2 below:

Table 2: percentage reductions in health and environmental impact versus 2005

	2005	Option1	6A	6B	6C	6D
PM2,5-chronic-premature deaths	494000	-38%	-42%	-46%	-50%	-54%
Ozone-acute- premature deaths	24600	-28%	-29%	-30%	-33%	-39%
Eutrophication, unprotected '000 sq Km	1125	-21%	-24%	-28%	-34%	-40%
Acidification, unprotected '000 sq Km	161	-71%	-77%	-81%	-85%	-87%

Option 6C reduces the health impacts of $PM_{2,5}$ by an additional third over the baseline (50% reduction versus 38%), while eutrophication impacts are reduced by more than an additional half over the baseline (34% reduction versus 21%).

5.2.2. Economic impacts

The economic impacts are shown in Table 3 below in €M (additional costs over Option 1(baseline), and % increase compared to the baseline):

Table 3: economic impacts of the options

	Option 1		Option 6A		Option 6B		Option 6C		Option 6D	
EU-28, 2025	87171	-	221	0,25%	1202	1,38%	4629	5,31%	47007	53,9%

The efforts required per SNAP[11] sector are shown in Table 4 below, expressed in €M and in percentage increase compared with Option 1:

Table 4: Efforts required per SNAP sector

	Option 1	Option 6A		Option 6B		Option 6C		Option 6D	
Power generation	9561	44	*0,46%*	125	*1,31%*	470	*4,92%*	3519	*37%*
Domestic combustion	9405	74	*0,78%*	497	*5,29%*	1680	*18%*	17791	*189%*
Industrial combustion	2513	19	*0,75%*	156	*6,20%*	641	*25%*	1811	*71%*
Industrial Processes	5017	17	*0,34%*	125	*2,49%*	331	*6,61%*	3964	*79%*
Fuel extraction	695	0	*0,00%*	0	*0,00%*	6	*0,81%*	583	*84%*
Solvent use	1176	1	*0,08%*	2	*0,15%*	56	*4,76%*	12204	*1038%*
Road transport	48259	0	*0,00%*	0	*0%*	0	*0%*	0	*0%*
Non-road machinery	8760	1	*0,01%*	5	*0,06%*	145	*1,66%*	1451	*17%*
Waste	1	6	*786%*	7	*941%*	9	*1154%*	9	*1203%*
Agriculture	1783	59	*3,33%*	285	*16%*	1292	*72%*	5675	*318%*
Total	87171	221	*0,25%*	1202	*1,38%*	4629	*5,31%*	47007	*54%*

The SNAP sectors represent types of activity (e.g. combustion, solvent use) that can take place in different economic sectors (chemicals, refineries, etc). By economic sector, Option 6C requires additional expenditure of 0,22% of the sectorial output in agriculture, 0,1% for refineries and much less for all other industries.

Table 5 shows the direct economic benefits and total external costs. Additional action could reduce external costs by €60-200 billion/year beyond the baseline, of which more than €4,5 billion could be direct economic savings.

Table 5: Economic benefits resulting from reductions in air pollution

2025, EU28	Option 6A	Option 6B	Option 6C	Option 6D
Lost working days, direct economic benefits vs baseline €M	726	1421	2137	2831
Damage to built environment, direct economic benefits vs baseline €M	53	106	145	162
Crop value losses, direct economic benefits vs baseline €M	61	101	278	630
Total health care costs, direct economic benefits vs baseline (where data available)	219	437	657	886
Total direct benefits vs baseline	1,059	2,065	3,237	4,509
Total reduction in external costs of air pollution vs baseline (low valuation)	14 997	29 767	44 686	59 642
Total reduction in external costs of air pollution vs baseline (high valuation)	50 317	100 937	150 853	200 074

The aggregate GDP impact is very small even in Option 6C, at -0,025%. Including productivity gains in the macroeconomic analysis fully offsets the GDP impact and additional direct benefits (healthcare, crop and building benefits) give a net economic benefit of 0,007% of GDP.

5.2.3. Social impacts

In all cases the employment effect of the options is small (on Option 6C, there is an increase of 2000 jobs, which is within the uncertainty range), even without taking labour productivity gains into consideration. When those are considered there is a net job creation (37 to 112 thousand jobs).

[11] Selected Nomenclature for Air Pollution

5.2.4. *Competitiveness and SME impacts*

The most significantly affected sectors are agriculture and petroleum refining. In all cases the impact would be below or in the order of the 1% threshold of Gross Value Added, indicating headroom to absorb the additional costs. Impacts on SMEs are significant for agricultural measures and for measures in medium-scale combustion plants (MCPs). For MCP the impacts can be reduced to under 2,4% of Gross Operating Surplus (see below). Agriculture measures can be targeted on larger installations covering most of the capacity, and residual impacts dealt with by appropriate support through the Rural Development Fund.

5.2.5. *Trajectory to achieve the long-term objective by 2050*

Background PM2,5 concentrations below the WHO's 10 µg/m^3 limit could be achieved virtually everywhere in the EU (99,5% of territory and 99% of population exposed), assuming structural changes and further technological development. An indicative trajectory to deliver the required reductions is set out in Table 6.

Table 6: Emission reduction trajectory towards achieving the WHO guideline values in 2050; emissions in kilotons, reductions compared with 2005 emissions

EU28	2005	2025	2030	2040	2050
SO2	8172	-79%	-82%	-87%	-91%
NOx	11538	-65%	-70%	-78%	-83%
PM2,5	1647	-48%	-54%	-64%	-72%
NH3	3928	-30%	-38%	-42%	-48%
VOC	9259	-50%	-55%	-64%	-71%

5.3. Comparison of Options

Table 7 presents a comparison of the impact of the options relative to the baseline:

Table 7: Comparison of the impact of the options relative to the baseline

2025, EU28	Option 6A	Option 6B	Option 6C	Option 6D
Costs relative to baseline €M	221	1202	4629	47007
Additional reduction in health impacts beyond baseline (2005 base year)	10%	21%	32%	43%
Additional reduction in eutrophication impacts beyond baseline (2005 base year)	16%	33%	62%	90%
GDP impact taking into account productivity gains	0,007%	0,009%	0,000%	-
Other direct benefits	333	644	1080	1678
Total reduction in external costs of air pollution vs baseline (low valuation)	**14 997**	**29 767**	**44 686**	**59 642**
Total reduction in external costs of air pollution vs baseline (high valuation)	**50 317**	**100 937**	**150 853**	**200 074**

For Option 6C the benefits outweigh the costs, while the additional measures brought in by 6D are more expensive than the benefits they deliver. For this reason, option 6C is preferred.

5.3.1. *Sensitivity analysis*

Extensive sensitivity analysis on Option 6C yielded the following conclusions:

- while climate policy will be beneficial for air quality, it alone will not achieve the long-term air quality objective by 2050;

- there is additional scope beyond option 6C to reduce eutrophication and ozone health impacts at modest cost (an increased compliance cost of 1%);
- there is potential to set an EU methane reduction target at low or zero cost;[12]
- the policy objectives are still achievable on alternative future scenarios.

5.4. Instruments to implement the preferred option

The main instrument to implement the overall policy is the NECD, which can also incorporate measures to improve national reduction programmes, emission inventories and projections, and ecosystem monitoring, at a small administrative cost (6,9 M€ initially and 2,5 M€/year thereafter).

Current and pending EU source legislation will deliver 52-75% of the required reductions for all pollutants except ammonia, for which the figure is only 25% (from the IED).

EU controls on medium scale combustion plants (1-50 MW rated thermal input) would be cost-effective:

- Significant and cost-effective emission reductions can be achieved for PM, NOx and SOx;
- The total annualised costs for operators can be limited to 400M€ if secondary NOx control is applied only for part of the new plants;
- Administrative costs can be minimised by requiring only registration of plants.

The favoured policy option is emission reduction consistent with the Gothenburg Protocol, coupled with registration for all plants. This reduces the impact on SMEs to 0,1 – 2,4% of Gross Operating Surplus.

6. MONITORING AND EVALUATION

There is an extensive set of indicators and mechanisms to monitor and evaluate implementation of EU air quality policy (e.g. the EEA and EMEP reports). These will be used to evaluate the achievement of revised impact reduction objectives. New NECD reduction commitments will be monitored by reinforced provisions on inventories and projections. The policy will be reviewed on a five-year cycle with the first not later than 2020.

[12] Methane is not considered in the overall optimisation because of its different lifetime (and hence the different timescale of its ozone impacts) compared with the other ozone precursors.