

Eastern Europe & the Caucasus Sub-Region

Actions taken by governments to improve air quality

1.0 Introduction:

In June 2014 the United Nations Environment Assembly (UNEA) adopted resolution 1/7 *Strengthening the Role of the United Nations Environment Programme in Promoting Air Quality*. As requested in paragraph 4 and 7 of the resolution, which requested UNEP to develop a report detailing actions taken by governments to promote air quality, this report details some of the major actions being undertaken by governments in the Eastern Europe and Caucasus sub-region to improve air quality.

This report summarises ten actions being undertaken in the sub-region to improve air quality. In selecting these ten actions, consideration was given to their replicability, global appropriateness to address particular air pollution challenges and potential impact. For more details, please refer to the methodology document.

These actions are: *For Industrial activities:* 1) Establishing incentives that promote investments in renewable energy, pollution control technologies, energy efficiency and clean production mechanism; and 2) Increasing industrial energy efficiency. *For road transport:* 3) Reducing fuel sulphur content; 4) Tightening vehicle emission standards to at least Euro 4 or its equivalent; and 5) Increasing investments in public and non-motorized transport systems. *For open waste burning:* 6) Reducing open burning of both agricultural and municipal waste through provision of legislation, monitoring, enforcement and municipal waste management systems. *For Indoor air pollution:* 7) Improving access to clean cooking and heating fuels; and 8) Improving access to clean and efficient cook/space heating stoves. *For general legislative efforts:* 9) Establishing and continuously tightening ambient air quality standards to meet WHO recommendations; and 10) Establishing laws and regulations to support efforts to meet ambient air quality standards, and strengthen monitoring and enforcement. Figure 1 provides a summary of these actions for the sub-region.

EASTERN EUROPE & THE CAUCASUS POLICIES AND ACTIONS TO IMPROVE AIR QUALITY

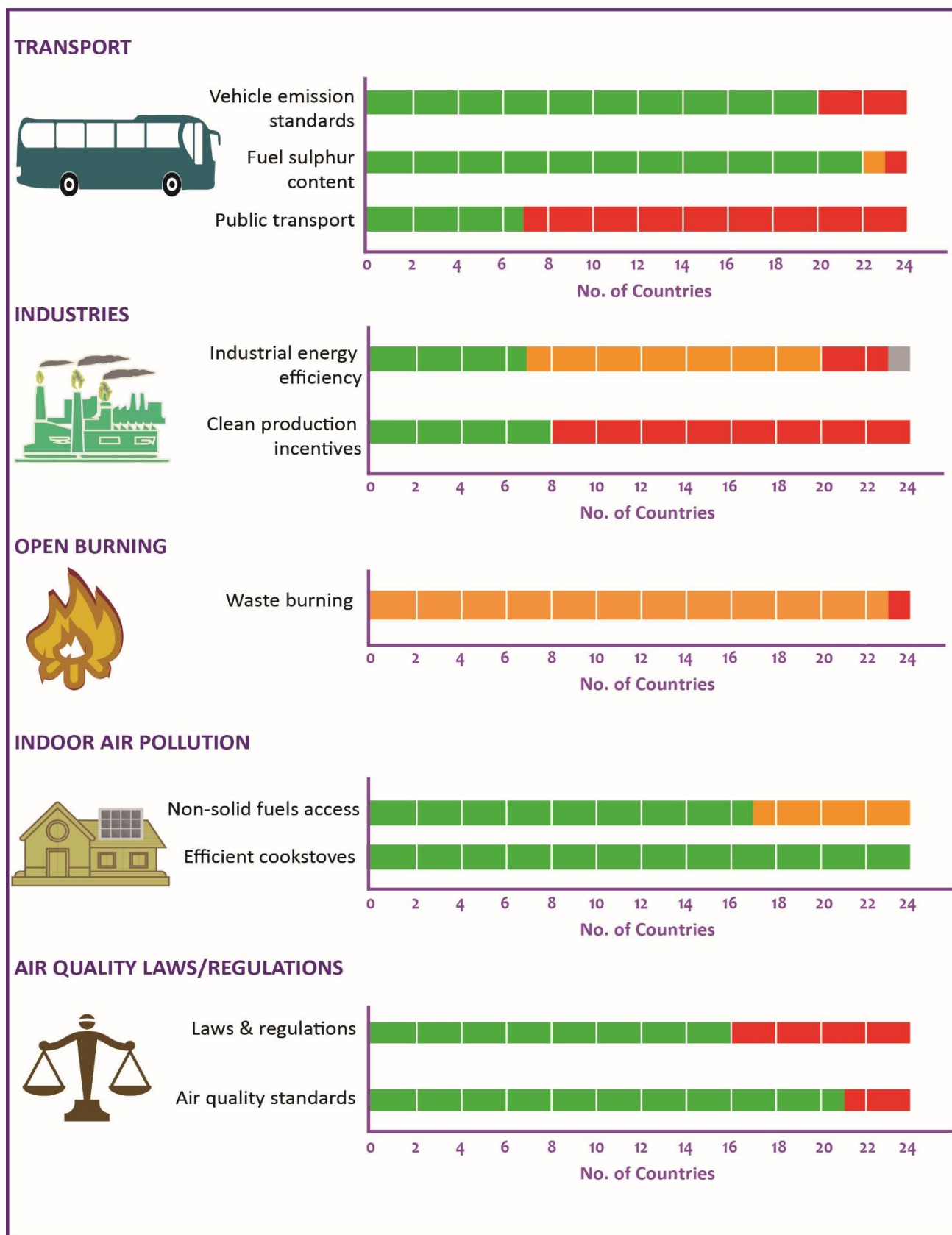


Figure 1: A summary of actions, programmes, policies, laws and regulations undertaken by governments in the sub-region to improve air quality (green = progressing to best practice; red = action still required).

2.0 Regional Overview

The Eastern Europe and Caucasus sub-region comprises of; Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Latvia, Lithuania, Macedonia, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Turkey and Ukraine. In this sub-region air quality is a major environmental issue of concern, causing approximately 256,000 premature deaths annually. Out of this approximately 88,000 deaths are as a result of indoor air pollution and approximately 168,000 are as a result of ambient air pollution.

Although six out of the twenty-four countries in the sub-region generate more than 30% of their electricity from renewable energy sources, coal fired power plants still remain an important source of electricity, and are major drivers of ambient air pollution. Governments have instituted several incentives, such as feed-in tariffs, to encourage power production from renewable sources, and for all the nations with these incentives, at least 10% of the power is generated from renewable sources. They have also provided incentives to upgrade pollution control equipment.

Another contributing factor to the high emissions levels from the industrial sector is the use of older technology for industrial processes /production which is also indicated by the relatively high energy intensity of the industrial sector in Eastern Europe and the Caucasus. Industrial energy efficiency¹ is relatively low with only seven out of the twenty-four countries having a GDP per unit of energy used greater than 9 USD. This is indicative of older, less efficient technology still in use in industrial production. Improvement in industrial energy efficiency offers one of the ways that countries in this sub-region can reduce their energy demand and consequently reduce air pollution from energy generating facilities. For instance, it's estimated that energy efficiency measures can provide up to 20% of energy saving in Georgia. Equally, many countries would benefit from energy efficiency measures.

Another major source of air pollution in the sub-region is the use of biomass for domestic space heating. Although the efficiency of wood burning space heating stoves and boilers has significantly improved over the years, wood burning represents the highest polluting form of heating in the sub-region, contributing to both indoor and outdoor air pollution. In an effort to reduce the overreliance on solid fuels for domestic space heating, governments have put into place several

¹ Estimated as unit of energy use at constant 2011 purchase Power Parity (PPP) \$ per kg of oil equivalent

policies, regulations and actions aimed at reducing the use of these fuels. Some of these policies have led to increased electricity access, with all the countries having an electricity access rate of close to 100%. In addition, governments have also put in place policies and actions aimed at increasing the percentage of the population with access to non-solid fuels which currently is above 85% for two-thirds of the countries in the sub-region.

Progress has been made in different areas in different countries, and there are several positive case studies to be found across the sub-region. There are however specific areas in each country that can be improved, while standards need to be established and continuously tightened, public transport expanded, the use of best practice increased etc. In addition, for policies and legislation to lower air pollution, countries must also improve implementation and enforcement, without which actions to improve air quality will not achieve their potential impact.

3.0 Actions taken to improve air quality

3.1 National standards

Based on the UNEP Air Quality Policy Catalogue, twenty-one out of twenty-four countries in Eastern Europe and the Caucasus have ambient air quality standards, although most of these standards do not include PM2.5 as a regulated pollutant. Out of these twenty-one countries, sixteen have accompanying air quality policies, laws and / or Acts. Figure 2 below shows the number of countries in the sub-region that have enacted and promulgated air quality laws and regulations.

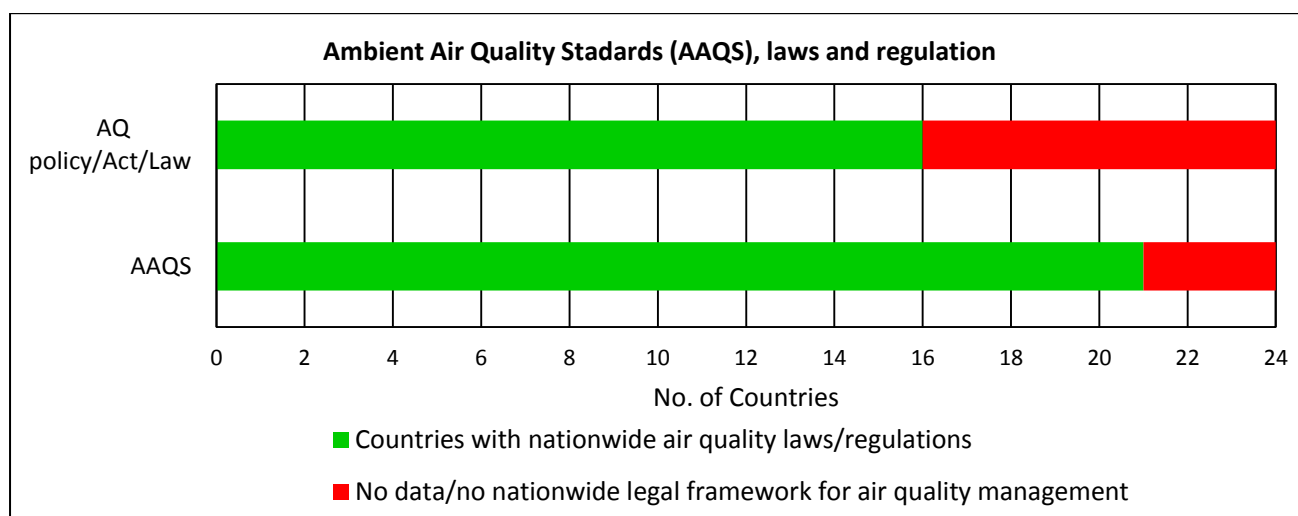


Figure 2: Number of countries in the sub-region that have enacted some form of air quality laws and regulations, and also the number of countries that have enacted and promulgated Ambient Air Quality Standards (AAQS).

The EU member states (Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia) are all required to meet standards that are contained in the Clean Air for Europe (CAFE) Directive (EP & CEU, 2008) and the Fourth Daughter Directive (EP & CEU, 2004). These Directives also include rules on how Member States should monitor, assess and manage ambient air quality. The Clean Air For Europe (CAFE) Directive is the principal legal instrument at European Union level relating to air pollutants, and thus seeks to protect the environment and human health. It sets out assessment and measurement standards, and reduction targets for the atmospheric concentration of particulate matter.

A review of the EU air quality policy was conducted in 2011-2013. This review led to the adoption of a Clean Air Policy Package in December 2013. The package consists of: a new Clean Air Programme for Europe with new air quality objectives for the period up to 2030; a revised National Emission Ceilings Directive with stricter national emission ceilings for the six main pollutants; and a proposal for a new Directive to reduce pollution from medium-sized combustion installations.

Nine of the non-EU countries have established air quality policies or regulations at both national and sub-national levels. In most of these countries, sub-national laws and regulations are a reflection of the national laws and regulations. However in a few areas, mainly large cities, the local air pollution regulations are stricter than the national regulations. This is the case in Moscow, where air emission laws are more stringent than the national requirements. In addition, Moscow supports industries that are upgrading their equipment or implementing innovations to reduce emissions.

In some of these non-EU countries, air pollution prevention laws and regulations have been enacted to be in line with respective EU directives and various international conventions.

3.2 Transport sector

The transport sector is one of the most important source of air pollution in Eastern Europe and the Caucasus, and especially so in urban areas. Given the increased congestion experienced in many

urban areas, maintaining and increasing the modal share of public and non-motorised transport is essential to increasing mobility while decreasing transport emissions.

Seven countries are investing in expansion of public transport systems. In Azerbaijan for instance, the government has taken several steps toward improving public transport, including the replacement of medium-sized buses with large ones and the application of intelligent transport management system. In Georgia the government has initiated a discount system to encourage increased use of public transport; it has also purchased 1,000 new buses for the city of Tbilisi. In Turkey, plans exist to increase the number of cities serviced by trams. The construction of bicycle paths is being co-financed by the Ministry of Environment and Urbanization, especially within the major cities. Figure 3 below shows the number of countries in the sub-region that have made investments to significantly expand public transport.

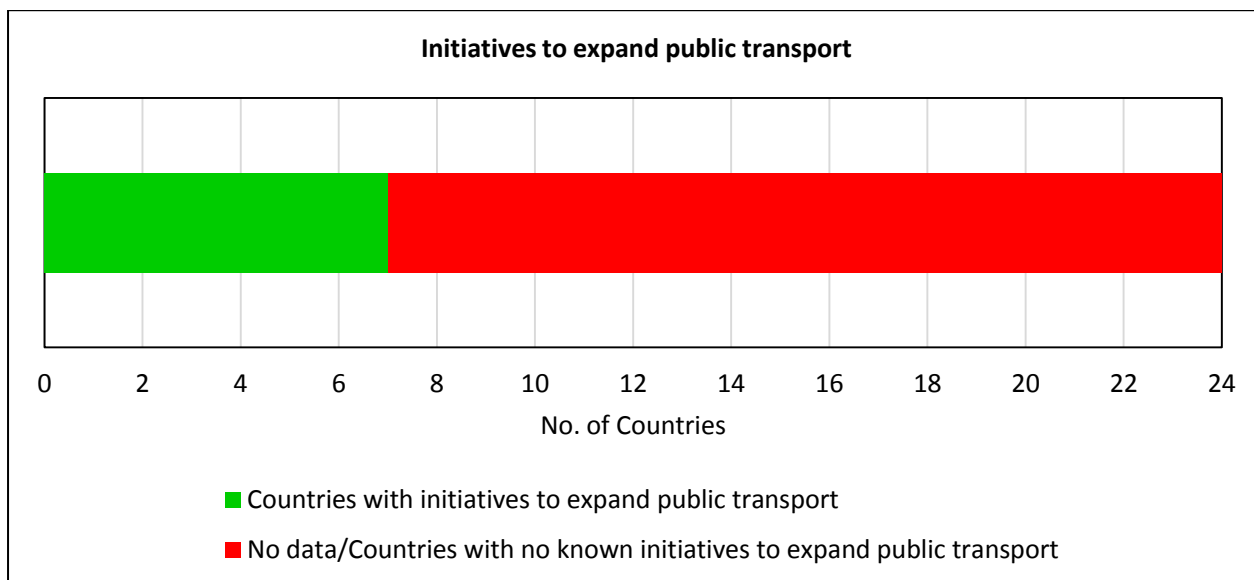


Figure 3: Number of countries in the sub-region that have initiated programmes and initiatives to significantly expand public transport.

Some of the other actions undertaken by governments to reduce emissions from the transport sector include setting vehicle emission standards. Twenty out of twenty-four countries in the sub-region have vehicle emission standards that are at least Euro 4 or higher (see Figure 4). For the EU member states (Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia), vehicle emissions standards are at Euro 6 for light duty vehicles and Euro 4 for heavy duty vehicles.

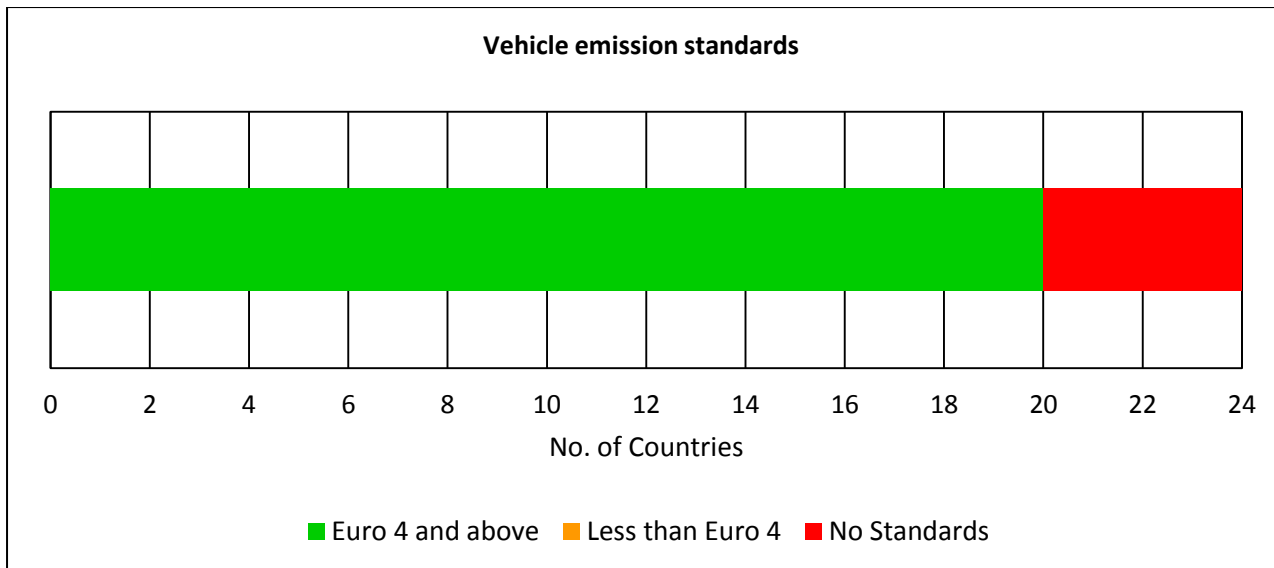


Figure 4: The number of countries in the sub-region that regulate vehicle emissions to Euro standards or its equivalent.

In some countries, differentiated tax regimes encourage a move toward cleaner, more efficient vehicles. In Albania, vehicles importations are not restricted in terms of age or emission requirements; however, an import tax is assessed based on vehicle age and engine size, favouring newer, small petrol vehicles. In 2010, Moldova abolished customs taxes for vehicles less than seven years old that were imported from neighbouring countries. Currently an age limit of ten years is applied for all imported automobiles.

In Russia, vehicle emissions are restricted through an age-based taxation system, where a 30% tax increase is charged on imported vehicles that are older than one year. There is a 35% tax increase for imported vehicles that are between 3 to 5 years old, and for vehicles older than 5 year, the tax is between €2.5 and €5.8 per cm³ of engine volume.

Governments have also initiated tax incentives to encourage the use of electric vehicles. In Turkey, electric vehicles attract less tax compared to other conventional vehicles, while in Georgia electric vehicles are exempted from import duty. In the Czech Republic, households with electric vehicle get favourable electricity tariff. Estonia is the first country in the world to introduce a nationwide, publicly serviced charging system for charging batteries of electric vehicles.

Fuels and vehicles work as a system; in order to benefit from improved vehicle standards, low sulphur fuels are needed as these allow the advanced pollution control devices to work optimally. Twenty-two countries out of the twenty-four in the sub-region have low sulphur fuels with sulphur content below 50ppm (Figure 5). For EU member states, the maximum allowable sulphur level in

petrol and diesel fuels has been 10ppm since 2009. Some non-EU member states also have ultra-low sulphur fuels, such as Moldova, where all major fuel distributors sell diesel and petrol fuel with a maximum sulphur content of 10ppm, even though national fuel quality legislation allows a much higher sulphur content.

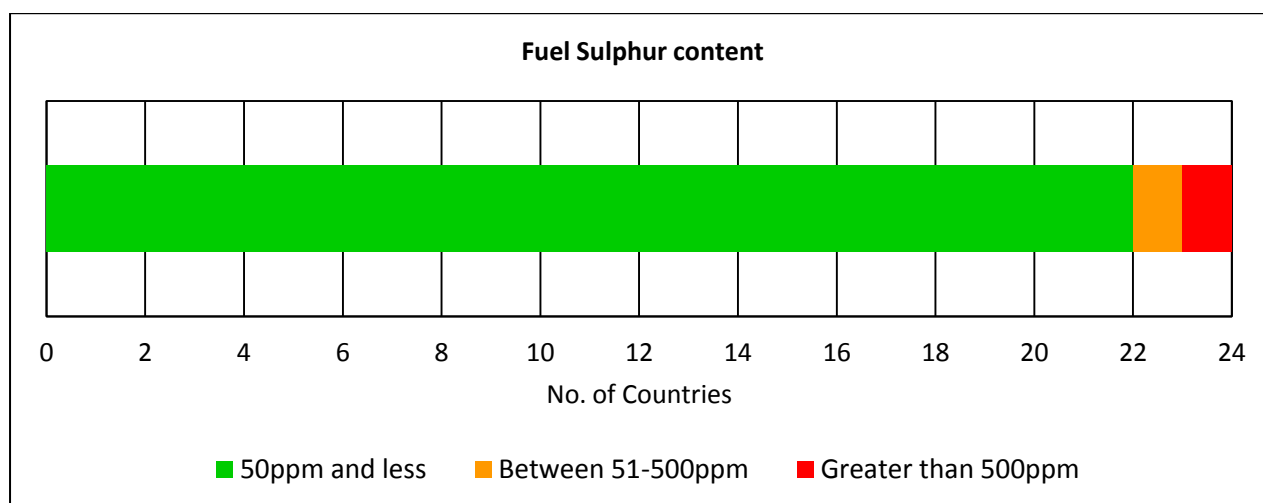


Figure 5: Number of countries in the sub-region that regulate fuel quality. Fuels Sulphur content is used as a proxy of fuel quality.

3.3 Open burning of Wastes

Open burning of municipal waste is practiced in one out of the twenty-four country. Most governments in this sub-region have implemented waste collection and disposal systems, thus reducing the need for open burning of municipal waste. Although most of the municipal waste is collected and disposed of by the authorities, agricultural waste management remains a challenge, and open burning of this waste occurs in all the countries. The cross-boundary transport of emission from these fires means that the impact of open burning of agricultural waste can be experienced far from its source.

In this sub-region, very few countries have direct regulations to govern agricultural fires. For instance, in Russia, there is no federal law regulating agricultural waste burning, although agricultural waste burning is regulated under the normative Act of the Ministry of Emergency. Some areas within Russia have developed regulations to control agricultural waste burning, however the regulations are not adhered to as the fines and sanctions are too low.

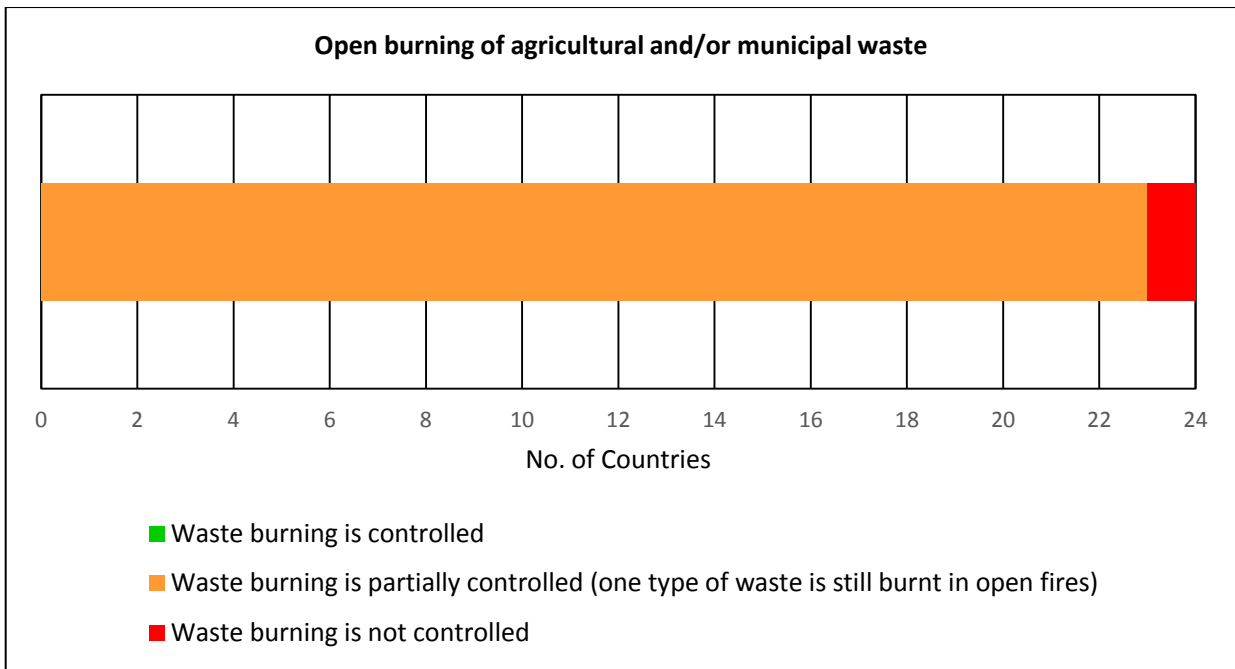


Figure 6: Number of countries where laws, regulations and actions have been implemented to prevent open burning of agricultural and / or municipal waste.

3.4 indoor air pollution

While reliance on solid fuels for cooking and lighting is not common in Eastern Europe and the Caucasus, many households do use solid fuels for space heating during wintertime (Figure 7). Although most governments in this sub-region have provided access to non-solid fuel and electricity, the use of these forms of energies are not widely used for space heating during cold months, which suggests that cheaper heating options are required. On the other hand, the efficiency of biomass-based heating stoves can be increased to minimise emissions from these source, as the main drivers of emissions from this source are the obsolescence and low efficiency of the heating units.

In some countries, governments have initiated programmes and other action to assist households to acquire cleaner and more efficient stoves. For example, the Czech Republic has a programme that offers financial help to households transferring from old wood, coal or natural gas stoves used for heating to newer, cleaner natural gas stoves. The government also provides subsidies for upgrading insulation and heating in office and residential buildings.

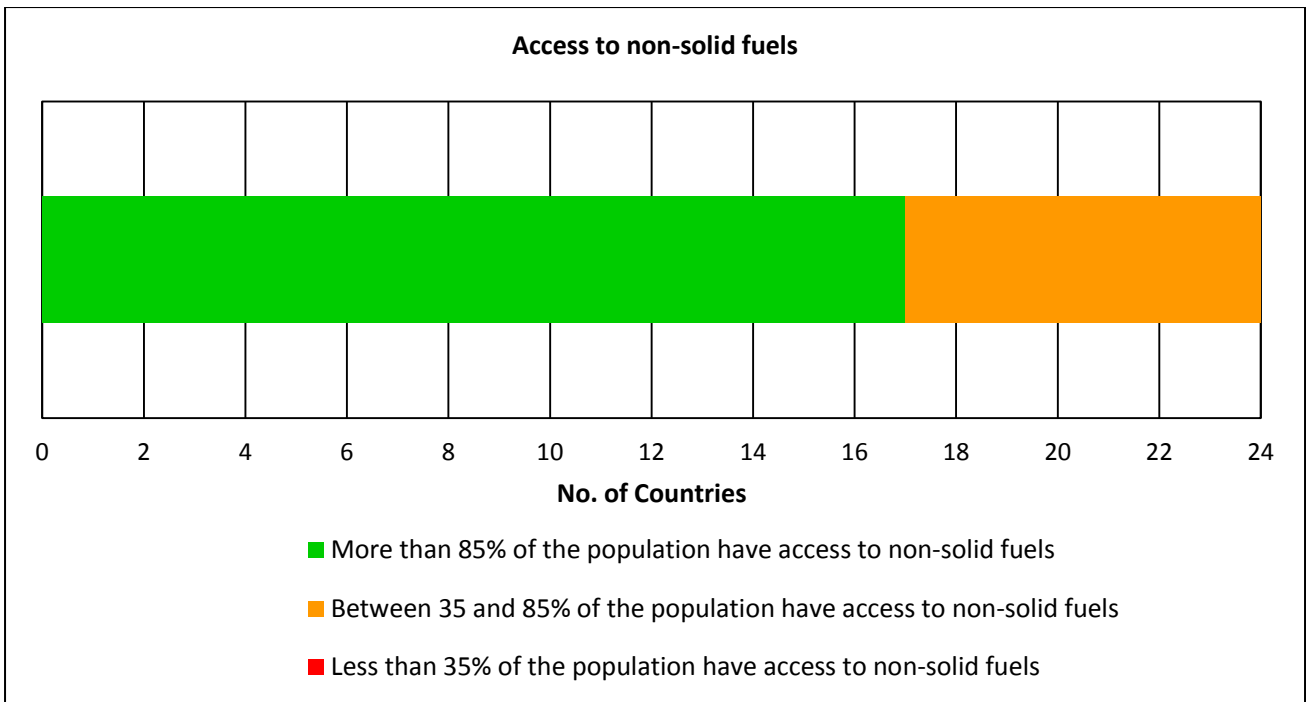


Figure 7: Number of countries in the sub-region that have implemented programmes and policies to improve non-solid fuels access rate, as indicated by percentage of households with access to non-solid fuels.

3.5 Industries

The use of incentives for increasing investments in energy efficiency, renewable energy, clean technology and pollution control occurs in seven countries. The government of Georgia has embarked on a project to minimize industrial emissions in cement factories and metallurgical facilities. These factories were fitted with dust abatement systems, which have reduced particulate matter emissions by 70%. The Ministry of the Environment of the Czech Republic developed a National Emission Reduction Programme in 2007, to be reviewed every four years. As a result, the government has increased investments to emission reduction, particularly from large power plants, resulting in a significant drop in key air pollutants.

According to the EU Renewables Directive, member countries will have to source 24% of their final energy demand from renewable sources by 2020, up from 17.8% in 2005. Towards this end, Bulgaria enacted the Renewable and Alternative Energy Sources and Biofuels Act (2007), which was aimed at diversifying energy supply and increasing the capacity of small and medium enterprises and renewable energy source producers, as well as other market actors. Feed-in-tariffs were used as an incentive to attract investments into this sector. Albania’s National Energy Strategy (NES)

2006-2020 aims to incentivise the use of renewable energy sources (solar, wind, biomass) in order to maximise the use of local resources; currently, 94.4% of the electricity generation capacity comes from hydroelectric plants. The "Energy Law of the Republic of Armenia" guarantees a market for electricity produced by all small hydropower plants and other renewable energy sources. In 2008, the government of Hungary approved the Renewable Energy Strategy for 2007-2020. The policy targets the increase of renewable energy production to 15% by 2020. The strategy will favour decentralized energy production, the cogeneration of heat and power, and the establishment of small power stations utilizing renewable sources locally.

Lithuania's National Energy Strategy contains long term energy development directions including energy savings and renewable energy targets. Energy/electricity suppliers are required to purchase at preferential prices all renewable electricity that has a certificate of origin, except for power generated by hydroelectric power plants with installed capacity of over 10MW. In addition, installation of a renewable energy source for the generation of electricity with a capacity of up to 5 MW, or for thermal energy production, requires no license. Feed-in tariffs for various renewable energy sources are also in place. Long-term purchase contracts are set to replace this feed-in tariff structure for electricity.

To enable the financial viability of renewable energy installations, Russian authorities have created a support scheme that issues 'certificates' and 'premiums' to provide additional revenues to the operators of renewable energy installations. Moreover, the authorities compensate the network connection costs of renewable energy installations with an installed capacity not exceeding 25MW.

The third priority of the Energy Policy of Serbia is the New Renewable Energy Source Selective Utilization Program, which includes a plan for the utilization of biomass, geothermal, solar, wind power and hydroelectric sources. According to the goals of the Program, the share of renewable energy sources in final energy consumption should rise by 1.5-2% by 2015. The Energy Law of July 2004 contains the Energy Sector Development Strategy of the Republic of Serbia that proposes policies for incentives for financial investments in energy facilities using renewable energy sources, incentives for increasing energy efficiency, and methods for ensuring environmental protection. Figure 8 shows the number of countries in the sub-region that use incentives to stimulate cleaner production and or renewable energy generation.

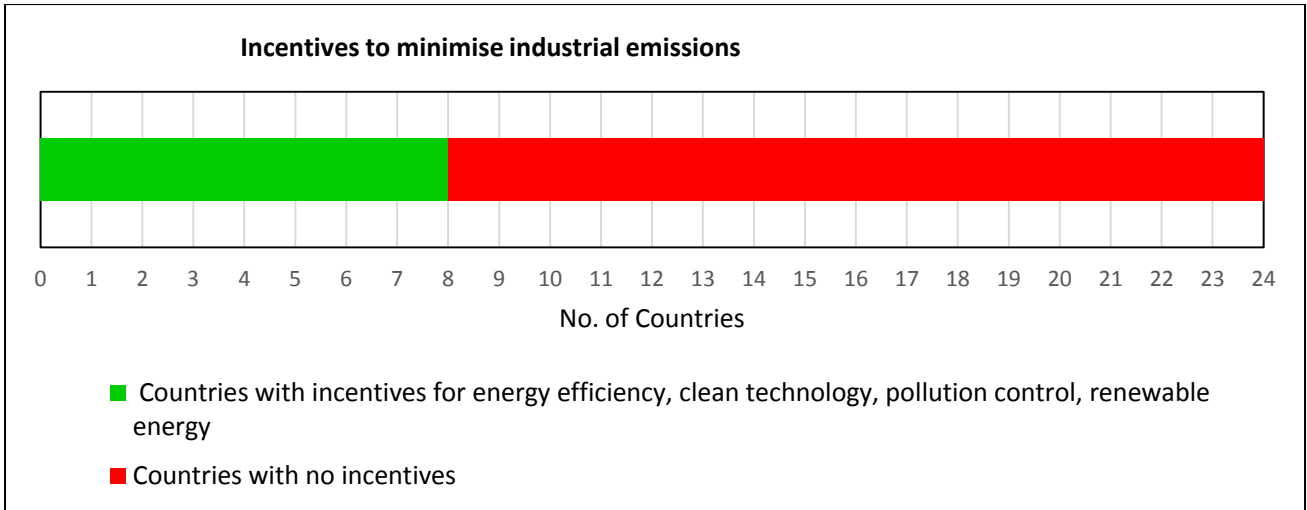


Figure 8: Number of countries in the sub-region that use incentives to encourage industrial investments in cleaner production and renewable energy generation.

More efficient industrial processes tend to be cleaner and use less energy. In the sub-region, only seven countries have an industrial energy efficiency greater than 9 GDP per unit of energy at constant 2011 PPP dollars per kg of oil equivalent, as shown in Figure 9.

A few countries have initiated programmes and other actions to increase energy efficiency. For example, the government of Montenegro developed an Energy Efficiency Action Plan 2008–2012 to promote more efficient use of energy across economic sectors. The Montenegro Energy Efficiency Project financed improvements in heating systems, insulation, thermostatic valves, heat substations and networks, and other installations in buildings.

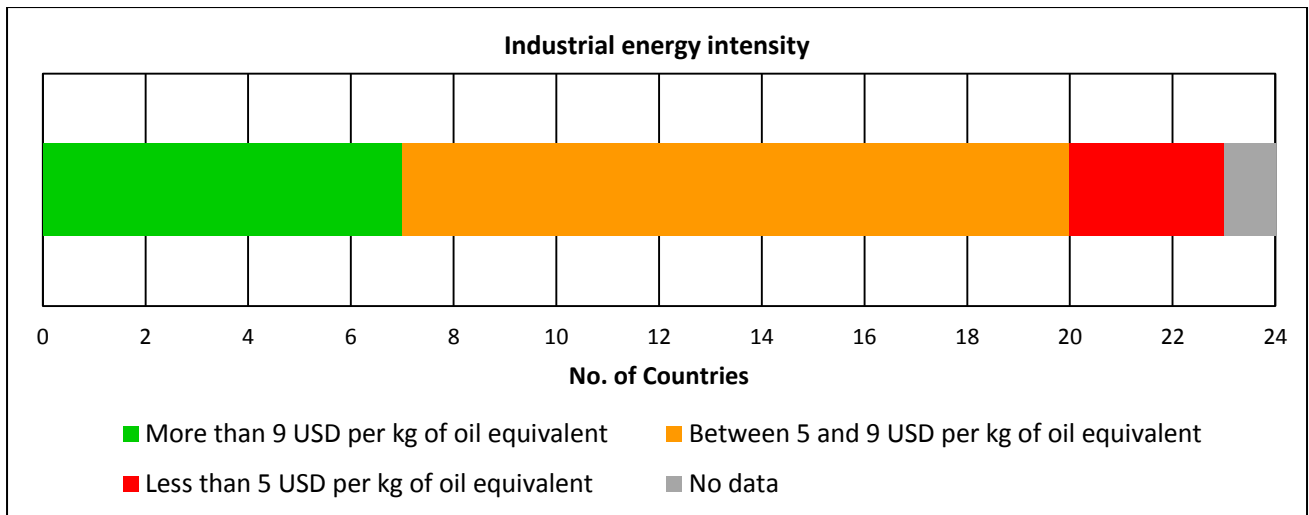


Figure 9: Number of countries in the sub-region with their corresponding industrial energy efficiency. Energy efficiency is calculated as GDP per unit of energy use at constant 2011 PPP \$ per kg of oil equivalent

Industrial emissions within the EU member states (Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia) are regulated under the Industrial Emissions Directive (IED), which entered into force in January 2011. The directive's aim was to achieve significant benefit to the environment and human health by reducing harmful industrial emissions across the EU, in particular through better application of Best Available Techniques. The IED had to be transposed into national legislation by Member States by January 2013. European legislation establishes air quality objectives (limit and target values) for the different pollutants.

4.0 Data sources

Data indicating progress or current status of each of the top ten actions was obtained from various sources:

- Airlex <http://airlex.web.ua.pt/>
- World Bank <http://data.worldbank.org>
- World Health Organisation
http://www.who.int/quantifying_ehimpacts/national/countryprofile/en/
- UNEP <http://www.unep.org/Transport/new/pcfiv/>
- Various government reports, websites

- Energypedia https://energypedia.info/wiki/Main_Page
- Reegle <http://www.reegle.info/countries/>
- www.BRTdata.org
- Global Coalition for Clean Cookstoves <http://catalog.cleancookstoves.org/stoves>
- Air Quality Catalogue <http://www.unep.org/transport/airquality/>
- E5P, “The Eastern Energy Efficiency and Environment Partnership,” <http://georgia.e5p.eu/>, 2015, <http://georgia.e5p.eu/>