

Emission source shift, from land to sea

Air pollutant emissions from international shipping continue to rise, while those from land-based sources in Europe keep on slowly shrinking.

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Smarter structure for energy taxation

A proposal for a revision of the EU Energy Tax Directive, launched in April by the European Commission, has triggered strong reactions from some of the EU member states.

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Finding ambition levels for a revised protocol

Significant emission reductions and environmental improvements can be achieved in Europe by 2020. Health benefits outweigh the extra costs for emission control.

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Coal-fired plants hinder German climate targets

If all the 20 planned coal-fired power plant projects in Germany are realised, they would together make it impossible to achieve the national climate targets.

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Sulphur emissions from shipping to be slashed

EU ship fuel sulphur standards are to be aligned with international standards, meaning that the global limit should come down to 0.5 per cent in 2020.

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California rules give great benefits

Switching to low sulphur fuels in shipping can provide greater reductions in air pollutant emissions than previously assumed.

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Management or protection?

The fate of the vast boreal forest belt of the northern hemisphere is crucial for global climate. A new AirClim-report looks into our possibilities to protect and manage these forests for climate mitigation. Reducing paper consumption turns out to be an option.

A new report presents an overview of the relationships between boreal forests, forestry and climate change. It looks exclusively at climatic aspects, which does not mean that other aspects, such as socioeconomics or biodiversity, are seen

as less important. The sole reason for this limitation is the wish for clarity.

A central assumption is that +2°C is a critical threshold for global warming, and that severe reductions in greenhouse

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Acid News

A newsletter from the Air Pollution & Climate Secretariat, the primary aim of which is to provide information on air pollution and its effects on health and the environment.

Anyone interested in these matters is invited to contact the Secretariat. All requests for information or material will be dealt with to the best of our ability. Acid News is available free of charge.

In order to fulfil the purpose of Acid News, we need information from everywhere, so if you have read or heard about something that might be of general interest, please write or send a copy to:

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Printed by Trydells Tryckeri, Laholm, Sweden.
ISSN 0281-5087.

The Air Pollution and Climate Secretariat

The Secretariat has a board consisting of one representative from each of the following organisations: Friends of the Earth Sweden, Nature and Youth Sweden, the Swedish Society for Nature Conservation, and the World Wide Fund for Nature (WWF) Sweden.

The essential aim of the Secretariat is to promote awareness of the problems associated with air pollution and climate change, and thus, in part as a result of public pressure, to bring about the needed reductions in the emissions of air pollutants and greenhouse gases. The aim is to have those emissions eventually brought down to levels that man and the environment can tolerate without suffering damage.

In furtherance of these aims, the Secretariat:

- * Keeps up observation of political trends and scientific developments.
- * Acts as an information centre, primarily for European environmentalist organisations, but also for the media, authorities, and researchers.
- * Produces information material.
- * Supports environmentalist bodies in other countries in their work towards common ends.
- * Participates in the lobbying and campaigning activities of European environmentalist organisations concerning European policy relating to air quality and climate change, as well as in meetings of the Convention on Long-range Transboundary Air Pollution and the UN Framework Convention on Climate Change.

Editorial

The United Nations says that the Kyoto Protocol is generally seen as an important first step towards a truly global emission reduction regime that will stabilise GHG emissions, and provides the essential architecture for any future international agreement on climate change. By the end of the first commitment period of the Kyoto Protocol in 2012, a new international framework needs to have been negotiated and ratified that can deliver the stringent emission reductions the Intergovernmental Panel on Climate Change (IPCC) has clearly indicated are needed.

According to Climate Action Tracker the aggregated emission-reduction pledges of all Parties in the UN climate convention fall far short of what is needed to get the world on track for limiting global warming to 2°C and 1.5°C above pre-industrial levels. Both of these warming limits are mentioned in the Cancun Agreements. Similar emission levels are needed in 2020 to meet both temperature targets: Global emissions need to be at 40-44 billion tonnes CO₂ equivalent per year by 2020, and to steeply decline afterwards. The Climate Action Tracker added up the international reduction target and pledges of individual countries, and has estimated that global emissions in 2020 would be 54 billion tonnes CO₂e/year in 2020: A gap of 10-14 billion tonnes remains to reach the reduction level required.

Climate Action Network (CAN) demands that the UN at the Durban conference in 2011 secures a second commitment period for the Kyoto Protocol, and thus preserves the only legally binding instrument with emission reduction targets and timetables for developed countries. KP

“The Kyoto Protocol is more than just a legal protocol, it holds symbolic meaning for developing countries”

architectural elements are crucial to ensure that mitigation commitments are legally binding and have environmental integrity. (For details of the Kyoto architecture see article on page 3.)

At the same time CAN demands that the UN secures a mandate to negotiate a legally binding instrument under the Climate Convention to be adopted no later than 2015 and come into force by the end of the second commitment period of the Kyoto Protocol. By 2015 at the latest, the commitments and actions of all

Parties, while respecting the principles and provisions of the Convention, should be inscribed in legally binding instruments.

In a letter to EU environmental ministers, CAN Europe argues that the European Union is central in shaping the direction of the global climate change regime. “We have noted that the EU has always had the most impact in international climate negotiations when it

has led from the front – by unilaterally adopting clear, ambitious positions, well in time. The Kyoto Protocol is more than just a legal protocol, it holds symbolic meaning for developing countries – and its downfall would provoke outcry and blame. CAN Europe believes that it is in the EU’s own interest to save the Kyoto Protocol. Failing to do so will leave climate laggards sitting in quiet satisfaction while the EU takes the blame for destroying the only legally binding set of global climate rules. The only way the EU can put pressure on the largest emitters is to build an inclusive movement of the majority of the world’s countries; the EU cannot do this if it abandons the Kyoto Protocol.”

Reinhold Pape

References: <http://www.climateactiontracker.org/> and http://climatenetwork.org/sites/default/files/CAN_durban_expectations_september2011_web.pdf

Principles of the Kyoto Protocol

The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialised countries and the European community for reducing greenhouse gas (GHG) emissions. These amount to an average of five per cent against 1990 levels over the five-year period 2008-2012. The major distinction between the Protocol and the Convention is that while the Convention encouraged industrialised countries to stabilise GHG emissions, the Protocol commits them to do so.

Recognising that developed countries are principally responsible for the current high levels of GHG emissions in the atmosphere as a result of more than 150 years of industrial activity, the Protocol places a heavier burden on developed nations under the principle of “common but differentiated responsibilities.”

The Kyoto Protocol was adopted in Kyoto, Japan, on 11 December 1997 and entered into force on 16 February 2005. The detailed rules for the implementation of the Protocol were adopted at COP 7 in Marrakesh in 2001, and are called the “Marrakesh Accords.”

Under the Treaty, countries must meet their targets primarily through national measures. However, the Kyoto Protocol offers them an additional means of meeting their targets by way of three market-based mechanisms.

Under the Protocol, countries’ actual emissions have to be monitored and precise records have to be kept of the trades carried out.

Registry systems track and record transactions by Parties under the mechanisms. The UN Climate Change Secretariat, based in Bonn, Germany, keeps an international transaction log to verify that transactions are consistent with the rules of the Protocol.

Reporting is done by Parties by way of submitting annual emission inventories and national reports under the Protocol at regular intervals.

Table: Countries included in Annex B to the Kyoto Protocol and their emissions targets

Country	Target (1990** - 2008/2012)
EU-15*, Bulgaria, Czech Republic, Estonia, Latvia, Liechtenstein, Lithuania, Monaco, Romania, Slovakia, Slovenia, Switzerland	-8%
US***	-7%
Canada, Hungary, Japan, Poland	-6%
Croatia	-5%
New Zealand, Russian Federation, Ukraine	0
Norway	+1%
Australia	+8%
Iceland	+10%

* The 15 States that were EU members in 1997 when the Kyoto Protocol was adopted, agreed that the 8% target that will be redistributed among themselves, taking advantage of a scheme under the Protocol known as a “bubble”, whereby countries have different individual targets, but which combined make an overall target for that group of countries. The EU has already reached agreement on how its targets will be redistributed.

** Some Economies in Transition have a baseline other than 1990.

*** The US has indicated its intention not to ratify the Kyoto Protocol.

Note: Although they are listed in the Convention’s Annex I, Belarus and Turkey are not included in the Protocol’s Annex B as they were not Parties to the Convention when the Protocol was adopted. Upon entry into force, Kazakhstan, which has declared that it wishes to be bound by the commitments of Annex I Parties under the Convention, will become an Annex I Party under the Protocol. As it had not made this declaration when the Protocol was adopted, Kazakhstan does not have an emissions target listed for it in Annex B.

A compliance system ensures that Parties are meeting their commitments and helps them to meet their commitments if they have problems doing so.

The Kyoto Protocol, like the Convention, is also designed to assist countries in adapting to the adverse effects of climate change. It facilitates the development and deployment of techniques that can help increase resilience to the impacts of climate change.

The Adaptation Fund was established to finance adaptation projects and programmes in developing countries that are Parties to the Kyoto Protocol. The Fund is financed mainly through a share of proceeds from CDM project activities.

The targets cover emissions of the six main greenhouse gases, namely:

- Carbon dioxide (CO₂);
- Methane (CH₄);
- Nitrous oxide (N₂O);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Sulphur hexafluoride (SF₆)

The maximum amount of emissions (measured as the equivalent in carbon dioxide) that a Party may emit over the

commitment period in order to comply with its emissions target is known as a Party’s assigned amount. The individual targets for Annex I Parties are listed in the Kyoto Protocol’s Annex B (Table).

The Protocol mirrors the Convention in recognising the specific needs and concerns of developing countries, especially the most vulnerable among them. Annex I Parties must thus provide information on how they are striving to meet their emissions targets while minimising adverse impacts on developing countries.

An Adaptation Fund was established to finance concrete adaptation projects and programmes in developing countries that are Parties to the Kyoto Protocol. The Fund is to be financed with a share of proceeds from clean development mechanism (CDM) project activities and receive funds from other sources.

Source: http://unfccc.int/kyoto_protocol/items/2830.php

Management or protection?

Continued from front page

gas emissions are needed over the next few decades to avoid exceeding this threshold. Analysis of the importance of boreal forests and the effects of various courses of action should therefore not be limited to a long-term perspective (100 years or more).

The amount of carbon stored in boreal forests is greater than that of any other land ecosystem, and almost twice that stored in tropical forests. This huge accumulation of carbon makes the boreal forest a key factor in future climate.

About half of the world's boreal forests are old-growth forests, mostly or entirely unaffected by forestry. They represent a very large share of the total carbon stored. These forests could continue to act as carbon sinks for centuries (figure). However, continued global warming could transform old-growth boreal forests into a source of carbon source as the result of an increase in natural disturbances, such as fires and insect infestation. We can already see clear trends in this direction. If warming exceeds a critical level (3–5°C is suggested) heat stress and water scarcity could lead to widespread forest death in the boreal region. A large proportion of the stored carbon will then be released into the atmosphere, further driving global warming in an irreversible and self-sustaining process.

Logging or managing these forest in order to avoid such a development is not an option. Turning old-growth boreal forest into managed forest has a negative impact on climate in the short and medium term, as some of the vast amount of stored carbon is released into the atmosphere during harvesting. It takes a long time – 100 years or more – for new forests to bind the corresponding amount of carbon, which means that the felling of old-growth forest further accelerates global warming when seen in this short-term perspective.

In managed boreal forests, there are greater opportunities to influence the movement of greenhouse gases through forest practices and use of the harvested biomass. Once again it is important to

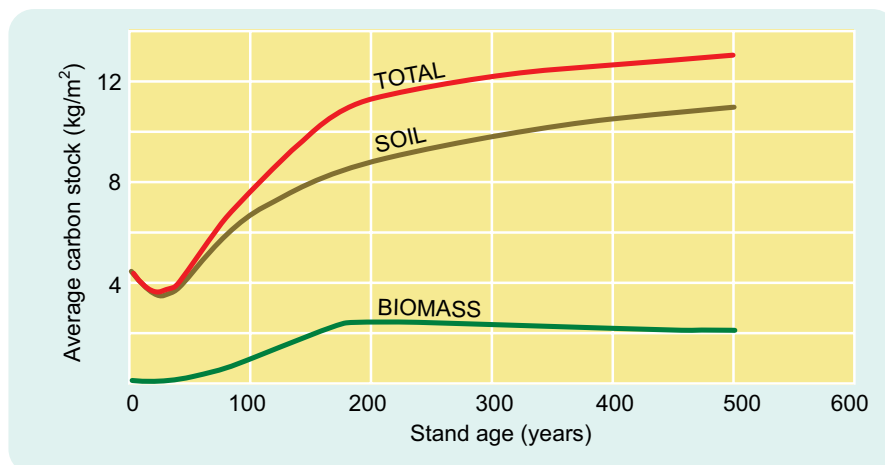


Figure: How stored carbon changes with time in an Alaskan black spruce forest. Carbon stored in biomass reaches a peak when the forest is around 200 years old, while the total carbon stored continues to rise even after 500 years, thanks to carbon uptake by the soil. The graph is based on estimates and shows idealised trends. (After Kasischke et al 1995).

take into account the need for rapid restrictions on emissions when we weigh up alternatives course of action. A solution that may appear optimum over a span of 100 or 200 years may be counterproductive when seen in the light of what we need to achieve in the next few decades.

More intensive forestry, which enables higher production and higher yields through widespread fertilisation, for example, poses risks to the climatic. Aside from the risks, it is not clear that these alternatives are positive, particularly in the short term. For example, if we were to start the widespread uprooting of stumps in Swedish forests to increase the yield of forest fuel it would create a carbon deficit – in other words be negative from the climate viewpoint – for at least the next 30 years.

Interesting opportunities are offered by forest management strategies that have other goals than maximising production and timber yield. Extending rotation periods in Scandinavian forestry has, for instance, been shown to have positive climatic effects, particularly in spruce forests, even after taking into account substitution effects (see below). This is mainly due to an increase in the sawn timber share of yield. Eliminating clear-cutting would also have immediate positive effects in relation to the impact of forestry on climate, since clear-cutting creates carbon sources.

Wood products can replace fossil fuels, both directly through combustion and indirectly, by replacing materials with high embodied energy, such as steel and concrete. Over time, the estimated substitution effects can be high, since the eliminated emissions are cumulative with each forest generation. In the short term (a few decades), it is however questionable whether the climatic benefits of substitution justify investing in increased forest logging or production.

In substitution studies it is often assumed that increased timber yield is used to substitute for materials or fuel, or a combination of both. This differs markedly from the actual situation in boreal forestry. In Sweden, less than one fifth of the timber yield is used for long-lived structural timber, and about half is used for papermaking. The manufacture and use of paper is on the whole negative from a climate perspective (although the effects are likely to differ between various paper products). Reducing consumption of paper and using more of the harvested wood for timber and fuel would thus benefit the climate.

Roger Olsson

To manage or protect? Boreal forest from a climate perspective, AirClim report #26 by Roger Olsson, can be found at www.airclim.org

Not efficient enough

The European Commission do not believe that their own proposal for a new Energy Efficiency Directive will be enough to meet the 20 per cent energy savings target by 2020.

There are no binding targets for member states in the European Commission's proposal for a new Energy Efficiency Directive that was presented on 22 June, and it will not be enough to reach the overall target of 20 per cent reduction in energy consumption by 2020 according to the commission's own impact assessment. The assessment presents two scenarios with indicative targets, one "pessimistic" in which 60 per cent of the savings needed to reach the overall target will be achieved, and one "optimistic" in which 80 per cent of the savings necessary will be achieved.

In its assessment the commission also notes that a majority of stakeholders and the European parliament are in favour of binding targets. The explanation of why the commission put forward a proposal that they themselves do not believe will be enough to achieve the 20 per cent target is found in this sentence from the impact assessment: "In strong contrast are, however, the views of the majority of member states who consider that the indicative approach to targets is to be kept, at least until its efficacy can be properly assessed."

Several environmental organisations have been critical. Brook Riley, from Friends of the Earth Europe, commented: "Frankly, the European Commission is fooling itself if it believes the energy efficiency directive will deliver the 20 per cent savings target. Its own internal analyses show that only a binding target will suffice. Instead of showing leadership the European Commission is giving in to industry scaremongering and pandering to the lack of understanding among national governments. This directive is set up to fail."



This is what the European Commission is aiming for.

Progress towards the 20 per cent target will be reviewed in 2014. If the reductions are too slow according to the commission it may be appropriate to move on to binding targets. Since a new commission will be appointed in the same year, critics suggest that this is a way for the present commission to shift responsibility to their successors.

On a more practical level the commission puts forward a few proposals. One is to make systems based on white certificates mandatory in all member states. A white certificate is a documented energy reduction that might be tradable. A few countries: Italy, Denmark, France, Belgium (Flanders) and the United Kingdom already have

systems like this. According to the proposal, energy utilities will be obliged to show energy saving credits of 1.5 per cent a year of their total energy sales. Key features of the obligation schemes should be harmonised at EU level, which could open up a common market for white certificates in the future.

Another proposal is that the stock of public buildings in each member state should be renovated for better energy efficiency at a pace of three per cent each year. Public buildings account for about 12 per cent of all the buildings in the EU. Today the average pace of renovation is about 1.5 per cent a year. Making criteria for energy efficiency a compulsory part of public procurement is a second way of pushing the public sector towards a leading role in energy efficiency.

Other features in the proposal include mandatory energy audits for large industries and rules to make metering and billing more transparent for consumers. The directive will replace two existing pieces of legislation, the Cogeneration Directive (CHP) from 2004 and the Energy Services Directive (ESD) from 2006, which both partly cover the scope of the new directive. The proposal will now go for a first reading in the European Parliament. Claude Turmes, a green MEP from Luxembourg, has been appointed as a rapporteur. According to the European Commission's own time plan they are aiming for a single reading and a final agreement at the end of 2012.

Kajsa Lindqvist

The European Commission's proposal on energy efficiency and impact assessment can be downloaded at: http://ec.europa.eu/energy/efficiency/eed/eed_en.htm

Shift in emission sources

Air pollutant emissions from international shipping continue to rise, while those from land-based sources in Europe keep on slowly shrinking.

Since 1980, total European emissions of sulphur dioxide (SO₂) – the most significant acidifying pollutant and an important precursor to health-damaging secondary fine particles (PM_{2.5}) – from land-based emission sources have fallen by more than 80 per cent, from around 53 million tonnes in 1980 to 9.1 million tonnes in 2009.

Emissions of nitrogen oxides (NO_x), non-methane volatile organic compounds (VOCs), and ammonia have also gone down, although to a lesser extent. VOCs have more than halved since 1980, while NO_x and ammonia emissions have dropped by 35 and 39 per cent, respectively.

Since the late 1990s, emissions of primary fine particles (PM_{2.5}) have been attracting increasing attention, mainly because of their negative impacts on health. However, these emissions are not as well documented as those of other air pollutants, and many countries lack emissions data for the 1990s. Between 2000 and 2009

it is estimated that emissions of PM_{2.5} from land-based sources have fallen by a quarter, from 2.9 to 2.2 million tonnes.

Emissions from international shipping in European waters show a steady increase. Since 1980, ship emissions of SO₂ have gone up from 1.7 to 2.4 million tonnes (a 41 per cent increase), and those of NO_x from 2.4 to 3.9 million tonnes (61 per cent).

The data in Table 2 is taken from figures reported by countries themselves to the Convention on Long-range Transboundary Air Pollution, and was compiled by the European Monitoring and Evaluation Programme (EMEP). The Convention's EMEP keeps track of the ways in which emissions from one country affect the environment in others. The EMEP report also provides an overview of calculations for source-receptor relationships (including transboundary movements between countries), covering acidifying, eutrophying, photo-oxidant, and particle pollution.

For most European countries the biggest share of depositions of sulphur and nitrogen emanate from outside their own territory, and an increasing share of the depositions originate from international shipping.

For 2009 it was estimated that ship emissions were responsible for ten per cent or more of the total depositions of both sulphur and oxidised nitrogen compounds in more than half of the EU's 27 member countries (see Table 1).

In some countries, such as Denmark, Sweden, Norway, the Netherlands, Ireland, Portugal and the United Kingdom, ship emissions already make up approximately one fifth or more of total pollutant depositions.

Christer Ågren

Report: Transboundary acidification, eutrophication and ground level ozone in Europe in 2009. EMEP Status Report 1/2011. www.emep.int

Table 1: European countries that have the highest proportion of air pollutant depositions of sulphur and oxidised nitrogen.

Sulphur		NO _x -nitrogen	
Denmark	28%	Ireland	27%
Netherlands	27%	Denmark	25%
Ireland	21%	Norway	24%
Portugal	20%	Sweden	23%
Norway	19%	UK	24%
Sweden	18%	Portugal	21%
UK	18%	Netherlands	20%
France	16%	Estonia	18%
Spain	15%	Spain	17%
Italy	13%	Finland	16%
Belgium	12%	Italy	16%
Estonia	11%	France	16%
Germany	8%	Belgium	15%

EU sulphur emissions fall

A European Union air pollutant emission inventory report compiled by the European Environment Agency (EEA) and released in July shows that the EU27 has cut SO₂ emissions by 80 per cent since 1990. Over the last two years the decline was particularly sharp – more than 34 per cent – from 2007 to 2009, most probably as a result of the entry into force of stricter emission standards for old large coal-fired power plants in 2008 combined with the effects of the economic recession.

The emissions of the three ozone precursors NO_x, VOCs and CO also continued their downward trend (reductions of 8%, 6%, and 11%, respectively, from

2008 to 2009). Ground-level ozone is a harmful pollutant that can trigger respiratory problems, contribute to premature mortality and also damage plants, reducing agricultural crop yields. Health-damaging primary fine particles (PM_{2.5} and PM₁₀) have not improved much in the last five years, but emissions in 2009 were about five per cent lower compared to the previous year. Ammonia emissions only came down by one per cent between 2008 and 2009.

Report: European Union emission inventory report 1990–2009 under the UNECE Convention on Long-range Transboundary Air Pollution (LRTAP). EEA Technical report No 9/2011.

Table2: European emissions of sulphur dioxide, nitrogen oxides (as NO₂), VOCs, ammonia, and PM_{2.5} (kilotonnes). Data for 2000 and 2009 is from the 2011 EMEP report, while data for 1980 and 1990 is from earlier EMEP reports. Russia in the table refers only to the western parts of the Russian Federation.

	Sulphur dioxide				Nitrogen oxides				VOCs				Ammonia				PM _{2.5}	
	1980	1990	2000	2009	1980	1990	2000	2009	1980	1990	2000	2009	1980	1990	2000	2009	2000	2009
Austria	360	74	32	21	246	212	206	187	436	284	179	123	52	69	65	64	23	20
Belgium	828	361	172	76	442	382	334	213	274	305	206	108	89	112	85	67	33	16
Bulgaria	2,050	2,007	918	658	416	363	184	165	309	214	123	146	144	144	56	58	59	34
Cyprus	28	46	46	17	13	19	22	19	14	16	14	11	8	5	6	5	4	3
Czech Republic	2,257	1,876	264	173	937	742	321	251	275	374	227	151	156	157	74	73	28	20
Denmark	451	176	29	15	307	266	201	132	194	166	139	95	138	134	93	77	22	24
Estonia	287	274	97	55	70	74	37	29	81	71	46	36	24	26	10	10	21	19
Finland	584	259	79	59	295	299	210	153	210	221	160	111	39	38	37	37	40	38
France	3,213	1,333	632	303	2,024	1,829	1,575	1,117	2,734	2,414	1,707	878	795	787	902	744	381	270
Germany	7,514	5,289	656	448	3,334	2,878	1,911	1,370	3,224	3,584	1,663	1,285	835	758	594	597	143	100
Greece	400	487	493	427	306	299	328	375	255	281	299	212	79	79	74	63	49	63
Hungary	1,633	1,011	486	80	273	276	185	167	215	252	173	128	157	124	71	68	26	28
Ireland	222	186	140	33	73	119	138	90	111	111	73	52	112	114	121	108	12	9
Italy	3,440	1,795	749	231	1,585	1,945	1,431	981	2,032	2,023	1,620	1,107	441	405	449	391	179	144
Latvia	96	97	16	4	83	69	36	29	152	73	65	61	38	47	13	16	23	28
Lithuania	311	263	43	36	152	158	47	65	100	136	61	70	85	82	25	28	17	10
Luxembourg	24	26	2	3	23	20	16	19	15	16	11	8	7	7	7	4	3	2
Malta	26	29	24	16	9	14	8	11	2	8	3	3	5	1	2	2	1	1
Netherlands	490	189	73	38	583	549	395	276	579	491	232	154	234	249	163	125	24	16
Poland	4,100	3,278	1,511	861	1,229	1,581	838	820	1 036	832	599	615	550	511	322	273	135	120
Portugal	253	317	284	76	158	243	293	239	189	273	241	179	96	55	61	48	87	76
Romania	1,055	1,310	760	460	523	527	297	247	829	517	522	432	340	289	206	188	116	123
Slovakia	780	542	127	64	197	215	107	86	252	122	69	65	63	66	32	25	23	28
Slovenia	234	198	92	12	51	63	50	45	39	53	44	31	24	25	19	18	14	13
Spain	2,913	2,166	1,419	403	1,068	1,247	1,277	946	1,392	1,135	971	671	285	329	377	354	95	73
Sweden	491	117	42	30	404	306	210	149	528	443	200	180	54	55	56	48	28	27
United Kingdom	4,851	3,699	1,253	397	2,580	2,932	1,789	1,086	2,099	2,396	1,563	826	361	382	333	288	103	70
Sum EU27	38,891	27,405	10,439	4,996	17,381	17,627	12,446	9,267	17,576	16,811	11,210	7,738	5,211	5,050	4,253	3,779	689	1,375
Albania	72	74	39	37	24	23	21	29	31	30	23	32	32	23	29	24	9	14
Belarus	740	888	162	155	234	379	208	168	549	497	340	222	142	215	142	150	40	27
Bosnia & Herz.	482	484	420	431	79	73	53	51	51	48	40	43	31	21	17	17	20	19
Croatia	150	178	62	67	60	88	74	77	105	105	88	111	37	53	39	36	9	10
Iceland	18	9	35	74	21	9	27	24	8	12	8	6	3	4	4	4	1	0
Macedonia	107	110	90	113	39	46	39	33	19	21	25	28	17	15	14	7	9	9
Moldova	308	175	13	7	115	131	27	29	105	123	21	36	53	61	25	27	6	6
Montenegro	0	0	0	10	0	0	0	8	0	0	0	10	0	0	0	3	0	4
Norway	136	53	27	16	191	224	210	178	173	295	379	140	20	20	24	23	59	42
Russia	7,323	6,113	1,997	1,481	3,634	3,600	2,357	3,548	3,410	3,659	2,450	2,405	1,189	1,204	650	548	693	401
Serbia	406	593	396	443	192	165	137	133	142	158	141	126	90	74	65	57	45	37
Switzerland	116	42	18	13	170	156	107	78	323	262	145	91	77	68	66	64	12	10
Ukraine	3,849	3,921	1,599	1,290	1,145	1,753	871	528	1,626	1,053	641	275	729	682	485	187	289	247
Sum Non-EU	13,707	12,640	4,858	4,137	5,904	6,647	4,131	4,884	6,542	6,263	4,301	3,525	2,420	2,440	1,560	1,147	1,192	826
Sum Europe	52,598	40,045	15,297	9,133	23,285	24,274	16,577	14,151	24,118	23,074	15,511	11,263	7,631	7,490	5,813	4,926	2,881	2,201
Int. ship: Baltic Sea	139	168	188	122	215	236	276	327	5	8	10	13	-	-	-	-	22	17
Int. ship: Black Sea	35	45	56	69	52	62	81	97	1	2	3	4	-	-	-	-	6	8
I. ship: Mediterran.	725	858	1,070	1,306	1,000	1,234	1,564	1,868	21	41	54	67	-	-	-	-	124	152
Int. ship: North Sea	277	361	443	288	395	508	649	771	9	18	23	29	-	-	-	-	52	39
I. ship: N.E. Atlantic	550	384	494	614	772	565	723	858	15	19	24	30	-	-	-	-	57	71
Sum internat. ship.	1,726	1,816	2,251	2,399	2,434	2,605	3,293	3,921	51	88	114	143	-	-	-	-	261	287
Sum Europe + ships	54,324	41,861	17,548	11,532	25,719	26,879	19,870	18,072	24,169	23,162	15,625	11,406	7,631	7,490	5,813	4,926	3,142	2,488
Turkey	1,030	1,519	2,000	1,557	364	691	1,118	1,278	359	636	794	1,320	321	373	402	409	305	247

Tougher US car fuel efficiency standard

The Obama administration and 13 automakers agreed in July to boost the fuel economy of cars and light-duty trucks sold in the United States to 54.5 miles per gallon by 2025. The new agreement more than doubles the current Corporate Average Fuel Economy, or CAFE, Standard of 24.1 miles per gallon. Achieving the fuel efficiency goals is expected to save American drivers US\$1.7 trillion dollars in fuel costs, and by 2025 result in an average fuel saving of over US\$8,000 per vehicle. The new standards are expected to result in savings of 12 billion barrels of oil in total.

The standards also curb carbon pollution, requiring performance equivalent to 163 grams per mile of CO₂ (that is 101 grams per kilometer of CO₂). The administration says the standards will cut more than six billion tonnes of greenhouse gas over the life of the programme.

Source: Environmental News Service, 2 August 2011

Fuel efficiency rule for US heavy duty trucks

The first national fuel efficiency and greenhouse gas emissions standards for medium and heavy-duty trucks and buses in the United States were announced on 9 August, covering vehicles made between 2014 and 2018. Heavy-duty vehicles account for 17 per cent of transportation oil use and 12 per cent of all US oil consumption. Nearly six per cent of all US greenhouse gas emissions and 20 per cent of greenhouse gas emissions from the transportation sector in 2007 were produced by heavy-duty vehicles.

The businesses that operate and own these commercial vehicles are expected to save some US\$50 billion in fuel costs and more than 500 million barrels of oil over the life of the programme. Greenhouse gas emissions are expected to be cut by 270 million tonnes.

Source: Environmental News Service, 9 August 2011

Proposal: Equal tax for all fuels

A proposal for a revision of the EU Energy Tax Directive, launched in April by the European Commission, has triggered strong reactions from some of the EU member states, including giants like the UK and Germany.

The fury is caused by a proposal to make it mandatory to split the national fuel taxes in two parts, one based on the energy content and one on the emitted fossil CO₂, and oblige the member states to use the same tax factor (€/kg CO₂ and €/MJ) on all fuels in both of the categories motor fuels and heating.

Though these may only sound like minor technical changes, necessary to make energy taxation within EU more coherent and in line with EU's climate and energy policies, the proposal touches upon some very controversial topics within the EU.

For CO₂, the Commission proposes a minimum tax of €0.2 per kg (= €20/tonne) from 2013 (in 9 Eastern states from 2022), covering (almost) all fossil fuels used outside the Emission Trading Scheme (ETS). The level is intended to mimic the same emission costs within as well as outside ETS in order to avoid perverse incentives and make emission reduction efforts cost-effective.

The minimum CO₂ tax has been perceived by some members as an EU-wide carbon tax, which in turn has made Germany ap-

peal against it, referring to the government coalition deal of 2009, which specifically rules out a European carbon tax. The UK government (with the highest fuel taxes in the Union) thinks the EU should not intervene in national tax structures and regards the proposal as a move towards a common EU tax policy.

The proposed "technical neutrality" would mean that member states would have to use the same tax factor for all fuels – whatever the level, the CO₂ tax should be the same for all fossil fuels and the energy tax factor should be the same for the same fuel category (motor fuel or heating fuel). Since diesel has both a higher energy content and causes higher CO₂ emissions per litre, an inevitable consequence of the proposal is that diesel would always be taxed some 8 per cent higher per litre than petrol. At present all EU countries but one tax petrol at a higher rate per litre than diesel, the UK being the exception with similar taxes per litre for both. The proposal is particularly sensitive since both the EU and many member

The energy tax directive

The present Energy Tax Directive was adopted in 2003. It includes minimum taxes for motor fuels, heating fuels and electricity. The directive allows member states to deviate from the minimum taxes for a number of user categories. Full exception is permitted for household heating, public transport, rail transport and biomass-based fuels. The directive prohibits the taxation of aviation and shipping fuels.

The minimum taxes are set in litres, tons, gigajoules and kWh. The new proposal would not raise the minimum taxes very much (petrol minimum will not change, diesel minimum

will rise from €330/1000 l to €394/1000 l), but would create a more coherent system where the minimums for all fuels are set based on CO₂ emissions and energy content, full stop.

A general minimum tax for fossil fuels of €20/ton would cover every use of fossil fuels except for household heating. The energy factor minimum will rise automatically in line with inflation, while the CO₂ factor will be adjusted by Council decision to reflect the development of the price of emission allowances within the ETS.



If the tax directive proposal is accepted you will pay the same tax on energy and CO₂ no matter if you choose diesel or petrol for your Venice boat ride.

states have in recent years encouraged a switch from petrol cars with higher CO₂ emissions per km to diesel cars with lower emissions per km.

In general the proposal is a small but clear step in the right direction. Its main weakness is that it hardly touches on the most urgent problems, which are related to the transport sector, where EU regulation is of fundamental importance since fuel is frequently bought in one country and used in another. This is particularly true for aviation, shipping and heavy road traffic.

On aviation and shipping fuels, the present directive includes an outright tax ban for non-domestic or recreational use. Concerning heavy vehicles the proposed minimum tax for diesel is set at such a low level that it will preserve the present situation where a few “fuel tax havens” – Luxembourg being the most obvious example – by setting the diesel tax level as low as permitted by the directive can attract huge numbers of international

trucks to come and fill their tanks with low-tax diesel in Luxembourg instead of in France or Germany, for instance, where diesel taxes are 40-50 per cent higher. As a consequence, diesel sales in Luxembourg are 7-8 times higher per person than in the neighbouring countries, and the fuel tax revenues are 4-5 times higher per person. The system effectively prevents neighbouring countries from using fuel taxes efficiently as part of their climate policies. Paradoxically it leads to a situation where the state of Luxembourg would lose tax revenues if it raised the diesel tax!

An interesting proposal is a new tax break until 2020 for electricity delivered to ships at berth.

The preconditions for a strong directive are as weak as possible. Decisions on the directive are taken solely by the 27 governments in the Council and unanimity is required. This means “fuel tax havens” or governments generally hostile to taxes can effectively prevent progress, unfortunately at the same time making

it more difficult for other member states to raise their taxes.

No progress is foreseen during the Polish presidency, but things may change when Denmark takes over the presidency from 1 January 2012.

Magnus Nilsson
Transport & Environment

The European Commission proposal can be found at: http://ec.europa.eu/taxation_customs/common/legislation/proposals/taxation/index_en.htm

Further reading:

Report: Fuelling oil demand. What happened to fuel taxation in Europe?, April 2011

Briefing: Transport fuels & the energy Tax directive (ETD), May 2011

Publication: GBE, EEB and T&E position paper on the Energy Tax Directive, June 2011

All three can be found at: www.transportenvironment.org

Berlin leads fight on air pollution, Rome bottom

A long-term strategy to reduce car use and limit high emitters gave Berlin the top position in a ranking of the performance of seventeen European cities in combatting air pollution.

Berlin, Stockholm and Copenhagen are the leading cities in Europe for combatting air pollution according to a ranking of seventeen European cities, carried out by Friends of the Earth Germany in cooperation with the European Environmental Bureau. Rome, Milan and Düsseldorf came bottom.

Berlin took top spot in the ranking for its efforts to improve air quality. The city has a broad strategy to tackle high emitters as well as a long-term plan to get people out of their cars and into public transport and other modes of transport such as cycling and walking.

Runners-up Stockholm and Copenhagen were praised for having the best economic incentives, such as congestion charges for vehicles entering the city centre and parking management to reduce the number of vehicles in the city.

Rome, Milan and Düsseldorf came bottom, showing few efforts in any of the nine air quality measures used to rank the cities. Rather low marks were also given to London, host of next year's Olympics, as well as Madrid and Brussels.

The purpose of the city ranking was to highlight what has been done to improve air quality in western European cities, to stimulate the exchange of knowledge and experiences between cities throughout Europe and to demonstrate that reducing emissions from local traffic and meeting air quality standards is perfectly feasible.

The 17 cities were selected according to the similarity of their air quality problems, their high pollution levels, their political importance, size, or because they presented good reduction practices.

The ranking was determined according to 10 criteria, including traffic management, modal shift to public sustainable transport modes, technical measures and public information. The measures were selected based on their potential to reduce

emissions of particulate matter and soot from traffic and non-road pollution sources. For each of the criteria, cities were given a grade and ranked accordingly.

Cities were judged on their action taken between 2005 and 2010, as 2005 is the date of entry into force of limit values for particulate matter (PM₁₀). This means that cities that took most measures before 2005 would not come out so well in this ranking.

Bad air quality is a major health problem in most European cities and a majority

of big cities are struggling to come in line with European air quality standards.

In the most polluted cities the average life expectancy is reduced by over two years on average. For the whole of the EU, the health cost of bad air quality is estimated to be nearly half a million premature deaths each year. In economic terms, the health damage from air pollution in 2000 was estimated to amount to between €277 and €790 billion for a year.

Visit <http://sootfreecities.eu/> for more information

What is the recipe for achieving a top score?

Reduction Success Local Emissions

The PM₁₀ daily value is set at 50µg/m³ 24-hour mean with a maximum of 35 days a year. In Berlin the exceedances decreased by 45 per cent between 2005 and 2009. Zürich has also decreased the number of days. Some cities show decreasing numbers but have been given lower marks since figures appear to be inconsistent or there has been manipulation of the data. In Madrid for instance stations have been moved to less polluting areas.

Low Emission Zones and Bans on High Emitters

Low emissions zones (LEZ) can apply to all vehicles or only heavy goods vehicles. The former were graded higher. The time of introduction, the size, the height of the threshold (Euro 4 and better gave top points) and enforcement were also factors affecting the grading. Berlin was the only city given full marks. Its LEZ covers the entire inner city, and from 2010 only Euro 4 and retrofitted Euro 3 cars are permitted.

Public Procurement Clean Cars

Municipal vehicles and buses cover great distances in the city. They also include a large share of the heavy vehicles and diesel vehicles in the city. Cities can take an array of measures to reduce emissions from public vehicles, such as only purchasing cars that meet the latest Euro standard, retrofitting vehicles in the existing fleet and investing in electric and gas vehicles.

Non-Road Mobile Emissions Sources

In some cities Non Road Mobile Machinery (NRMM) is responsible for up to 30 per cent of the traffic pollution. Zürich requires its new contractors to equip diesel-powered vehicles over 18KW with particle filters and to only use low-emission fuel. Vienna has a logistics plan for construction traffic, which aims to channel such traffic along main roads with tunnels and side barriers.

Use of Economic Incentives

Congestion charges have been proved effective in reducing traffic and air pollution. Stockholm introduced a trial

Table : For each category of measures, cities could be attributed ++ (very good: 5 points), + (good: 4 points), 0 satisfactory: 3 points), - (fair 2 points), or -- fail (1 point).

Cities	Overall Mark	Reduction Success (local emissions)	LEZs; bans of high emitters	Public procurement: clean cars	Non-road mobile emission sources	Use of economic incentives	Traffic & mobility management	Modal shift to public transport	Modal shift to walking and cycling	Transparency & communication policy	Response to questionnaire
Berlin	84%	++	++	++	+	0	++	0	+	+	++
Stockholm	82%	0	0	+	0	++	++	++	++	+	++
Copenhagen	82%	+	-	+	+	++	+	+	++	++	++
Zürich	80%	++	-	++	++	+	+	+	+	0	++
Vienna	80%	+	0	0	++	+	+	++	+	+	++
Lyon	71%	0	-	-	0	-	+	+	++	++	++
Amsterdam	67%	0	0	+	0	+	0	+	+	+	0
Graz	64%	+	-	--	-	+	+	+	+	+	++
Glasgow	64%	+	0	+	-	-	-	++	+	0	++
Paris	62%	-	-	-	-	+	+	+	+	+	+
Brussels	58%	-	-	0	--	0	+	0	+	+	++
Madrid	58%	--	--	+	--	0	+	++	0	+	++
Stuttgart	58%	0	+	0	--	-	0	+	-	+	-
London	58%	-	-	0	0	+	0	0	0	0	-
Düsseldorf	51%	+	0	0	-	-	-	-	-	0	-
Milan	44%	--	0	--	--	-	0	+	0	-	++
Rome	38%	-	-	--	--	-	-	0	-	-	++

congestion zone in 2006 and made it permanent in 2007. Journeys in the city area are subject to a fee varying between €1 and €2. As a result incoming traffic decreased by 18 per cent. London introduced a congestion charge zone back in 2003, but recently weakened it by halving the charge, hence its lower rating. Increasing parking fees is another way to reduce traffic in the city. Scrapping and retrofitting bonuses have also been considered in this part of the evaluation.

Traffic and Mobility Management Incl. Modal Shift

This ranking looked at the reduction in motorised transport between 2004 and 2010, for instance in Stockholm 14 per cent of inhabitants switched from driving their own cars to public transport and cycling. In Berlin, car-ownership has dropped by 7 per cent between 1998 and 2008. Cities with reduced speed limits, innovative mobility management programmes and an ambitious overall transport strategy have also been given marks in this section.

Modal Shift to Public Transport

Cities' investments plans and expansion of services, changes in the bus or tram fleet, interconnectivity schemes (i.e. park and ride) were the focus for this section. The measures implemented in the past five years as well as solid plans to do so in the future were the basis for evaluation. Vienna is right now expanding two of its metro lines and is continuously increasing the number of park and ride spaces available, currently standing at 30,000. Madrid is mentioned for having very low fares (€1) compared to most European cities.

Modal Shift to Walking and Cycling

As for public transport, actual investments over the past six years are considered as well as concrete future plans with political and financial support. Lyon is a city with a low cycling share (2 per cent in 2006), but has expanded its cycling lane network by 33 per cent between 2004 and 2009, hoping to achieve a cycling share target of 5 per cent in 2014. Copenhagen is well known for being a cycling city. In 2009, the city had

35,000 bike racks and 360 km of bike lanes, with current activities extending the infrastructure. There are currently 40 km of cycling routes and plans for a further 22 routes totalling 110 km. Bicycles can be taken on all metro trains (with a few exceptions at rush hour).

Transparency and Policy Communication

Several cities provide citizens with online real-time air quality data. There is also a partnership with a local radio station. There are also different ways to disseminate the information through the media, for example through press releases or, as in Lyon, by establishing a partnership with a public radio station. Campaigns that enable people to take their own action to improve air quality as well as consultations with the public about measures to improve air quality are also taken in to account in this section.



Aiming high? Pole vault athlete Angelica Bengtsson did just that, winning her a gold medal at the 2010 Youth Olympic Games in Singapore. The negotiators of the Gothenburg Protocol have not yet made up their minds about what level they are aiming at.

Finding new ambition levels

Significant additional emission reductions and accompanying environmental improvements can be achieved in Europe by 2020. Health benefits alone far outweigh the extra costs for emission control.

This year, negotiations for a revised Gothenburg Protocol to the Convention on Long-range Transboundary Air Pollution Convention (CLRTAP) are to be finalised. The convention's negotiating body, the Working Group on Strategies and Review (WGSR), met in Geneva on 12-16 September with the intention of arriving at a close-to-ready protocol text to be finally agreed by the convention's Executive Body in December.

Since little progress was achieved at the previous negotiating session in March, there were many issues to resolve, including the level of environmental ambition, the new national emission ceilings for 2020, and updating of the technical annexes

that among other things specify emission limit values for different emission sources.

There is general agreement to extend the protocol by adding fine particles ($PM_{2.5}$) to the four pollutants that are currently covered (see box), and that black carbon should also be included in the revision as a component of $PM_{2.5}$. Since the current protocol has been ratified by only 26 of the convention's 51 parties in Europe and North America, there is also a general aim to get more countries to sign, especially those in Central and Eastern Europe.

To assess various levels of environmental ambition and the resulting national emission ceilings for 2020 that would be required to meet the environmental

targets, a computer model for integrated assessment is being used to inform and assist negotiators. The optimisation feature of the model identifies cost-effective emission abatement options and the least-cost combinations of measures for Europe as a whole that achieve specified environmental targets.

Between 2005 and 2020, emissions of sulphur dioxide (SO_2) in the 38 European countries covered, are expected to come down by about 50 per cent as a result of current legislation (baseline), while those of nitrogen oxides (NO_x), volatile organic compounds (VOCs), fine particulate matter ($PM_{2.5}$) and ammonia (NH_3) are

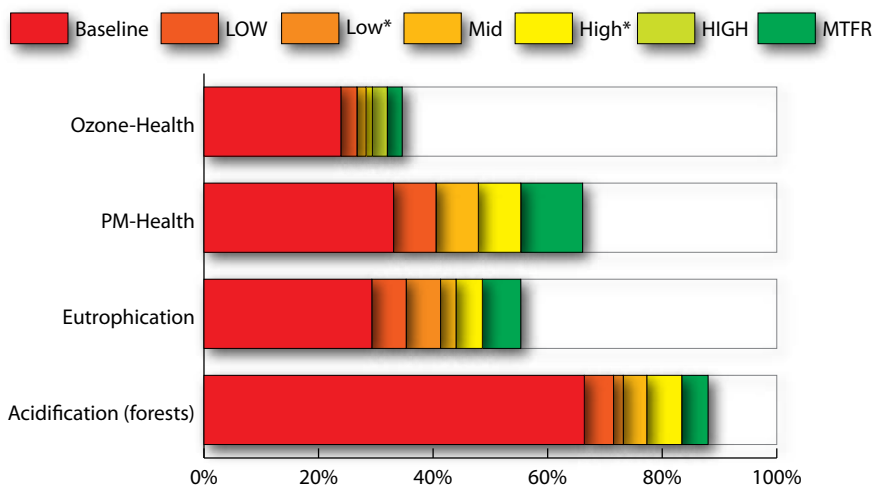


Figure 1: Per cent improvement (gap-closure) by 2020 from the situation in year 2000. (100% = no exceedance of ecosystem critical loads, and no premature deaths due to air pollution.)

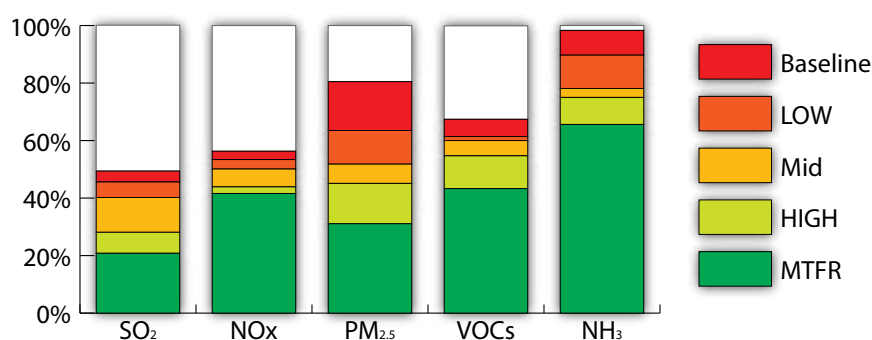


Figure 2: Annual emissions in the year 2020 of various scenarios for 38 European countries combined. 100% equals emission levels in 2005.

projected to fall by 45, 32, 20 and 7 per cent, respectively.

There is however significant scope for further reductions. If every country were to apply the maximum technically feasible reduction measures (MTR) contained in the model it would cut SO₂ and PM_{2.5} emissions by nearly 80 per cent by 2020, NO_x and VOCs by close to 60 per cent, and NH₃ by 35 per cent, compared to 2005.

In addition to these technical measures, even further reductions can be achieved by structural changes, such as energy savings and efficiency improvements, switching from fossil fuels to cleaner renewable sources of energy, changes in transport and agriculture policies, and changes in consumer behaviour (eating less meat, walking and cycling more, etc.).

The scenarios are constructed for what is known as a gap closure approach, aiming at step-wise health and environmental improvements. In effect this means closing the gap between the impacts of the baseline and the MTR scenarios. Negotiators have studied five gap-closure scenarios, investigating varying levels of ambition,

from 25 to 75 per cent gap closure for four different health and environmental targets (see figure 1).

Named from “low” to “high”, the outcome of these five scenarios can be compared to the situation in a baseline case, which assumes full implementation of current legislation in all countries by 2020, and compared to the MTR scenario.

Estimated costs and non-monetised

Table 1: Summary of gap closure percentages of various ambition levels (scenarios) for the main impact indicators.

	PM-health	Acidification	Eutrophication	Ozone-health
LOW	25%	25%	25%	25%
Low*	25%	25%	50%	25%
Mid	50%	50%	60%	40%
High*	75%	75%	75%	50%
HIGH	75%	75%	75%	75%

Table 2: Total monetised annual health damage by air pollution in 2020 (€billions/year), net annual benefits (monetised health benefits minus emission control costs) in 2020 (€billions/year), and benefits-to-cost ratios for the various scenarios.

Scenario	Monetised health damage	Net benefits	Benefits-to-cost ratio
Baseline	321-883	n.a.	n.a.
LOW	289-804	31-78	52-158
Low*	289-801	31-81	35-110
Mid	257-723	62-193	28-86
High*	224-640	91-290	18-55
HIGH	224-638	86-287	9-28
MTR	188-539	69-356	2-7

benefits to individual countries of the various scenarios have been presented in a report¹ and another study² has performed an economic valuation of the health benefits from emission reductions. The results are analysed by countries’ negotiators, a main negotiating scenario is selected, and the resulting allocation of emission reductions to different countries is used as a quantitative starting point for the negotiations.

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The Gothenburg Protocol

The Convention on Long-Range Transboundary Air Pollution (CLRTAP) dates back to 1979 and covers 51 parties in Europe and North America. It is extended by eight protocols that specify emission reduction commitments and identify specific abatement measures to be taken. Cooperation under the convention includes development of policies and strategies to cut emissions of air pollutants through exchanges of information, consultation, research and monitoring.

The Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone was signed in 1999 and entered into force in 2005. It sets binding national emission ceilings for 2010 for four pollutants (SO₂, NO_x, VOCs and NH₃), contains emission limit values for a number of specific emission source categories such as large combustion plants and road vehicles, and requires the use of best available techniques.

For more information: <http://www.unep.org/env/lrtap/>

Particles killing two million people

In many cities air pollution is reaching levels that threaten people's health according to a new compilation of air quality data by the World Health Organization (WHO). The information includes data from nearly 1100 cities across 91 countries, including capital cities and cities with more than 100,000 residents.

WHO estimates that more than two million people die every year from breathing in tiny particles present in indoor and outdoor air pollution. These tiny particles can cause heart disease, lung cancer, asthma, and acute lower respiratory infections. The WHO air quality guideline for PM₁₀ is 20 micrograms per cubic metre (µg/m³) as an annual average, but the data released today shows that the average PM₁₀ level in some cities has reached up to 300 µg/m³.

Average PM₁₀ levels in European cities range between 29 and 42 µg/m³, the data show. This compares with a world average of 71 µg/m³. The highest average PM₁₀ levels are in the eastern Mediterranean region with a range of 137-142 µg/m³, followed by Southeast Asia.

For 2008, the estimated mortality attributable to outdoor air pollution in cities amounts to 1.34 million premature deaths. If the WHO guidelines had been universally met, an estimated 1.09 million deaths could have been prevented in 2008.

Sources: WHO press release 26 September 2011, and ENDS Europe Daily, 27 September 2011



Karachi, Pakistan, one of many cities in the Eastern Mediterranean region with high PM levels.

Finding new ambition levels

Continued from previous page

The costs for the additional emission abatement measures range from €0.6 billion per year in 2020 for the LOW scenario case, and up to €10.7 billion/yr for the HIGH case. If expressed as a percentage of GDP in 2020, for the Mid case this is equivalent to 0.01 per cent, for the High* case 0.03 per cent, and for the HIGH case 0.07 per cent as an average for the whole region.

To put these figures in perspective, 0.01 per cent of GDP corresponds to 10 minutes of work per year for each person, assuming 250 eight-hour workdays per year, according to the report.

Estimates of the health benefits show that these may amount to some €30-80 billion/year for the two low scenarios, €60-160 billion/year for the mid scenario, and €100-240 billion/year for the two high scenarios.

The lower figures in these spans are based on valuing mortality impacts using the value of a life year lost (VOLY), while the higher figures use the value of a statistical life lost (VSL). All figures given here are adjusted using the so-called purchasing power parity (PPP) – if the EU average valuation throughout the region is used instead, figures would be about 20 per cent higher.

For all scenarios the monetised health benefits significantly exceed the costs. Some examples: for the Mid scenario the benefits exceed the costs by between 28 times (lowest valuation) and 86 times (highest valuation), and for the High* scenario the benefits-to-cost ratio is between 18 and 55 (see table 4).

It should be noted that these monetised benefits do not include impacts to ecosystems, agricultural crops or materials. Nor do they include for example chronic effects of ozone on health.

As late as December 2010 all parties agreed that the revised protocol was to be finalised and adopted before the end of 2011. But negotiations have proceeded much slower than anticipated. At the March meeting, there was virtually no discussion on the preferred level of ambition, and this was again the case at the September meeting.

While the choice of ambition level will strongly influence the final outcome regarding the national emission ceilings, it should also be noted that the ceilings are complemented by a general requirement to implement best available techniques and apply binding emission limit values (ELVs) for a number of specific emission source categories, including large combustion plants and road vehicles. Therefore the level of ambition of the ELVs, the emission sources covered by these, and the deadlines set for their implementation are also of great importance for the overall outcome.

The ELVs currently under consideration in the draft texts are certainly not very ambitious. After the September meeting, there are only two ambition levels left – one that is largely in line with already adopted EU legislation, and another with even more lenient standards.

While the national emission ceilings are to be achieved by all parties by 2020, eastern European countries, led by Russia and Belarus, claim they will need a transition period of 15-20 years to implement the ELVs for existing stationary sources, such as power plants. Rather surprisingly, the request for such a generous transition period seems so far to be acceptable to both the EU and the USA.

Provided that agreement will actually be reached in December on all the elements of the revised Gothenburg Protocol, the formal signing and adoption can take place around four months later, i.e. most probably in May 2012.

Christer Ågren

¹ **An updated set of scenarios of cost-effective emission reductions for the revision of the Gothenburg Protocol. 26 August 2011.** By M. Amann et al, CIAM/IIASA, Austria. The report and other documents from the September session of the Working Group on Strategies and Review are available at: <http://live.unece.org/env/lrtap/workinggroups/wgs/docs49thsession.html>

² **Cost benefit analysis for the revision of the national emissions ceilings directive: Policy options for revisions to the Gothenburg Protocol to the UNECE Convention on Long-range Transboundary Air Pollution.** 4 August 2011. By M. Holland et al, AEA, UK. Available at: <http://ec.europa.eu/environment/air/pollutants/pdf/Gothenburg%20CBA1%20final%202011.pdf>.

Carbon dioxide emissions up 5.8 per cent last year

Global emissions of carbon dioxide reached 33 billion tonnes in 2010, and are now 45 per cent higher than in 1990.

Global emissions of the main greenhouse gas carbon dioxide (CO₂) did a full swing after the recession, growing more than 5 per cent in 2010, according to the report “Long-term trend in global CO₂ emissions”, published on 21 September. This is the highest increase in the last two decades and only fuels the climate crisis.

Without accounting for the land-use sector, global CO₂ emissions reached 33 billion tonnes, a 45-per-cent increase since 1990, driven mostly by a 7.6 per cent increase in coal consumption.

This means the world now uses coal for a third of its energy demand – the highest share since 1970. Use of other fossil fuels soared too, with natural gas consumption increasing by 7 per cent and oil consumption jumping by 3 per cent. (This increase takes place mostly in the developing countries, in order to reach decent living standards.)

The report, which uses data from the Statistical Review of World Energy, shows that the growth of emissions was driven in part by economic growth in China and

India, with 10 per cent and 9 per cent increases in 2010, respectively. While India's per capita emissions remain fairly low, China's 6.8 tonnes per head per year already overtake those of large historic and defacto polluters such as France, Italy and Spain.

This follows at least in part because of moving manufacturing industries into developing countries, the outputs of which are largely used by developed countries.

So, clearly all Parties to the UN Framework Convention on Climate Change (FCCC), especially those bound by the existing commitments

for emission reductions, need to do their share when they meet in Durban in late November to lay the foundation for a solution to the problem. Inspiration can also be found in more and more countries – in particular in the developing world – working towards a shift to low carbon economies.

While the upward spiral of emissions in China is concerning from a global point of view, the country managed to double

its wind and solar capacity for the sixth year in a row. If the developed countries and other major emitters followed China's lead and achieved similar renewable energy growth rates, along with a push for energy efficiency, the world's prospects of staying below 1.5°C or 2°C would be much better than they are now.

Source: Climate Action Network International; Eco 2, October 2011.

The report “Long-term trend in global CO₂ emissions”, was prepared by the European Commission's Joint Research Centre (JRC) and Netherlands Environmental Assessment Agency (PBL), and can be downloaded from: www.pbl.nl/en.



Stuck in fossil dependence. Coal consumption grew by 7.6 per cent last year.

North American ECA has entered into force

Emissions of sulphur oxides (SO_x), nitrogen oxides (NO_x) and particulate matter (PM) from ships in the North American Emission Control Area (ECA) will be subject to more stringent controls than the limits that apply globally, as a result of the entry into force as from 1 August 2011 of amendments to MARPOL Annex VI of the International Maritime Organization (IMO). This means that there are currently three designated ECAs, the other two being sulphur oxide ECAs: the Baltic Sea area and the North Sea area.

The North American ECA will take effect 12 months after the amendments enter into force, giving the shipping industry one year before it has to comply with the ECA requirements. According to the US Environmental Protection Agency (EPA), the cost of implementing the ECA standards is estimated at US\$3.2 billion, while the health-related benefits could be as much as US\$110 billion in the US in 2020.

Source: Sustainable Shipping News, 1 August 2011

Energy efficiency standards for new ships

In July, the International Maritime Organization (IMO) adopted an Energy Efficiency Design Index (EEDI) regulation for new ships. The EEDI will require new ships to meet a minimum level of energy efficiency: ships built between 2015 and 2019 will need to improve their efficiency by 10 per cent, rising to 20 per cent between 2020 and 2024 and 30 per cent for ships delivered after 2024. The environmental group Clean Shipping

Coalition (CSC) welcomes the decision, but warns that it's only the first step in what needs to be a far more expansive effort to address shipping's climate impacts. Shipping accounts for around 3.3 per cent of man-made CO₂ emissions worldwide and this figure is expected to rise to 6 per cent in 2020.

Source: Clean Shipping Coalition pressrelease, 15 July 2011

Web link: <http://www.transportenvironment.org/tag/shipping>

Air pollution from US power plants to be cut

The new Cross-State Air Pollution Rule by the US Environmental Protection Agency (EPA) replaces and strengthens the 2005 Clean Air Interstate Rule (CAIR). By 2014, this rule and other state and EPA actions are expected to reduce SO₂ emissions by 73 per cent from 2005 levels, and NO_x emissions by 54 per cent.

According to the EPA, the new rule, which affects 27 states in the eastern half of the country, will reduce smog and soot pollution in communities that are home to 240 million Americans, preventing up to 34,000 premature deaths, 15,000 non-fatal heart attacks, 19,000 cases of acute bronchitis, 400,000 cases of aggravated asthma, and 1.8 million sick days a year beginning in 2014, thus achieving up to US\$280 billion in annual health benefits. The benefits far outweigh the US\$800 million projected to be spent annually on this rule in 2014 and the roughly US\$1.6 billion per year in capital investments already underway as a result of CAIR.

The rule will level the playing field for power plants that are already controlling air pollutant emissions, by requiring more facilities to do the same.

Source: US EPA, 7 July 2011

Web link: <http://www.epa.gov/crossstaterule/>



A positive diagnosis! With the new Clean Air Interstate Rule acute bronchitis is predicted to decrease by 19,000 cases a year in the US.

Coal-fired plants hinder German climate targets

If all the 20 planned coal-fired power plant projects in Germany are realised, they would together emit more than 140 million tonnes of carbon dioxide annually from 2050 onwards. This would make it impossible to achieve the climate targets of the German government.

Energy-related CO₂ emissions make up over 95 per cent of greenhouse gas emissions in Germany. Recently published reports show that many German coal power plants have an efficiency standard comparable with that of the 1960s and should therefore be closed, and that no new coal power stations should be built in Germany if the climate targets set by the government are to be achieved.

Almost half of Germany's coal-fired power plant fleet is outdated and thus particularly harmful to the environment. According to research by Oeko-Institut, reported by Frankfurter Rundschau, 76 fossil-fueled power plants are in operation, using technology that has been outdated for decades and producing much higher amounts of carbon dioxide than modern plants. In 2008 these power plants emitted 352 million tonnes of CO₂.

The list shows that air pollution and environmental legislation in Germany during the last 30 years has not led to modernisation of these old plants or replacement with more environmentally friendly energy sources.

These old power plants convert less than 39 per cent of the energy contained in the fossil fuels into electricity. The average for modern facilities is about 45 per cent efficiency. Most of the old plants were built in the 1960s and 70s and are owned by the four major energy companies

E.ON, RWE, Vattenfall and EnBW. More than half of the plants are fueled with lignite, 30 plants use hard coal, five more gas or oil.

The generating capacity of these old plants is nearly 21 gigawatts and in total the German coal-fired power plants have a capacity of around 50 gigawatts (GW). This shows that a large share of the coal-fired power plants that supply nearly half of Germany's electricity is outdated and wasting valuable and expensive resources.

More efficient technology has been available for decades, and new plants were achieving 43 per cent efficiency even by the mid-80s. Because of all the old power plants, the average efficiency 20 years later is still only 38 per cent in Germany. According to the reports the inefficient coal power plants will continue to operate, since the investment costs have already been written off, and they will remain in operation despite high fuel consumption and rising costs for carbon dioxide pollution because there are economically attractive allowances for the energy companies.

German NGOs demand an energy efficiency of at least 58 per cent for existing fossil fuel power plants.

In Germany, eight hard coal and two brown coal power plants with a gross generating capacity of 11.4 GW are in the construction phase and 10 more are planned.

If all the 20 planned coal-fired power plant projects in Germany are realised, they would together emit more than 140 million tonnes of carbon dioxide annually from 2050 onwards. According to the report by the environmental alliance



GUY GOREK / CREATIVE COMMONS

Scholven Power Plant in North Rhine - Westphalia owned by E.ON and built in 1968-1971 is not at risk of being outcompeted by new and more effective plants according to an Umwelthilfe report.

Umwelthilfe, this would make it impossible to achieve the climate targets of the German government for 2050. Without the conversion of electricity production to renewable energies, the long-term climate goal is not achievable.

The Umwelthilfe report argues that the often repeated statement that new coal plants would edge the old and inefficient power plants out of the market, is wrong. Many of the operators that are planning new power plants have no generation capacity of their own that could be shut down as a result of opening the new plants. Umwelthilfe also concludes that as long as the operation of an old coal-fired power plant is economical there is also

no economic reason for its closure. Old power plant units remain in service despite higher fuel consumption and rising costs for emissions, because their capital costs have already been written off.

Reinhold Pape

Reference: Frankfurter Rundschau 28 October 2011, <http://www.fr-online.de/energie/kohlekraftwerke-deutschlands-uralte-klimasuender,1473634,4784924.html>

Umwelthilfe Deutschland: Energie-, umwelt- und klimapolitische Gründe gegen den weiteren Zubau von Kohlekraftwerken in Deutschland (2011)

UK government sued for bad air quality

Environmental law organisation ClientEarth has issued judicial review proceedings against the UK Government. ClientEarth is bringing the case to make the government protect people's health from toxic levels of air pollution in towns and cities. In the UK, 29,000 people die prematurely every year because of air pollution – more people than die, or sustain serious injuries, in road traffic accidents.

The judicial review is a legal challenge to the failure of the UK Department of Environment, Food and Rural Affairs (Defra) to produce plans that will bring nitrogen dioxide (NO₂) within legal limits by 1 January 2015, and for refusing to consult the public on its latest plan for reducing dangerous airborne particles (PM₁₀) in London – despite ClientEarth reminding them in April of their legal responsibility to do so.

Source: ClientEarth press release, 29 July 2011

Eurovignette road charging law adopted

On 12 September EU general affairs ministers adopted the revised Eurovignette directive on road charges for heavy duty vehicles. The new legislation will allow member states to charge lorries for the noise and air pollution they cause. Tolls will vary according to different factors, such as distance travelled and the time of road usage. Higher infrastructure charges could also be levied during peak periods to address congestion problems. Countries are allowed to exempt lorries weighing between 3.5 and 12 tonnes should they decide to apply the rules to their territories. But they would have to justify these exemptions to the European Commission.

Vehicles complying with Euro V standards will be exempt from air pollution charges until the end of 2013, and Euro VI vehicles will be exempt until the end of 2017. Even less-polluting hybrid and electric vehicles will be permanently exempted.

Source: ENDS Europe Daily, 12 September 2011

Sulphur emissions from shipping to be slashed

EU ship fuel sulphur standards are to be aligned with international standards, meaning that the global limit should come down to 0.5 per cent in 2020, and the stricter limit applied in sulphur emission control areas is to be further lowered to 0.1 per cent in 2015.

On 15 July the European Commission tabled a proposal for stricter control of harmful sulphur emissions from international shipping. The proposal incorporates global standards that were unanimously agreed three years ago by the International Maritime Organization (IMO) into EU law.

Environment Commissioner Janez Potočnik said: "This proposal is an important step forward in reducing air emissions from the fast-growing maritime transport sector. It will help resolve the persistent air quality problems that continue to affect millions of Europeans."

With nearly half of Europe's population living in areas where EU air quality objectives are still not met, air pollution is one of the main environmental worries facing citizens.

European emissions of sulphur dioxide (SO₂) from land-based sources have decreased significantly over the past 20-30 years. Without further action, ship emissions around Europe could exceed the total of EU land-based emissions by 2020, according to current trends (see Fig. 1).

Ships traditionally use heavy fuel oil with a sulphur content of up to 4.5 per cent for propulsion (although the global average ship fuel sulphur content is around 2.7 per cent), compared with an EU limit of 0.001 per cent for road fuels.

The proposed legislation revises an existing EU directive on the sulphur content of certain liquid fuels and incorporates the 2008 IMO standards into EU law to ensure their proper and harmonised enforcement by all EU member states. It will also improve the effectiveness of the IMO standards as they would be monitored and enforced under the EU regime, which is more effective than the international system.

Under the proposal, the maximum

permissible sulphur content of marine fuels used in designated Sulphur Emission Control Areas (SECA), namely the Baltic Sea and the North Sea including the English Channel, will fall from the previous level of 1.5 per cent to 0.1 per cent, as of 1 January 2015. In other sea areas, a sulphur limit of 0.5 per cent will apply as from 1 January 2020, as compared to the previous maximum level of 4.5 per cent (see Fig. 2).

By extending the stricter 0.1 per cent sulphur standard to passenger ships outside of SECAs from 2020, the proposal goes beyond what is required by the IMO.

As an alternative to using low-sulphur fuels, ships will be allowed to use equivalent technologies such as exhaust gas cleaning systems or alternative fuels such as liquefied natural gas (LNG). According to the Commission, this equivalence option will significantly lower compliance costs (by 50-88 per cent) and help promote innovative solutions.

The expected cost to the shipping industry of the new standards is between €2.6 billion and 11 billion per year in 2020, but these costs are far outweighed by public health savings of up to €34 billion/year. In addition, there are significant benefits related to environmental improvements, such as reduced acidification damage to ecosystems.

The lower bound of costs is based on ships fitting exhaust cleaning techniques (scrubbers), while the upper bound assumes a fuel switch to lower-sulphur distillates.

According to the Commission's Impact Assessment, the health benefits associated with full implementation of the IMO's 2008 standards are at least between €3 and €13 for every €1 spent, and the benefits are even greater for the SECAs, at least between €5 and €25 for every €1 spent.

The results of a public consultation showed that the overwhelming majority of respondents wanted more European sea areas to be designated as SECAs. Green groups want it for the much needed health

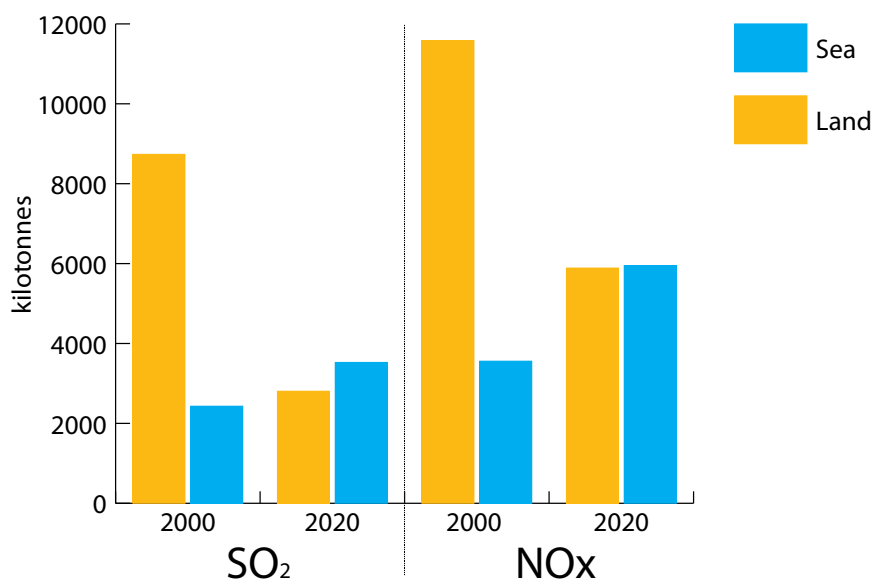


Figure 1: Projected SO₂ and NO_x emissions for 2020 from EU land-based sources and from international shipping in European sea areas in the absence of additional control measures (kilotonnes).

and environmental benefits, and several industry groups – especially Nordic ones – want it on the grounds that an EU-wide SECA would address intra-sectoral competition issues.

While the Commission concludes that such an extension of the SECA coverage is likely to offer net benefits and address competitiveness concerns, it does not have the competence to propose this to the IMO – any such proposals must come from member states bordering the sea area in question. The same applies to designation of nitrogen oxides (NO_x) Emission Control Areas. (There are currently no NO_x ECAs in Europe, but the whole coastline around the USA and Canada – out to 200 nautical miles – has been designated as a combined SO₂/NO_x ECA.)

There have also been calls to introduce ship emissions standards for nitrogen oxides (NO_x) and particulate matter (PM) into EU law. The Commission's response is that this could be considered in the future, and that it will continue to support member states in developing proposals for additional ECAs and emission limit values for submission to the IMO.

Experience with the implementation of existing legislation has shown that there is a need for a stronger monitoring and enforcement regime. In response to this, the proposal includes a more unified reporting and verification procedure, and sampling provisions aligned with international standards.

Fuel quality impacts not only the environment but is also important for ship safety, and the Commission concludes that “ultimately there may be a role for establishing mandatory fuel quality standards for marine fuels placed on the market in the EU”, as this would help guarantee that the fuel actually conforms to the recognised international standards.

Responding to concerns from some industry groups about the expected increase in shipping costs, Transport Commissioner Siim Kallas said: “Transposing into EU law the standards unanimously agreed in the IMO would be a step towards further improving the sustainability of waterborne transport. I am very glad that the proposal includes a variety of short and medium-term accompanying measures to help the sector face this challenge”.

The Commission's Impact Assessment suggests that the European Commission and member states use and adapt existing public support instruments to assist industry in the transition towards the new standards, especially the SECA limit. This could include financial support to invest in new technologies such as exhaust gas cleaning systems and support wider supply and uptake of LNG as a fuel for ships.



EUROPEAN PARLIAMENT

“A step towards further improving the sustainability of waterborne transport” said Transport Commissioner Siim Kallas.

The Commission have made it clear, however, that a delay in the 2015 SECA limit – as has been suggested by some industry groups – is not an option, neither at EU level nor attempting to push for a delay at the IMO.

Air pollutant emissions from ships have been estimated to cause 50,000 premature deaths a year in Europe, as well as respiratory illnesses, aggravation of heart disease, and acidification of sensitive ecosystems with subsequent damage to biological diversity.

Not surprisingly, environmental organisations welcome the Commission's proposal: “With many ships using fuel over 3,500 times dirtier than car fuel we are pleased to finally see EU action on air pollution from ships,” said Bill Hemmings from Transport & Environment.

However, the environmental organisations say that more should be done, and are calling on EU legislators to extend the stricter SECA sulphur standard of 0.1 per cent to all European seas. With the current proposal this limit will apply only to the North Sea and the Baltic Sea, while ships operating in the Mediterranean (which accounts for more than half of European ship emissions), in the North-eastern Atlantic and in the Black Sea will be exempt from this standard. Moreover, the same strict standard (0.1%) should also apply to all cruise and passenger ships as from 2015.

Nitrogen oxides emissions from ships are also great a concern, say the environmental organisations, but there are still no EU standards or EU measures in place for controlling their release.

Christer Ågren

The Commission proposal can be found at: http://ec.europa.eu/environment/air/transport/ships_directive.htm

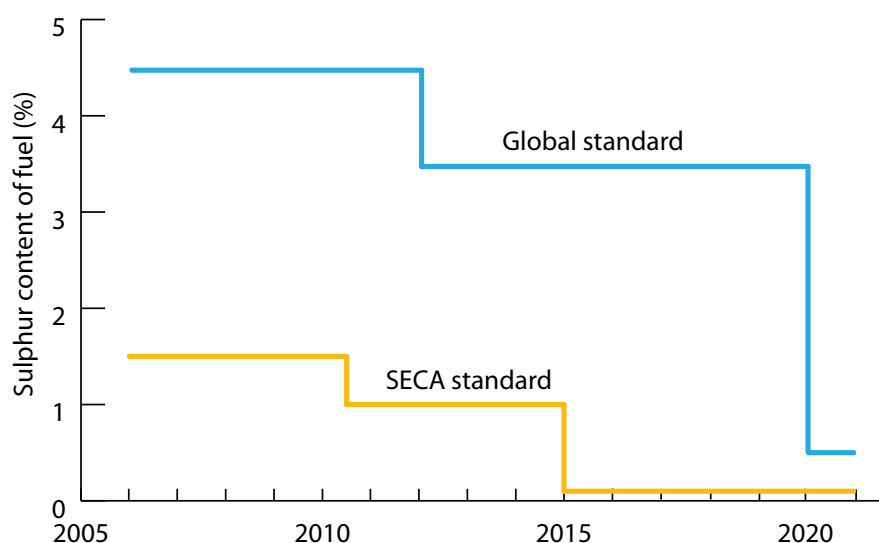


Figure 2: International standards for the maximum allowed sulphur content of marine fuels (per cent).

Particle filters on all new Swiss inland ships

The Swiss General Navigation Company of Lake Zürich (ZSG) has now equipped all its 15 motor vessels with particulate filters, capable of removing up to 99 per cent of particulate matter (PM) emissions. Since August 2010, particle filters have been mandatory for all new ships and, wherever feasible and economically viable for the existing fleet. ZSG reports that the material costs for the equipment of its ships amounted to around CHF1.3 million, and that installation takes up to 20 working days per ship.

Source: AECC Newsletter, May-June 2011



Switzerland is known for cheese, chocolate and now also for filters on inland shipping.

Call for a global shipping fuel tax

A report by Oxfam and WWF shows how it is possible to tackle the huge and growing greenhouse gas emissions from ships and raise billions of dollars to help developing countries tackle climate change, without unfairly hitting developing countries. It argues that a deal to apply a carbon price to international shipping should be at the heart of the agreement at the UN climate change conference in Durban, South Africa, later this year. It would also offer a solution to the deadlock on shipping emissions that has lasted more than a decade.

According to the proposal, applying a carbon price of US\$25 per tonne to shipping fuel would help cut emissions while generating US\$25 billion per year by 2020. The finance would be used both to compensate developing countries for marginally higher import costs that could result from the carbon price, and to provide more than US\$10 billion per year to the Green Climate Fund (GCF).

Source: WWF/Oxfam press release, 8 September 2011

California rules give great benefits

Switching to low sulphur fuels in shipping can provide greater reductions in air pollutant emissions than previously assumed. Carbon dioxide emissions also drop when ships slow down because of the more expensive fuel.

The effects of new ship fuel regulations and voluntary lowering of speeds have been investigated in a recently published study¹, led by the National Oceanic and Atmospheric Administration (NOAA) scientist Daniel Lack.

In May 2010, the research team measured the emissions from a commercial container ship, Maersk Line's Margrethe Maersk, about 40 miles off the coast of California, while the ship was burning heavy fuel oil (HFO) containing 3.15 per cent sulphur and 0.05 per cent ash. Another set of measurements took place after the ship had switched to marine gas oil (MGO) containing 0.07 per cent sulphur and less than 0.01 per cent ash.

The fuel switch occurred over a 60-minute period, just before the ship came within 24 nautical miles of the California coast. As the ship participated in the Californian voluntary speed reduction incentive programme, it also slowed down from 22 knots to 12 knots, at about the same time as the fuel switch took place.

As the ship transitioned from high sulphur HFO to low sulphur MGO and slowed down the emission factors (expressed as grams of pollutant per kilogram of fuel) for sulphur dioxide (SO₂) and fine particles (PM) dropped by about 90 per cent. The emission factors for sulphate (SO₄), cloud condensation nuclei (CCN)

and black carbon (BC), pollutants that may have either negative or positive climate impacts, also dropped, by 97, 95.5 and 41 per cent, respectively.

More importantly, emissions per kilometre travelled fell even more. By reducing the speed, fuel consumption was significantly reduced, resulting in a 55-per-cent cut in emissions of the greenhouse gas carbon dioxide (CO₂). In addition, the switching from HFO to MGO resulted in a 6-per-cent reduction in CO₂ emissions, due to the higher energy content of MGO. These two factors combined resulted in an overall CO₂ emission reduction of 58 per cent.

Calculated as emissions per kilometre travelled, pollutant emissions of SO₂ and PM both came down by 96 per cent, and those of BC by 75 per cent (see table of all pollutants).

While SO₂ is best known as a precursor to acid rain, it also degrades air quality, both directly and indirectly through chemical reactions in the atmosphere. Emissions of SO₂ lead to the formation of secondary sulphate particles (PM_{2.5}) in the atmosphere, which poses serious public health concerns. Sulphate particles have a negative radiative forcing, i.e. they contribute to cooling the planet.

Primary PM is a well-known health hazard and can, among other things,

Table: Emission reductions per kilometre travelled by the Margrethe Maersk as a result of fuel switch, speed reduction and combined.

	Fuel switch	Speed reduction	Combined
Carbon dioxide (CO ₂)	6%	55%	58%
Sulphur dioxide (SO ₂)	92%	56%	96%
Sulphate (SO ₄)	93%	85%	99%
Particulate organic matter (POM)	73%	55%	88%
Black carbon (BC)	-	-	75%
Particulate matter (PM)	-	-	96%
Cloud condensation nuclei (CCN)	-	-	99%
Total particulate number (Ntot)	-	-	41%



Measures to support cleaner shipping

On 21 September the European Commission adopted a staff working paper entitled "Pollutant Emission Reduction From Maritime Transport and The Sustainable Waterborne Transport Toolbox". The document accompanies a legal proposal to revise an EU directive related to the sulphur content of marine fuels that aligns EU law with International Maritime Organization (IMO) requirements.

According to the document, compliance shall be achieved on time while minimising any possible unwanted side effects. Therefore, a number of short-term accompanying measures are being considered to seek solutions for minimising the compliance costs. Among other things it points to existing frameworks such as the TEN-T and the Marco Polo programmes and the European Investment Bank's policy and instruments in support of sustainable shipping

Moreover, the paper outlines the conditions under which member states may choose to grant investment aids, enabling companies to go beyond existing standards or assisting in the early adaptation ahead of the entry into force of the standards.

The document is available at: http://ec.europa.eu/environment/air/transport/ships_proposal.htm

Cruise line fined for breaching sulphur rules

A cruise ship operator has been fined EUR 30,000 for contravening European Union rules on the sulphur content of marine fuel. The 88,000 gross tonne Disney Magic was inspected this month while at berth in the Italian port of Naples, and it was found the ship was using a bunker fuel with a sulphur content in excess of an EU regulation that requires ships at berth to use fuel with a sulphur content of no more than 0.10 per cent, unless they are scheduled to be in port for less than two hours. Reports said the ship, owned by the US cruise operator Disney Cruise Line, was immediately ordered to stop burning the fuel. Naples is one of the regular ports of call for the 1998-built, Bahamas-flagged Disney Magic.

Source: Sustainable Shipping News, 22 September 2011

"Good news for California and for the nation," says Mary Nichols Chairman of California Air Resources.

damage people's lungs and hearts, leading to premature deaths. Black carbon is a component of PM that comprises dark-coloured particles that can warm the atmosphere and also degrade air quality.

The authors of the study discuss the net radiative effect (warming vs. cooling) of the fuel switch. Changes in the emissions of various air pollutants – some which have a warming effect, others which have cooling effects – likely mean net warming. They argue that the reduction in BC emissions due to fuel quality changes "might suggest a consideration of more refined fuels for future Arctic shipping."

The study's new information on reductions in PM emissions suggests that switching to low-sulphur MGO will result in greater health improvements than previously estimated. So the findings of this study could have global significance, as new international regulations by the International Maritime Organization (IMO) require vessels in designated Sulphur Emission Control Areas (SECAs) to switch to MGO with a maximum of 0.1 per cent fuel as from 2015. At present,

nearly the whole coastline of the U.S. and Canada (out to 200 nautical miles) as well as the Baltic Sea, the North Sea and the English Channel are SECAs, and more sea areas may follow their initiative.

Moreover, from 2020 IMO's global sulphur limit will be strengthened from the current level of 4.5 per cent to 0.5 per cent.

"These scientific findings clearly demonstrate that ships off our coast now emit significantly less sulphur pollution than in the past," said California Air Resources Board Chairman Mary D. Nichols. "This is good news for California and for the nation. When the federal regulations kick in for ships to use low-sulphur fuel, communities throughout America that live near shipping lanes and next to ports will see clean air benefits."

Christer Ågren

Impact of Fuel Quality Regulation and Speed Reductions on Shipping Emissions: Implications for Climate and Air Quality. By Daniel Lack et al. Published in Environmental Science & Technology.

Source: NOAA, 12 September 2011.

Climate change will increase ozone-related deaths

Belgium, France, Spain and Portugal will see the biggest climate-induced increase in ozone-related deaths over the next 60 years, according to a new study, presented at the European Respiratory Society's Annual Congress in Amsterdam on 27 September.

The research is part of the Climate-TRAP project and its health impact assessment led by Professor Bertil Forsberg from Umeå University in Sweden.

According to the World Health Organization (WHO), climate change that has occurred since the 1970s caused over 140,000 excess deaths annually by the year 2004. In addition to its impact on clean air, drinking water and crop production, many deadly diseases such as malaria and those which cause diarrhoea are particularly sensitive to climate change.

In this new research, the scientists used emission scenarios and models to assess the health impacts of a changing climate. They compared four periods: baseline period (1961–1990); the current situation (1990–2009); nearer future (2012–2050); and further future (2041–2060).

The findings revealed that since 1961, Belgium, Ireland, the Netherlands and the UK have seen the biggest impact on

ozone-related deaths due to climate change. The results predicted that the biggest increase over the next 50 years is likely to be seen in Belgium, France, Spain and Portugal, which could expect an increase of between 10 and 14 per cent. However, Nordic and Baltic countries are predicted to see a decrease over the same period.

Dr Hans Orru, air pollution expert



Time to untie. When temperatures peak it gets harder to breathe.

from Umeå University and the University of Tartu in Estonia, explains: "Ozone is a highly oxidative pollutant, linked with hospitalisations and deaths due to problems with the respiratory system. Ground-level ozone formation is due to rise as temperatures increase with climate change. The results of our study have shown the potential effects that climate change can have on ozone levels and how this change will impact upon the health of Europeans."

Professor Marc Decramer, President of the ERS, said: "Outdoor air pollution is the biggest environmental threat in Europe. If we do not act to reduce levels of ozone and other pollutants, we will see increased hospital admissions, extra medication and millions of lost working days. As part of the European Respiratory Roadmap, which was launched last month, the ERS is calling for a collaborative approach between health professionals and policy makers, to protect vulnerable populations from the damaging effects air pollutants can have."

Source: ERS press release 27 September, 2011: <http://www.erscongress2011.org/mediacentre/news-releases.html>

High ozone levels in Europe

The EU long-term objective to protect human health from ozone damage was exceeded in all EU member states and in most of the other reporting European countries at least once during summer 2010, according to a new report by the European Environment Agency (EEA). As in previous years, the most widespread high concentrations occurred in the Mediterranean area. However, areas of western and central Europe experienced higher ozone concentrations than in 2009.

Ozone is not directly emitted into the atmosphere but formed in complex photochemical reactions from ozone precursor

air pollutants (nitrogen oxides, carbon monoxide, methane and non-methane volatile organic compounds). Its production depends on meteorological conditions such as solar intensity and temperature. Elevated levels of ground-level ozone reduce agricultural crop yields and corrode infrastructure and cultural heritage. It can also cause health problems and lead to premature deaths.

Preliminary results show that 17 EU countries are facing difficulties in meeting the target value for protecting human health. In all these countries, the maximum daily eight-hour mean ozone concentration

of 120 $\mu\text{g}/\text{m}^3$ was exceeded on more than 25 days during summer 2010.

Levels of ozone in Europe are influenced by local emissions as well as by emissions in other northern hemisphere countries and by poorly regulated sectors such as international shipping and aviation. Thus, ozone pollution is not only a local air quality issue but also a hemispheric and global problem.

The report "**Air pollution by ozone across Europe during summer 2010**" can be downloaded from: www.eea.europa.eu/publications/air-pollution-by-ozone-across

Source: EEA press release, 6 June 2011.

Give your opinion!

Road transport pollution control

In light of rapid developments in automotive technology, persistent air quality problems in urban areas, and the experience gained in implementing the existing legislation, the European Commission on 5 September launched a public consultation on measures to reduce emissions from the road transport sector. Among the measures considered are mandatory fuel consumption meters in all new cars and the mandatory installation of gear shift indicators (GSI) in light-duty vehicles. These and other measures related to emissions from motor vehicles are open for public consultation until 28 October 2011

Web link: http://ec.europa.eu/enterprise/sectors/automotive/documents/consultations/2011-emission-standards/index_en.htm

Review of EU air quality directive

On 6 June, the European Commission officially launched its 2011-2013 review of air quality legislation. Updates of key legislation such as the National Emission Ceilings (NEC) Directive and the Ambient Air Quality Directive will be discussed, together with linkages to policies on climate, transport and agriculture. The Commission invites member states, industry, NGOs and the wider public to express their views on how to improve Europe's air legislation.

Three written consultations were launched in June 2011: one for the members of a newly established expert group, one for the wider public, and a third one for air quality professionals. The consultation is open until 15 October 2011.

Web link: http://ec.europa.eu/environment/air/review_air_policy.htm

Reducing greenhouse gases from traffic

The European Commission wants your views on measures that can cut CO₂ emissions from road vehicles. The results of the public consultation will feed into the Commission's decision-making on EU regulations for cars, vans and heavy-duty vehicles. In "A Roadmap for moving to a competitive low carbon economy in 2050", the commission estimates that the emissions from the transport sector will need to drop by 50-70 per cent by 2050. The consultation is open until 9 December 2011.

Web link: http://ec.europa.eu/clima/news/articles/news_2011092101_en.htm



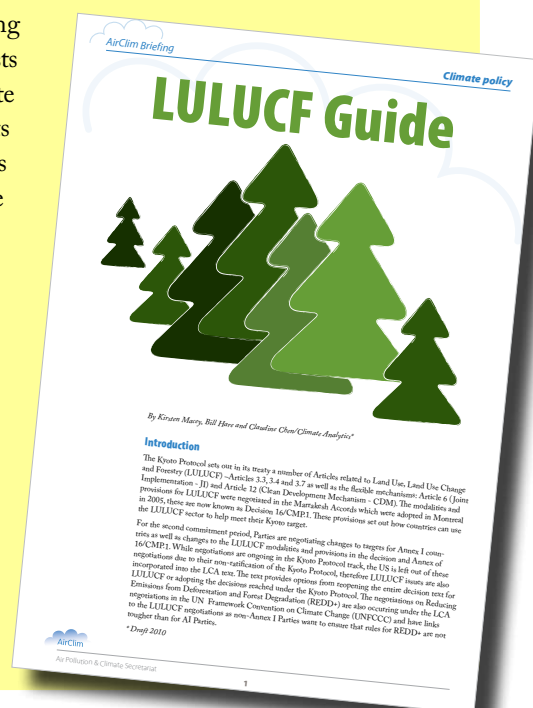
VALAYAMA / FOTOLIA

New guide to LULUCF

AirClim has published a briefing which aims to describe the role of forests in the negotiations of the UN Climate Convention. The Kyoto Protocol sets out in its treaty a number of Articles related to Land Use, Land Use Change and Forestry (LULUCF).

For the second commitment period of the Kyoto Protocol countries have to submit to the UNFCCC forest management reference levels which would be used to define credits from forest management activities. It is very important that these reference levels do not lead to an increase in greenhouse gases.

It is free to download from <http://www.airclim.org/>



Recent publications from the Secretariat



For Clean Air Everywhere: what can be done to decrease air pollution?

A new brochure from Transport & Environment, European Environmental Bureau and AirClim. Target readers are regional and local decision makers, local authorities, environmental organisations and the interested general public. It starts off with a short guide to the effects of major air pollutants on human health, recommended guidelines and current EU standards. Followed by twelve practical steps for cleaner air in our cities.



Boreal Forest and Climate Change

The fate of the vast boreal forest belt of the northern hemisphere is crucial for global climate. Regional perspectives on this issue are given in "Boreal Forest and Climate Change - regional perspectives" (by Roger Olsson, April 2010). The expected rate of warming varies considerably within the Arctic region, as does the state of the forest. This means that the possible climate effects - and the possibilities to mitigate them - will be different.

Our possibilities to protect and manage these forests for climate mitigation are presented in "To Manage or Protect" (by the same author, October 2011). Turning old-growth boreal forest into managed forest has a negative impact on climate in the short and medium term. Reducing consumption of paper and using more of the harvested wood for timber and fuel would be one option.

How to order

Single copies of the printed publications can be obtained from the Secretariat (free of charge within Europe). Please call for quotation if more copies are required. Reports can also be downloaded in PDF format from www.airclim.org

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Coming events

UN Climate Change Conference. Panama, 1-7 October 2011. Information: <http://unfccc.int>

EU Environment Council. 10 October 2011. Information: <http://europa.eu/eucalendar/>

European Transport Conference 2011. Glasgow, Scotland, 10-12 October 2011. Information: www.aetransport.org

Local Renewables Freiburg 2011. Freiburg, Germany, 27-28 October 2011. Information: www.local-renewables-conference.org/

The Baltic Sea Region - on the way towards the world's first EcoRegion? Success stories, future challenges. Gdynia, Poland, 16-17 November 2011. Information: <http://www.baltic-ecoregion.eu/>

UNFCCC 17th Session of the Conference of the Parties and 7th Session of the Meeting of the Parties to the Kyoto Protocol. South Africa, 28 November - 9 December 2011. Information: <http://unfccc.int>

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