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Citation for final published version:

Varvastian, Samvel 2015. Achieving the EU air policy objectives in due time: a reality or a hoax? European Energy and Environmental Law Review 24 (1) , pp. 2-11. 10.54648/eelr2015001

Publishers page: https://doi.org/10.54648/eelr2015001

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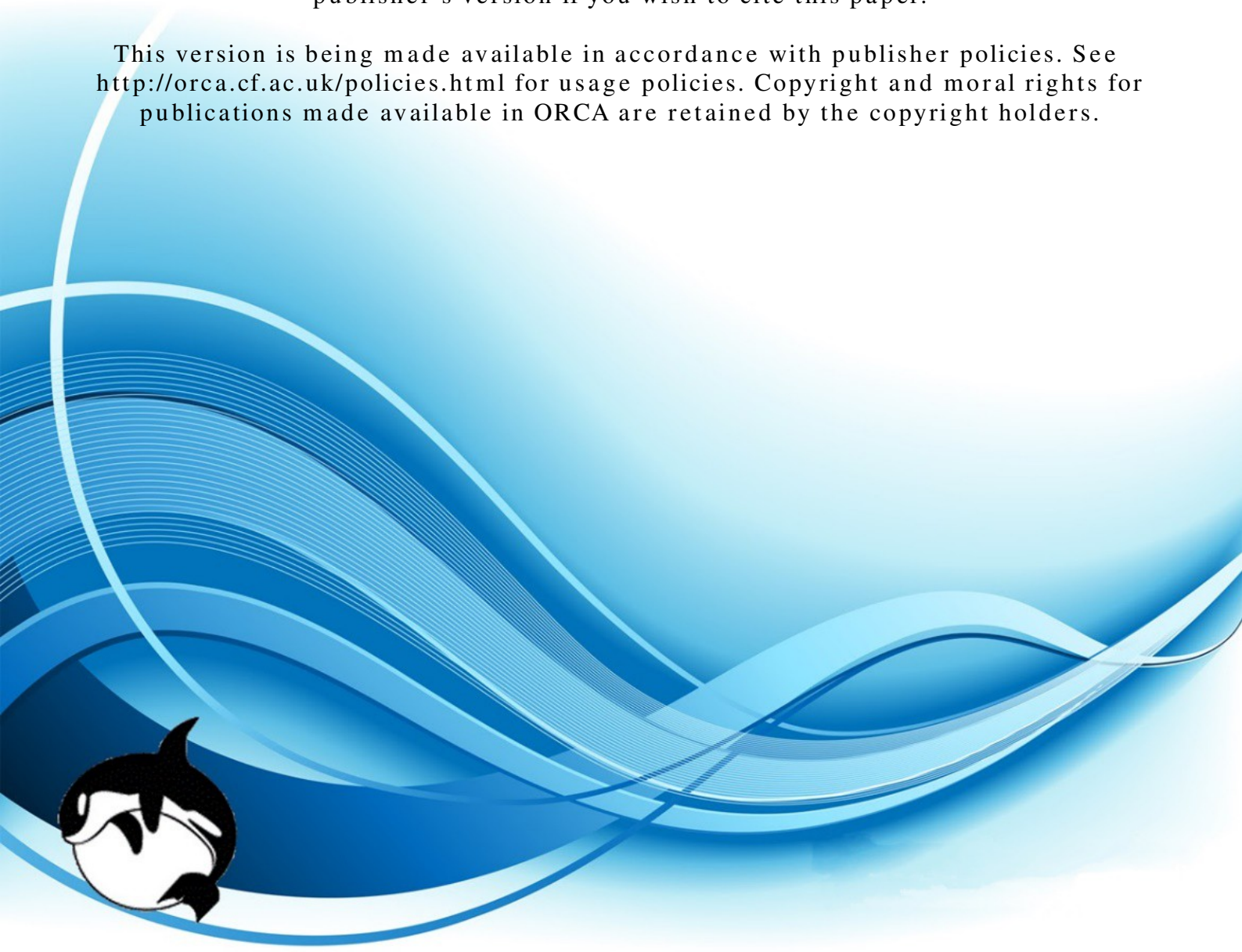

S Varvastian, 'Achieving the EU Air Policy Objectives in Due Time: A Reality or a Hoax?' (2015) 24(1) European Energy and Environmental Law Review 2-11

ACHIEVING THE EU AIR POLICY OBJECTIVES IN DUE TIME: A REALITY OR A HOAX?

Samvel Varvastian

Abstract

The identification of air pollution as a global problem contributing to health disorders and damage to the environment sparked the development of national legislation as well as international cooperation initiatives to improve air quality. As a result, the introduction of new and tighter air quality standards, national emission ceilings and more environmentally-friendly technologies led to significant progress in reducing the levels of different pollutants in the ambient air. However, notwithstanding the achieved success, the overall damage dealt by air pollution remains high, while further attempts to tackle it are losing their momentum. With no perceptible finish line, the situation could last for decades, claiming hundreds of thousands of lives and billions of Euros outlays annually, thus compromising the very foundation of air policy. The article addresses this problem from the EU perspective.

Keywords: EU air policy, air pollution, ambient air quality, emission ceilings, Clean Air Policy Package, Gothenburg Protocol

Introduction

The last few decades marked an increase in public and governmental awareness of the air pollution and the problems it causes, which resulted in the intensive emergence of legislation on clean air and reduction of air pollution adopted at national, European Union (EU) and international level[1]. Generally speaking, air pollution means the introduction of certain substances or energy into the air deteriorating its quality, which results in harmful effect on human, animal and plant health, ecosystems as well as material property[2]. This process is constant and it is caused both by natural sources, such as volcanic activity or dust and by anthropogenic activities, mainly by power generation, road and other transport, industrial processes and waste, agriculture and some domestic

[1] Communication from the Commission to the Council and the European Parliament. Thematic Strategy on air pollution. COM(2005) 446 final (TSAP), 2.

[2] See: the definition of air pollution in ECE Convention on Long-Range Transboundary Air Pollution (adopted 13 November 1979, entered into force 16 March 1983) 1302 UNTS 217 (CLRTAP) art 1(a).

activities, for example heating, etc[3]. Particular concern is expressed on the man-made pollution, since the majority of air pollutants originate from it[4]. Among the most notorious air pollutants are particulate matter ($PM_{2.5}$ and/or PM_{10}), ground-level ozone (O_3), sulphur dioxide (SO_2), nitrogen oxides (NO_x), ammonia (NH_3), volatile organic compounds (VOC), methane (CH_4), carbon monoxide (CO), arsenic (As), cadmium (Cd), lead (Pb), mercury (Hg), nickel (Ni), etc[5].

These as well as other pollutants contribute to a range of serious health disorders in humans, including cardiovascular diseases, lung diseases and different forms of cancer[6]. Even more, air pollution is a factor that often leads to premature deaths[7]. Thus, according to the estimates of the World Health Organization (WHO) the total number of premature deaths caused by air pollution globally in 2012 was about 7 million[8]. Meanwhile, in the EU premature deaths caused by air pollution in 2010 were estimated at more than 400,000, making air pollution the number one environmental cause of death, far exceeding the number of deaths in road traffic accidents[9].

Apart from its crippling effect on human health, air pollution deals significant damage to the environment and ecosystems. For example, sulphur and nitrogen compounds cause acidification of soils and inland water[10] and eutrophication[11]. Moreover, many primary pollutants, such as NO_x, VOC and CH_4 lead to the formation of the secondary pollutant, O_3, which harmfully affects the respiratory systems of humans and animals, damages agricultural crops, forests and other vegetation[12]. Some pollutants, including the above-mentioned O_3 and CH_4 produce the greenhouse effect thus contributing to the global warming and climate change[13].

Due to the above-mentioned reasons, air pollution has a negative impact on the economy as well. Thus, direct economic damage from air pollution in EU in 2010 was estimated at €23 billion, including €15 billion from lost workdays, €4 billion from healthcare costs, €3 billion from crop yield loss and €1 billion from damage to buildings, while total external costs of the health impacts ranged from €330 billion to €940 billion[14], i.e. amounting for 3-9% of EU GDP[15].

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[3] European Environment Agency, <http://www.eea.europa.eu/publications/2599XXX/page010.html> accessed 17 August 2014.
[4] United States (US) Environmental Protection Agency, <http://www.epa.gov/air/toxicair/newtoxics.html> accessed 17 August 2014.
[5] Impact Assessment, SWD(2013)531, (Impact Assessment) 90–91.
[6] ibid.
[7] ibid, 90.
[8] <http://www.who.int/mediacentre/news/releases/2014/air-pollution/en/> accessed 17 August 2014.
[9] Impact Assessment, 18.
[10] ibid, 91. Acidification is a process related to the build-up of acid in soils and water, thereby causing a reduction of the pH value. It is caused primarily through acid rain and damages plant and animal life in forests, lakes and rivers, as well as buildings and historical sites by corrosion.
[11] ibid, 92 and 14. Eutrophication is a process of pollution in rivers and lakes resulting from an excess of plant nutrients, which leads to the overabundance of aquatic plants. The decomposition of overabundant plant life requires significant amounts of oxygen, leaving the water lifeless. Therefore, eutrophication poses a serious threat to biodiversity. About 62% of the EU area, including 71% of Natura 2000 ecosystems, was exposed to this process in 2010.
[12] ibid, 92.
[13] PCC, 2013: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp, at 127.
[14] Impact Assessment, 14.
[15] <http://ec.europa.eu/environment/air/index_en.htm> accessed 17 August 2014.

No wonder that the reduction of ambient air pollution and the improvement of air quality have been on the agenda of national governments for some time, including not only advanced economies, but the emerging economies as well[16]. However, notwithstanding the growing universal concern over this problem and the initiatives to resolve it achieved or underway, the levels of concentration of different pollutants in the air remain high and in some cases even rising[17]. Hence, in EU, where significant emission reductions in all major pollutants were achieved throughout the period 1990–2009, an increase in PM, VOC, CO and some other pollutants' levels was observed in 2009–10, following from the economic recovery of EU largest economies[18]. And although these countries succeeded in stabilizing and even improving the situation in 2010–11, which led to an overall decrease in air pollution level across EU[19], both health and environmental impacts of air pollution in the whole region remain dissatisfying[20], while the EU standards are actually trailing behind those of the world's advanced economies[21]. The next section summarises the key elements of the EU air policy.

1. Current EU Air Policy

The main objectives of air protection in EU, as part of EU general environmental protection policy, which developed from the early 1970s onwards[22], are envisaged in the primary legislation[23]. In terms of air policy itself, regardless of the early attempts to reduce atmospheric emissions in the 1970s, which on some occasions targeted the harmonization of technical standards to conform with the common market requirements and on other were limited to exhaust emissions from certain industrial sectors[24], the appearance of EU air quality legislation dates back to Directive 80/779/EC, establishing controls for SO_2 and suspended particles' emission[25].

The 1970–2000 period gave rise to a number of legal and political instruments, including five environmental action programmes, defining the overall EU environmental policy[26]. In 2002 the

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[16] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A Clean Air Programme for Europe. COM(2013) 918 final (Clean Air Programme), at 10. China, for example, has recently announced additional investments on air pollution control and, being the 'world's biggest carbon emitter', initiated major changes in national environmental protection laws, tightening policy with regard to polluters. See: <http://www.bloomberg.com/news/2014-04-24/china-enacts-biggest-pollution-curbs-in-25-years.html> accessed 17 August 2014.

[17] Decision No 1386/2013/EU of the European Parliament and of the Council of 20 November 2013 on a General Union Environment Action Programme to 2020 'Living well, within the limits of our planet' [2013] OJ L354/171 (7th EAP), paras 6, 7, 19 and 26 of the Annex.

[18] European Union emission inventory report 1990–2010 under the CLRTAP, at 11–13. See: <http://www.eea.europa.eu/publications/eu-emission-inventory-report-1990-2010/at_download/file> accessed 17 August 2014.

[19] European Union emission inventory report 1990–2011 under the CLRTAP, 13–15. See: <http://www.eea.europa.eu/publications/eu-emission-inventory-report-lrtap/at_download/file> accessed 17 August 2014.

[20] 7th EAP, par. 44 and 45 of the Annex. See also Impact Assessment, 17–18.

[21] Clean Air Programme, 10.

[22] Katharina Holzinger, Christoph Knill and Ansgar Schäfer, 'Rhetoric or Reality? 'New Governance' in EU Environmental Policy' (2006) 12 European Law Journal 403, 404.

[23] See: Consolidated Version of the Treaty on the Functioning of the European Union [2012] OJ C326/47, art 191(1).

[24] Mark Wilde, 'The new directive on ambient air quality and cleaner air for Europe' (2010) 12 Environmental Law Review 282, 283.

[25] Impact Assessment, 14.

[26] Katharina Holzinger, Christoph Knill and Ansgar Schäfer, 410–413.

Council and the European Parliament adopted the 6th Environment Action Programme (6th EAP), which established a common EU long-term objective for air quality: to achieve, *inter alia*, 'levels of air quality that do not give rise to significant negative impacts on and risks to human health and the environment'[27]. And although the 6th EAP ended in July 2012, this key objective was later reiterated in the new General Union Environment Action Programme to 2020 (7th EAP)[28].

Currently, the EU air policy framework comprises the following five main elements[29]:

The first is the Thematic Strategy on Air Pollution (TSAP) adopted in 2005, which sets out the overall policy direction that emerged from the 2000–04 review of air policy, including interim objectives for 2020 towards the EU long-term objective and cost-effective actions to achieve those objectives while promoting overall policy coherence[30]. TSAP implies a range of mechanisms, such as, for example, the improvement of the ambient air quality legislation by merging legal instruments into single legislation and further cutting of certain hazardous emissions into the air[31].

The merging of legal instruments resulted in the second element of the air policy framework – the Ambient Air Quality Directive (AAQD)[32] which covers major primary pollutants, such as SO_2, NO_2, NO_x, CO and PM and secondary pollutant, O_3. The scope of the AAQD is quite broad[33], though its primary target is to set ambient concentrations for a range of parameters to be achieved everywhere in the EU and define the minimum standards for assessing and managing air quality in the Member States[34]. This is achieved through the introduction of certain requirements for zones and agglomerations[35], expressed in a range of different values, such as limit value[36], target value[37], etc. If these values are exceeded, the persons in concern have a right to require the authorities to draw up an action plan in order to reduce the risk and to limit its duration[38].

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[27] Decision No 1600/2002/EC of the European Parliament and of the Council of 22 July 2002 laying down the Sixth Community Environment Action Programme [2002] OJ L242/1, art 7(1).

[28] 7th EAP, Recitals 3 and 15.

[29] Impact Assessment, 15.

[30] ibid.

[31] TSAP, 5.

[32] Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe [2008] OJ L152/1. The AAQD is a result of substantial revision and merging of five acts, namely Directives 96/62/EC on ambient air quality assessment and management, 1999/30/EC relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air, 2000/69/EC relating to limit values for benzene and carbon monoxide in ambient air, 2002/3/EC relating to ozone in ambient air and Decision 97/101/EC establishing a reciprocal exchange of information and data from networks and individual stations measuring ambient air pollution within the Member States (Recital 3).

[33] AAQD, art 1.

[34] Impact Assessment, 15.

[35] Zones and agglomerations are parts of Member States' territory, established by the Member States to carry out air quality assessment and management pursuant to art 4 of the AAQD.

[36] A scientifically based level, with the aim of avoiding, preventing or reducing harmful effects on human health and/or the environment as a whole, to be attained within a given period and not to be exceeded once attained (art 2(5)).

[37] A scientifically based level, above which direct adverse effects may occur on plants or ecosystems but not on humans (art 2(9)).

[38] AAQD, art 24(1). This rule follows from the decision of the European Court of Justice (ECJ) in the case C-237/07 *Janecek v Freistaat Bayern* [2008] ECR I–6221, based on art 7(3) of the preceding Directive 96/62/EC. The case originated from the claim of a natural person, Mr Janecek, living on Munich's central ring road. The claimant was concerned about the level of PM_{10}, which exceeded the limit value fixed for this pollutant for much more than 35 times. The ECJ stated that 'natural or legal persons directly concerned by a risk that the limit values or alert thresholds may be exceeded must be in a position to require the competent authorities to draw up an action plan where such a risk exists, if necessary by bringing an action before the competent courts.' (para 39)

Apart from the pollutants covered, the provisions of AAQD, however, do not extend to some heavy metals with high carcinogenic properties, namely As, Cd, Hg and Ni as well as to other large group of organic pollutants, the polycyclic aromatic hydrocarbons[39] since the latter two cases proved to be difficult in terms of implementation[40]. Accordingly, these pollutants are regulated by Directive 2004/107/EC[41], though the merging of its provisions with those of the AAQD is potentially possible, once sufficient experience has been gained in relation to the implementation of the former[42].

The third element, the National Emission Ceilings Directive (NECD)[43] aims at limiting the total emissions from each Member State for a set of acidifying and eutrophying pollutants and O_3 precursors[44], namely SO_2, NO_x, VOC and NH_3[45]. The principle requirement of the NECD for Member States is to limit their annual national emissions of these pollutants to amounts not greater than the emission ceilings laid down in Annex I and ensure that they are not exceeded after 2010[46]. To achieve this, Member States are required to draw up and implement national programmes to meet the emission ceilings, which should be revised if projections show that the ceilings are unlikely to be met[47].

The fourth element comprises a range of measures at EU, national and international level controlling pollution at the source to achieve the objectives set in the above-mentioned instruments[48]. Examples of such measures include the control of emissions to air and water from mobile sources (road and non-road) and shipping, agriculture and manure storages as well as households and other small combustion sources[49]. The importance of controlling air pollution at source is, *inter alia*, highlighted in the AAQD as well[50].

Finally, international action under different platforms, including the exchange of scientific and technical information, provides an important backbone for the EU air policy framework[51]. International initiatives are crucial due to the transboundary nature of some pollutants, for example O_3, the background concentrations of which in Europe are influenced by O_3 production and transport

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[39] AAQD, Recital 4.
[40] Wilde, 284.
[41] Directive 2004/107/EC of the European Parliament and of the Council of 15 December 2004 relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air [2005] OJ L23/3.
[42] AAQD, Recital 4. The problem behind the implementation is related to the fact that due to the strong hazardous nature of the pollutants in question, scientific evidence shows that there is no identifiable threshold below which these substances do not pose a risk to human health. Yet, with a view to cost-effectiveness, ambient air concentrations of these substances, which would not pose a significant risk to human health, cannot be achieved in specific areas (Directive 2004/107/EC, Recital 3). For that particular reason, the Directive limits itself on providing only target values rather than binding limit values (Wilde, 288), though the introduction of the latter in the future is not *per se* impossible (Directive 2004/107/EC, art 8(2)(b)). Notably, the most difficult case proved to be mercury, which resulted in the absence of a target value for this especially hazardous substance and the undertaking of a separate research programme that led to the suspension of the setting of a target value in respect of this substance until the research is complete (Directive 2004/107/EC, Recitals 9 and 10, Wilde, 288).
[43] Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants [2001] OJ L309/22.
[44] ibid, art 1.
[45] ibid, art 4(1).
[46] NECD, art 4.
[47] ibid, Recital 12, art 6.
[48] Impact Assessment, 15.
[49] <http://ec.europa.eu/environment/air/review_air_policy.htm> accessed 17 August 2014.
[50] AAQD, Recital 2.
[51] Impact Assessment, 15.

in the entire northern hemisphere[52]. The key instrument in terms of international cooperation is the CLRTAP and its protocols[53]. Among the latter is the 1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone (Gothenburg Protocol)[54] which plays a vital role in EU air quality policy[55]. The Protocol initially targeted the reduction in emissions of four pollutants, namely SO_2, NO_x, NH_3 and VOC[56] and established emission ceilings for these pollutants to be achieved by 2010[57] as well as the limit values for emissions[58]. After the Protocol was amended in 2012[59] it introduced tighter reduction commitments for the above-mentioned substances (along with new requirements for yet another pollutant, $PM_{2.5}$[60]), to be attained for 2020 and beyond[61].

2. Key Problems

Although the above-mentioned elements create a comprehensive legal background for air protection in the EU region, there are certain factors significantly undermining the policy.

The most obvious problem is the non-compliance with existing EU legislation[62]. This problem is easily perceived from the number of Member States, facing infringement procedures for failing to meet PM limit values, with similar situation likely to follow in case of NO_2 and NO_x[63]. Regarding the PM-related infringement procedures, it should be observed that a number of such procedures resulted in a series of cases brought before the ECJ on the initiative of the European Commission (Commission)[64], which based its arguments on the requirements of the AAQD and/or the preceding legislation with respect to PM_{10} limit values[65]. These cases originated from very similar circumstances – the failure of Member States to ensure that the concentrations of PM_{10} in ambient air did not exceed the limit values set in the above-mentioned legislation[66].

The reasons behind the problem of non-compliance are different in their nature, though the two main drivers identified are the pollution sources themselves and the failure to manage air quality

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[52] ibid, 136.
[53] ibid, 137.
[54] Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution to Abate Acidification, Eutrophication and Ground-Level Ozone (adopted 30 November 1999, entered into force 17 May 2005) 2319 UNTS 81 (Gothenburg Protocol).
[55] Thus, the effects-orientated policy of the Gothenburg Protocol, based on scientific and technical knowledge has been endorsed by the EU and subsequently applied in EU legislation, for example, in the NECD. Impact Assessment, 137 and 139.
[56] Gothenburg Protocol, art 2.
[57] ibid, Annex II.
[58] ibid, Annexes IV-VI.
[59] <http://www.unece.org/fileadmin/DAM/env/documents/2013/air/eb/ECE.EB.AIR.114_ENG.pdf> accessed 17 August 2014.
[60] ibid, art 2.
[61] ibid, Annex II, etc.
[62] Impact Assessment, 15 and 19.
[63] Impact Assessment, 20.
[64] See: C-365/10 *Commission v Slovenia* [2011] ECR I–0040, C-479/10 *Commission v Sweden* [2011] ECR I–0070, (C-34/11) *Commission v Portugal* [2012] (ECJ, 15 November, 2012), C-68/11 *Commission v Italy* [2012] (ECJ, 19 December, 2012).
[65] (n 32).
[66] Notably, in all these cases the Court did acknowledge the failure to fulfil the obligations of the Member States in question under the preceding legislation in mid-2000s, but dismissed the actions with regard to the alleged breach of the AAQD provisions due to *ratione temporis*. See: (n 64) *Commission v Portugal*, paras 50, 55 and 56, *Commission v Italy*, paras 55, 56 and 67.

properly[67]. Hence, despite the fact that vehicles in general have delivered substantial emission reductions across the range of regulated pollutants, diesel engines, especially in light-duty vehicles, still deliver significant NO_x emissions, and what is even worse, many Member States continue to promote the sale and use of such vehicles compared to gasoline and other cleaner fuel vehicles by means of national taxation policies[68]. The problem with policy issues is further exacerbated by the increase in traffic volumes, especially in urban areas[69]. Last but not least, the illegal practices by some end users that defeat the anti-pollution systems to improve driving performance or save on the replacement of costly components also contribute to the problem[70]. Consequently, while the NO_x (as well as other emissions') limit values for diesel passenger cars have been gradually tightened from 1993 to 2009 through the introduction of higher European emission standards, the estimated average NO_x emissions in real driving conditions have experienced a slight increase[71]. Meanwhile, due to engine technology developments, the share of NO_2 emissions in the NO_x mixture has increased, posing additional challenges for the attainment of the NO_2 air quality standards[72]. Accordingly, all these factors compromise the compliance with both AAQD and NECD. Other examples of poorly controlled sectors include domestic combustion and concentrated local pollution, causing major PM compliance problems[73] as well as agriculture, which is responsible for 90% of the remaining NH_3 emissions, the primary driver of eutrophication in Europe[74].

As a result of the above-mentioned examples and in spite of broad compliance, reached for a number of key pollutants, standards for some other pollutants, namely PM_{10}, NO_2 and O_3, remain widely exceeded throughout Europe with a substantial part of the EU population and environment exposed to harmful pollution levels[75].

On the other hand, the problem lies not only in the Member States' non-compliance with the existing legislation, but the failure of the legislation itself to meet the EU international commitments, following the 2012 amendment of the Gothenburg Protocol[76]. Thus, the national emission ceilings established under the NECD are no longer compatible with the requirements of the amended Protocol, particularly in the light of updated emission reduction commitments for SO_2, NO_x, NH_3 and VOC as well as new commitments for $PM_{2.5}$ for 2020 and beyond[77].

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[67] Impact Assessment, 21.
[68] ibid, 21 and 22.
[69] Impact Assessment, 22.
[70] ibid, 21.
[71] ibid, 22.
[72] ibid.
[73] ibid, 22, 23.
[74] ibid, 25.
[75] ibid, 19. Thus the percentage of air quality management zones in compliance with AAQD requirements for PM_{10}, NO_2 and O_3 in 2010 was 68%, 76% and 65% respectively, while the percentage of population exposed to the levels of these pollutants above limit values calculated at about 40% in case of PM_{10}, from 6% to 12% in case of NO_2 and 35% in case of O_3. Meantime, the percentage of 108 national ceilings complying with the NECD requirements is estimated at 90%.
[76] Impact Assessment, 20.
[77] See: (n 59) Annex II, Tables 2-6 and NECD, Annex I. It should be noted that according to the projections, the obligations of the amended Protocol are expected to be met without further measures, yet formal transposition into the NECD is deemed necessary for ratification, to confirm the EU general commitment to the Gothenburg outcome and to encourage the participation of other parties, including Eastern European, Caucasus and Central Asian states. Impact Assessment, 20.

The major drawback, however, is the failure of the current policy to meet the long-term air quality objective, that is to reach the minimum impact levels as recommended by the WHO[78]. This issue is of substantial practical importance, because even in case of full compliance with the existing legislation, major health and environmental impacts of air pollution will persist[79], contrary to the main objective of the EU air policy to prevent such impacts. For instance, the number of premature deaths from exposure to the pollutants is expected to reduce from 406,000 in 2010 to 340,000 by 2020, while the reductions beyond 2020 are estimated to be very insignificant[80]. A similar fate is expected for the reduction in percentage of forest areas with exceeding acidification as well as ecosystem areas with exceeding eutrophication – in both cases a relatively significant rate of decrease from 2010 to 2020 does not extend from then onwards[81].

To summarise, even according to the best scenario possible, air pollution will continue to substantially affect both human health and the environment in the long-term perspective, claiming hundreds of thousands of lives and billions of Euros annually; therefore a revision of policy is deemed essential[82].

3. The Revision of the Policy and the Clean Air Policy Package

Following the earlier initiatives undertaken prior to the TSAP or under it[83] and drawing upon the experience gained throughout the implementation of the 6th EAP[84] the Commission carried out a comprehensive review of EU air policy in the run of 2011–13. The review resulted in some immediate measures, for example, the successfully negotiated revision of the amended Gothenburg Protocol as well as the adoption of the revised Directive on the Sulphur Content of Liquid Fuels[85]. Furthermore, a range of other measures, orientated to address the current air policy in broader terms was developed. This set of measures, adopted by the end of 2013 was named the Clean Air Policy Package (CAPP)[86].

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[78] Thus, current EU standards for PM_{10}, $PM_{2.5}$ and O_3 as provided in the AAQD are as follows: 40 µg/m^3 and 25 µg/m^3 averaged over a calendar year limit values for PM_{10} and $PM_{2.5}$ respectively to be attained by 2010 (Annex XI and Annex XIV respectively) with the decrease in limit value for $PM_{2.5}$ to 20 µg/m^3 to be attained by 2020 (Annex XIV), and the long-term objective for O_3 averaged in a daily eight-hour mean within a calendar year set at 120 µg/m^3 (Annex VII). Meanwhile, the updated WHO 2005 guidelines set the concentrations for these pollutants at 20 µg/m^3, 10 µg/m^3 and 100 µg/m^3 respectively. See: WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide, 2005, summary of risk assessment, p. 9 and 14. See: <http://whqlibdoc.who.int/hq/2006/WHO_SDE_PHE_OEH_06.02_eng.pdf?ua=1> accessed 17 August 2014.

[79] Impact Assessment, 24.

[80] Impact Assessment, 27.

[81] ibid.

[82] TSAP, 3.

[83] For example, the merging of different legislation into single AAQD.

[84] 7th EAP, Recitals 3–5.

[85] (n 49).

[86] <http://ec.europa.eu/environment/air/index_en.htm> accessed 17 August 2014. Basically, the CAPP comprises four documents: the Clean Air Programme, Proposal for a Directive on the limitation of emissions of certain pollutants into the air from MCPs (MCPs Proposal), Proposal for a revised NECD (NECD Proposal) and Proposal for a Council Decision on the acceptance of the amended Gothenburg Protocol.

In the light of the outstanding problems, the review concentrated on two major challenges – ensuring the compliance with existing legislation (the short-term objective) and the successful implementation of the EU long-term air policy objective[87].

The short-term objective stipulates a set of specific measures to be undertaken within the 2020 timeframe. The latter includes ensuring full implementation of current legislation and ensuring that the emissions of light duty diesel vehicles in real driving conditions are brought in line with regulatory requirements, facilitating action on residual local compliance problems, promoting enhanced policy coordination at Member State and regional/local level, and finally, ratifying the Gothenburg Protocol and incorporating the obligations of the protocol into EU legislation[88]. Particular attention is drawn to reducing NO_x emissions from light duty diesel engines in real driving conditions, since the latter proved to be an especially notorious case of non-compliance[89]. Therefore, in its CARS 2020 Communication, the Commission committed to actively support the development and implementation of a new driving test cycle and test procedure to assess NO_x emissions of light duty vehicles under real driving conditions[90,91]. Measures taken on the basis of these new procedures should ultimately ensure the substantial reduction of real world NO_x emissions, required to achieve the latest European emission standard's (Euro 6) NO_x emission limits under real driving conditions[92].

Throughout the review, five options were considered to reach the short-term objective (comparing with the baseline scenario of no new EU regulatory action), namely the adoption of new EU source control legislation, the tightening of national emission ceilings beyond the levels agreed as part of the Gothenburg Protocol, the strengthening of EU support for national and local action at the Member States level, the further promotion of tighter international air pollution controls and even the weakening of the limit values or relaxing the attainment dates[93]. The latter option, however, was almost immediately identified as counterproductive, while the first two options were acknowledged to be of low effectiveness[94]. At the same time, although the promotion of

[87] Impact Assessment, 34 and 35. Notably, these objectives are aligned with the general priority objectives of the 7th EAP (art 2). Furthermore, 'strengthening efforts to reach full compliance with Union air quality legislation and defining strategic targets and actions beyond 2020' is required as a particular tool in achieving the programme's key environmental goals (para 28(v)).
[88] Impact Assessment, 35.
[89] Clean Air Programme, 3.
[90] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Cars 2020: Action Plan for a Competitive and Sustainable Automotive Industry in Europe. COM(2012) 636 final, 11–12.
[91] This commitment follows from Regulation (EC) No 715/2007 of the European Parliament and of the Council of 20 June 2007 on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information [2007] OJ L171/1, art 14(3), which requires from the Commission to 'keep under review the procedures, tests and requirements referred to in Article 5(3) [such as requirements for tailpipe emissions, evaporative emissions, durability of pollution control devices, measurement of greenhouse gas emissions, hybrid and alternative fuel vehicles, measurement of engine power, etc.] as well as the test cycles used to measure emissions. If the review finds that these are no longer adequate or no longer reflect real world emissions, they shall be adapted so as to adequately reflect the emissions generated by real driving on the road'.
[92] Clean Air Programme, 3.
[93] Impact Assessment, 37–45.
[94] ibid, 41–46.

international action was deemed potentially necessary, the measurable impacts of such option were expected to materialise only after 2020[95].

On the other hand, targeted EU support measures were considered to be the best way to achieve the short-term objective[96]. Such measures would principally comprise the enhanced capacity building for local air quality assessment and management to enable better-targeted and more cost-effective air pollution reduction strategies, promoting enhanced synergies between local and/or national air quality management, broadening the toolbox available to national and local authorities for assessing and managing air pollution, etc. and, of course, fostering enhanced public awareness, participation and support for national and local action, including the marketing and sale of eco-friendly products[97]. An example of such policy enhancement would be the promotion of advanced technologies, building on the 'Super Ultra Low Emission Vehicle' concept, originally developed in the US[98]. The sum for the implementation of the above-mentioned measures, estimated around €100 million, would cover at least 30% of the non-compliance zones and is expected to be leveraged by information exchange and additional finance to provide comprehensive support for the remaining non-compliant areas[99].

Meanwhile, the long-term objective implies not only no exceedence of the WHO guideline levels for human health (though the latter may also develop over time), but no exceedence of the maximum levels that the ecosystems can tolerate without degrading as well[100]. Thus the scope of the long-term objective includes proportionally tapping the pollution reduction potential of contributing sectors, addressing background pollution and improving the information base for assessing policy implementation and effectiveness[101]. In principle, the scope covers the tasks of drawing trajectories for emission reductions in key pollutants beyond 2020 towards the potential achievement of the WHO standards and setting the 'gap closure' percentage[102] as well as the development of measures for combating emissions at source, particularly from medium combustion plants (MCPs)[103].

The first two tasks proved to be rather complicated due to both the variety of options under consideration and certain difficulties in analysing the potential impact of these options in the given timeframe as well as their cost-effectiveness. Eventually, it was decided to focus primarily on $PM_{2.5}$ health impacts, since the latter were most damaging and could be monetized, thus cost-effectiveness of options would be easily compared[104]. Moreover, the gap closure for this pollutant would also deliver a certain reduction for O_3, eutrophication and acidification[105]. Comparing all contributing factors, the 75% gap closure for $PM_{2.5}$ health impacts was identified as most beneficial with

[95] ibid, 42–46.
[96] ibid.
[97] ibid, 39 and 40.
[98] Clean Air Programme, 4.
[99] Impact Assessment, 44.
[100] Clean Air Programme, 6.
[101] Impact Assessment, 35.
[102] ibid, 48. The percentage by which the new objectives would close the gap between the baseline scenario (0%) on one hand, and the result of applying all (maximum) technically feasible reduction measures (100%), on the other.
[103] Combustion plants with a rated thermal input equal to or greater than 1 MW and less than 50 MW, irrespective of the type of fuel used. Proposal for a Directive of the European Parliament and of the Council on the limitation of emissions of certain pollutants into the air from medium combustion plants. COM(2013) 919 final, art 2(1).
[104] Impact Assessment, 48.
[105] ibid, 61.

additional 80% and 46% gap closure for eutrophication and O_3 respectively as a potential improvement to this option[106]. Accordingly, this option comprises a range of measures, such as using low sulphur coal and fuel oil, improved stoves and boilers, stricter NO_x and SO_2 controls throughout industries as well as improvements in feed, manure storages and fertilizers in agriculture[107]. All these steps are expected to entail significant and positive shifts in combating the negative effects of air pollution beyond 2020, retaining the improvement rates close to those in the short-term[108].

One of the main legislative pillars to achieve these strategic pollution reductions in the long-term would be the revised NECD[109]. It would align the EU reduction commitments beyond 2020 for the currently regulated pollutants (SO_2, NO_x, VOC and NH_3) to the tighter requirements of the amended Gothenburg Protocol and accordingly introduce new commitments (comparing to the existing NECD) for the reduction of $PM_{2.5}$ as well as new reduction commitments for the pollutant not covered by the Protocol, namely CH_4[110]. The trajectories for emission reductions in SO_2, NO_x, NH_3 and VOC for 2025 and 2030 (in comparison to 2005), drawn from the above-mentioned option of 75% gap closure for $PM_{2.5}$[111] and the emission reduction commitments set in the proposal for a revised NECD[112], however, reflect a more stringent approach than the amended Protocol[113].

Moreover, the revised NECD would also be expected to play a part in tackling air pollution at source from agriculture and international shipping. In case of agriculture, the applicable mechanism would be the national air pollution control programme, adopted, implemented and regularly updated by Member States, describing how their reduction commitments shall be met[114]. Where necessary, such programmes should include specific measures, aimed at curbing emissions from the agricultural sector[115]. With regard to international shipping, the proposal for a revised NECD provides a more flexible regulatory approach than the existing. It still does not account for emissions from international maritime traffic (art 4(3)) (similar to art 2 of the existing NECD), but with one exception: that in order to comply with the interim emission levels determined for 2025 and the national emission reduction commitments applicable from 2030 onwards, the Member States

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[106] ibid, 70.
[107] Impact Assessment, 49.
[108] ibid, 71. For example, as mentioned above, the number of premature deaths is estimated to drop by 60,000 by 2020, but this trend fails to keep its pace in the following years. The chosen option, however, entails a further 60,000 premature deaths' decrease by 2025 and yet another 60,000 by 2030, thus keeping the current trend intact.
[109] Proposal for a Directive of the European Parliament and of the Council on the reduction of national emissions of certain atmospheric pollutants and amending Directive 2003/35/EC. COM(2013) 920 final, 1.
[110] NECD Proposal, Recitals 5 and 6, art 4(1) and Annex II.
[111] Impact Assessment, 50. These trajectories stand as follows: -79% (-82%) for SO_2, -64% (-69%) for NO_x, -49% (-51%) for $PM_{2.5}$, -30% for NH_3 and -50% (-51%) for VOC.
[112] NECD Proposal, Annex II. The proposal uses a slightly different emission reduction scheme than the trajectories: for the 2020 – 2029 interim period and beyond 2030. Accordingly, the reduction rates are: -59% (-81%) for SO_2, -42% (-69%) for NO_x, -22% (-51%) for $PM_{2.5}$, -6% (-27%) for NH_3 and -28% (-50%) for VOC. Also, the Proposal introduces a -33% reduction for CH_4 beyond 2030.
[113] The amended Gothenburg Protocol (Annex II, Tables 2–6) sets the reduction rates for 2020 onwards, which correspond to the 2020–29 interim period reduction rates, presented in the proposal for a revised NECD above.
[114] NECD Proposal, 3.
[115] ibid, Recital 13, art 6(2) and Annex III Part 1. The measures in question include prohibition of certain fertilizers, strategic reduction of emissions from manure storages and animal housing, banning of open field burning of agricultural harvest residue, waste and forest residue, etc.

may offset NO_x, SO_2 and $PM_{2.5}$ emission reductions achieved by international maritime traffic against these emissions, released by other sources in the same year[116].

A quite different case though is the problem of abating emissions from MCPs. The key driver here is a clearly perceived gap in EU source legislation, specifically addressing air emissions of polluting substances from MCPs, although the combustion of fuel in both small and large combustion plants is covered by existing legislation[117]. Yet, the MCPs are used in a wide variety of applications (including electricity generation, domestic/residential heating and cooling and providing heat/steam for industrial processes, etc.) and are an important source of emissions of SO_2, NO_x and PM, while the number of such plants in the EU exceeds 140,000[118]. The main requirements of the proposed legislation include the mandatory registration for all MCPs[119], setting the emission limit values[120] as well as establishing a system of emissions' monitoring and environmental inspection imposed on operators and Member States respectively[121].

Overall, the above-mentioned measures should substantially improve the situation across Europe. In total, the new policy is expected to reduce the rate of premature mortality by 52% and the ecosystem area with exceeding eutrophication by 35% by 2030 (relative to 2005) comparing to 40% and 22% decrease respectively, resulting from the full implementation of current legislation[122], with overall economic benefits ranging from €40 billion to €150 billion per annum[123]. This, however, does not signify that the long-term objective of complying with the WHO guidelines could be reached in the nearest future (at least by 2030), since the latter possibility is acknowledged to be technically unfeasible in that timescale[124]. Yet, the ultimate goal of the EU air policy is to reach such compliance, thus the question on both the potential role of the CAPP in the long run and some further actions beyond 2030 remains open.

4. Reflections on the Future

[116] ibid, art 5(1). The application of this mechanism though, is contingent on several conditions: a) that the emission reductions occur in the sea areas that fall within the Member States' territorial seas, exclusive economic zones or in pollution control zones if such zones have been established; b) that the Member States have adopted and implemented effective monitoring and inspection measures to ensure a proper operation of this flexibility; c) that the Member States have implemented measures to achieve lower NO_x, SO_2 and $PM_{2.5}$ emissions from international maritime traffic than the emissions levels that would be achieved by compliance with the Union standards applicable to emissions of NO_x, SO_2 and $PM_{2.5}$ and have demonstrated an adequate quantification of the additional emission reductions resulting from these measures; d) that the Member States have not offset more than 20% of the NO_x, SO_2 and $PM_{2.5}$ emission reductions calculated in accordance with point (c), provided that the offset does not result in non-compliance with the national emission reduction commitments for 2020 set out in Annex II.

[117] MCP Proposal, 2.

[118] ibid.

[119] ibid, art 4(1). The registration procedure includes a notification by the operator (art 4(2 and 3)), containing information on the rated thermal input and the type of the MCP, type and share of fuels used, expected number of operating hours, etc. (Annex I). The existing MCPs are exempted from this procedure, provided that the above-mentioned information has been made available to the competent authorities (art 4(5)).

[120] ibid, art 5. It should be emphasized that the proposed Directive's limit values for the pollutants covered (namely SO_2, NO_x and PM) are in line with those set in legislation for large combustion plants and derived from the amended Gothenburg Protocol (at 4), opting for strategic emissions' reduction beyond 2020 (art 5(2) and Annex II).

[121] ibid, arts 6 and 7.

[122] Clean Air Programme, 5 and 6.

[123] Impact Assessment, 71.

[124] ibid, 70.

The recent review of EU air policy coincided with the end of the 6th EAP and the beginning of the 7th EAP, which basically faces the same challenges as its predecessor[125]. Still, with the short-term objective of complying with the existing legislation relatively within reach, the main attention shifts towards the long-term air improvement perspectives, which look less promising. Thus, notwithstanding substantial benefit to air quality, it is clearly acknowledged that the new policy alone would be insufficient to achieve the long-term objective by 2030, while the compliance with WHO guidelines by 2050 at the latest is also put under much doubt[126]. This extended timescale has not been chosen at random: it reflects the long-term vision of the EU priority objectives for 2050 required by the 7th EAP[127] and, accordingly, the 2030–50 prolonged scenario of Maximum Control Effort (MCE) developed throughout the review, combining the effect of further phasing out of the most polluting sources (including the solid fuels, such as coal), increased electrification, energy efficiency gains and the application of all technically available pollution control measures[128]. The outcomes of this scenario demonstrate that in the case of background concentration of $PM_{2.5}$, at least, the level will be below the currently established WHO guideline value virtually everywhere in the EU[129]. Furthermore, the MCE scenario stipulates quite significant further reductions in SO_2, NO_x, NH_3 and VOC[130]. Nevertheless, while all these reductions would be feasible under the MCE assumptions, they could not be cost-effectively achieved by technical measures alone; therefore their practical implementation would depend on structural and other changes which at the moment cannot be assumed[131]. Currently, it can only be concluded that such changes would eventually require a complex approach of promoting sustainable development, additional research, enhanced innovation policy and business conditions, etc., as repeated on numerous occasions in EU strategic documents[132].

Considering this, yet another issue should be mentioned, namely the potential revision of the AAQD. This Directive, enshrining the key requirements, so much needed for the bringing down of the air pollution concentrations below the WHO guidelines in the future, was excluded from the revision, since the review assumed that such revision would not be appropriate at this point, at least until the update of the NECD[133].

The above-mentioned points signify that the successful implementation of the WHO guidelines, hence the long-term objective, is postponed to a rather remote future. Accordingly, the importance of the undertaken review may seem to diminish, while the policy itself seems to acknowledge the inability to reach any breakthrough. Still, the situation, however pessimistic it may sound, is far more complex than could be described here and the issues playing part in both the pollution and its tackling by far outnumber the ones presented above. Undoubtedly, neither the current review and its proposed policy update nor the potential revision of the AAQD, *per se*, could

[125] 7th EAP, Recitals 4 and 5.
[126] Impact Assessment, 70.
[127] 7th EAP, Recital 8.
[128] Impact Assessment, at 49, 70.
[129] ibid, 70.
[130] ibid.
[131] ibid, 70 and 200.
[132] See: Communication from the Commission. Europe 2020: A strategy for smart, sustainable and inclusive growth. COM(2010) 2020, at 9-15. See also 7th EAP, Recital 8.
[133] Clean Air Programme, 4.

guarantee the immediate results, not only due to limited technical capabilities, but due to major role of a whole range of factors, such as global climate, weather and air quality variations, the interaction between natural and anthropogenic pollution, inefficiency of some of the adopted abatement schemes and last, but certainly not least, social and economic trends[134]. These factors may potentially play a decisive role in combating air pollution, forcing the governments to mitigate or even forgo the carried out abatement measures[135].

Moreover, these factors are often coupled with a degree of scientific uncertainty. An example of such uncertainty was presented above with regard to setting of a target value for Hg in Directive 2004/107/EC. As a result, in this case, the long-term objective, drawing upon 2000 WHO air quality guidelines was simply overshadowed by the general lack of scientific information, reflected in their vague statements[136]. At the same time, the preference for target values over limit values in case of other pollutants covered by this very Directive, resulting from a successful lobbying campaign by the industry[137] clearly reflected an economic consideration. Consequently, the adopted piece of legislation was bound to both these factors, hence the long term-objective resulted to be an underdog.

The evolution of scientific knowledge is a constant process, as demonstrated throughout the update of the WHO guidelines[138], thus the introduction of tighter standards for at least some air pollutants in the perceptible future is possible. The EU air policy, however, chasing after these standards is not very likely to catch up with them in due time, though in doing so it inevitably benefits from both saved lives' and outlays' yield. After all, the new policy itself admits that achieving the long-term objective is feasible only on a step-by-step basis[139]. Therefore, it foresees the review of the progress on achievement of the objectives and implementation of the instruments on a five-yearly basis, with the first review by 2020[140]. Evidently, this review will have to consider many things, including not only the direct measures discussed above, but the tightening of the AAQD standards, the problem of pollutants covered by Directive 2004/107/EC, further developments in source controls and structural improvements so much needed for a gradual implementation of the long-term objective[141].

Conclusion

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[134] See: 7th EAP, Recital 7, WHO air quality guidelines for Europe, 2nd edition, 2000 (WHO 2000 guidelines) <http://www.euro.who.int/__data/assets/pdf_file/0005/74732/E71922.pdf> accessed 17 August 2014, 41.

[135] Notably, a similar situation occurred in *Commission v Italy* (n 64), where the latter claimed that its failure to fulfil the obligations with regard to PM_{10} emission reduction was forced by the mentioned factors (paras 36, 40 and 41). Furthermore, Italy stated that 'ensuring compliance with those limit values would have involved the adoption of drastic economic and social measures and the infringement of fundamental rights and freedoms such as the free movement of goods and persons, private economic initiative and the right of citizens to public utility services' (para 59).
The Court, however, deeming the force majeure situation possible (para 64), decided that in the present case, the arguments put forward were too general and vague to constitute a case of it (para 65).

[136] WHO 2000 guidelines, 160. With regard to Hg, the guidelines simply stated that 'to prevent possible health effects in the near future […], ambient air levels of mercury should be kept as low as possible'.

[137] Wilde, 288.

[138] WHO air quality guidelines. Global update 2005. Particulate matter, ozone, nitrogen dioxide and sulfur dioxide. See: <http://www.euro.who.int/__data/assets/pdf_file/0005/78638/E90038.pdf> accessed 17 August 2014, 1.

[139] Clean Air Programme, 11.

[140] ibid, 10.

[141] 7th EAP, paras 47 and 48 of the Annex.

Currently, the EU air policy is challenged by two major problems: the failure to comply with the existing legislation and the failure of the legislation itself to achieve the EU long-term air policy objective of bringing down the values of key air pollutants below the WHO recommended guidelines. The first problem is expected to be resolved primarily by targeted EU support measures, enhancing the local capabilities of the Member States. Meanwhile, achieving the levels of air quality that do not cause significant negative impacts on human health and environment requires much more effort, including the update of existing legislation and the adoption of specific new mechanisms. However, due to the complexity of the air pollution phenomenon, its current state and future trajectories, relying on these measures alone would be unwise. That is why the undertaken revision of the air policy and the set of mechanisms developed in its course cannot be considered a decisive factor in achieving the long-term objective, rather only one of many steps towards it. Only a combined effort of legislative means, structural improvements and new scientific information coupled with further comprehensive revision of air policy could lead to successful achievement of the ultimate goal of EU air policy.