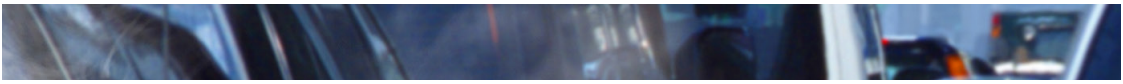
The Partnership for Clean Fuels and Vehicles

An Overview of the Partnership for Clean Fuels and Vehicles (PCFV)

Partnership for Clean Fuels and Vehicles

UNEP



Partnership for Clean Fuels and Vehicles Financial Donors

Asian Clean Fuels Association (ACFA), Afton Chemicals, Global Environment Facility (GEF), Environment Canada, European Union (EU), ExxonMobil, FIA Foundation, IPIECA, TNT, Norwegian Government, Swedish International Development Cooperation Agency (SIDA), United Nations Environment Programme (UNEP), US Environmental Protection Agency (USEPA)

last updated: April 2014

Introduction

The Transport Sector

The transport sector is one of the largest contributors to outdoor air pollution and an important source of CO2 and non-CO2 emissions, such as particulate matter. Road transport remains the primary source of urban air pollution in many countries, contributing as much as 80% of urban air pollution in some cities. Second-hand cars and trucks fitted with obsolete technology and fuelled with high sulphur fuels contribute a significant portion to the local emissions from transport.

Impact of Transport

- *3.2 million premature deaths are caused by global outdoor air pollution and particulate matter (The Health Effects Institute: December 2012).*
- *Global outdoor air pollution and particulate matter are classified as the leading environmental cause of lung cancer and death (International Agency for Research on Cancer: October 2013).*
- *The transport sector as a whole is estimated to account for 19% of global black carbon emissions, an important contributor to climate change (Climate and Clean Air Coalition Heavy Duty Diesel Vehicles & Engines Fact Sheet,: November 2012).*

Despite concerns over the impacts of current pollution levels, road transport emissions are projected to increase sharply over the next 30 years. This is due to the expected growth in vehicle ownership worldwide – resulting to between 2 and 3 billion vehicles by 2050 (IEA Energy Technology Perspectives 2010); the majority of which will be found in developing and transitional countries as incomes grow and consumption patterns change.

Air Quality and Climate Change

Vehicles, both petrol and diesel, emit a number of pollutants that affect air quality, including nitrogen oxides, sulphur oxides, particles, carbon monoxide, and hydrocarbons. Research has increasingly focused on air-borne small particulate matter (PM) due to its disproportionate effect on human health. Health effects associated with fine PM in the air - which can be inhaled deep into the lungs – include premature death and aggravation of respiratory and cardiovascular disease.

Emissions from a bus in Kenya © UNEP/Andrew Hall

A fraction of fine PM, is black carbon (or soot), which is an important contributor to global climate change.

Therefore, lowering PM emissions from cars and trucks will help to reduce global warming.

Solutions

A Nairobi street © UNEP/Susan Kabogo

Vehicle emissions can be reduced by using low-sulphur and lead-free fuels in combination with vehicles outfitted with emissions control devices that require such fuels. The benefits from such interventions are well documented. For example, the global elimination of leaded petrol is estimated to result in overall global benefit of $2.45 trillion/year, including over 1.2 million premature deaths avoided per year, of which 125,000 are children (Journal of Environmental Health, Hatfield, 2011). The Partnership for Clean Fuels and Vehicles (PCFV) has been supporting developing and transition countries to prioritise the reduction of vehicle emissions by implementing lead free and low sulphur fuels, and cleaner vehicle policies.

About the PCFV

The Partnership for Clean Fuels and Vehicles (PCFV) is the leading global public-private initiative supporting the reduction of vehicle emissions through the promotion of cleaner fuels and vehicles in developing and transitional countries. The PCFV support to countries is mainly coordinated by a Secretariat that is based at the United Nations Environment Programme headquarters in Nairobi, Kenya.

A global partners meeting © UNEP/PCFV

The PCFV helps developing and transitional countries address increasing emissions from vehicles. This international partnership was formed in September 2002 at the World Summit on Sustainable Development in Johannesburg, South Africa. The PCFV is the only global-scale effort dedicated to cleaner air and lower greenhouse gas emissions from road transport through the introduction of cleaner fuels and vehicles. Its work provides developing and transitional countries with access to technology and knowledge responsible for

significant reductions in pollutants from road transport in developed countries.

The PCFV provides a broad range of technical, financial and networking support for governments and other stakeholders to help improve urban air quality by putting in place needed cleaner fuels and vehicles standards. Since its founding, the PCFV has directly supported the implementation of cleaner fuel and vehicle programs in over 100 countries in all developing and transitional regions globally. This is possible mainly through the diverse expertise and participation of its partners coupled with the leadership and implementation activities of its Secretariat.

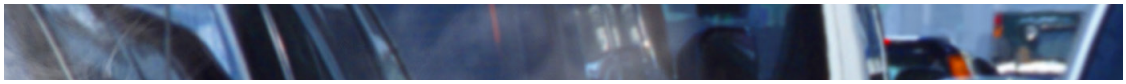
Screenshot of www.unep.org/pcfv

The PCFV is widely recognised for its two major global initiatives – 1) the phase-out of leaded petrol and 2) the reduction of sulphur in vehicle fuels. In 2012, ten years after its formation, partners met in London to re-launch the PCFV. At the meeting, partners agreed to move towards a 'systems approach' to cleaner fuels and vehicles to be implemented through two new PCFV campaigns:

- The Petrol Campaign
- The Diesel Campaign (see section below on PCFV Campaigns).

Vehicle emissions standards paired with complementary fuel quality standards promote not only cleaner, but more efficient vehicles and reduce emissions of conventional pollutants (sulphur and nitrogen) and also climate pollutants (carbon dioxide and black carbon). Cleaner and more efficient vehicles using cleaner fuels emit fewer pollutants and utilize less fuel. Through this approach the PCFV addresses urban air quality and human health concerns as well as global climate change and energy security.

For more information about the PCFV, please visit our website: *http://www.unep.org/tranport/pcfv*; or contact: *pcfv@unep.org.*



The PCFV Goals

The PCFV works to help countries to reduce emissions from road transport by introducing fuels and vehicle standards in a "Systems Approach" (see section on Systems Approach). The PCFV has agreed on specific goals on fuels and vehicle standards to cost-effectively support reduce vehicle emissions (see text box below). The PCFV provides regional and national level support to countries to ensure that as cleaner fuels are introduced in developing and transitional countries, complementary vehicles emission standards are adopted.

PCFV Goals

	Petrol	Diesel
Fuels	Support complete elimination of leaded petrol in the remaining 6 countries	Continue to support countries to reduce sulphur levels to 50 ppm or less
Vehicles	Support measures that ensure that only catalyst equipped vehicles are introduced in countries	Support countries to put in place vehicle emissions standards complementary to their fuel sulphur levels

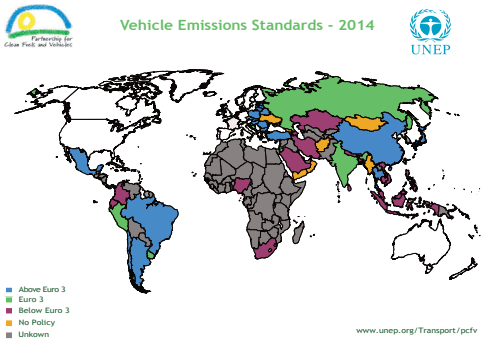
The PCFV Campaigns

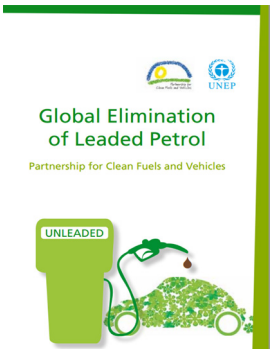
A Systems Approach

The PCFV recognizes that fuels and vehicles work together as a system, and that the greatest benefits are achievable by combining unleaded and lower sulphur fuels with appropriate cleaner vehicle and emission control technologies. With developing and transition countries adopting cleaner fuels, the PCFV will intensify its focus on the introduction of cleaner vehicles to match improving fuel quality. At present, few developing and transition countries have vehicle emission standards that match their fuel quality.

Only a handful of developing and transition countries have vehicle emission standards above Euro 3. The goal of the PCFV is for countries to aim for Euro 4 standards – see Vehicle Emission Standards map.

The global map on the current state of vehicle emissions standards shows that only a handful of developing and transition countries have European vehicle emission standards equivalent of Euro 3 (implemented by the EU in 2000) and above – the goal of the PCFV is for countries to aim for Euro 4 vehicle standards (that would be enabled by the adoption of 50 ppm fuel sulphur). In addition, the interventions of the PCFV have other co-benefits, namely improvements in vehicle fuel economy. The introduction of cleaner fuels also allows for the importation of cleaner, more fuel efficient vehicles, leading to a cleaner and more efficient global fleet. This will contribute towards national air quality improvements and the mitigation of CO2 emissions. The PCFV will implement this integrated systems approach through two campaigns – one focusing on petrol vehicles and the other on diesel vehicles. These campaigns are detailed below.



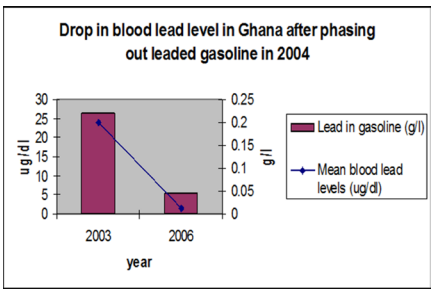


Global Elimination of Leaded Petrol Brochure

The Petrol Campaign

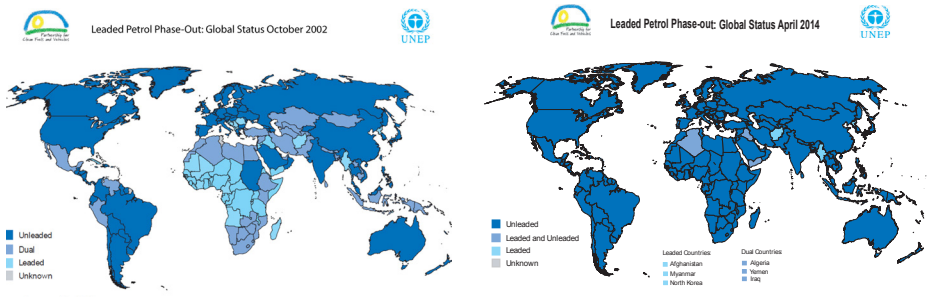
One of the most notable accomplishments of the PCFV has been its work on the global phase-out of leaded petrol. When the PCFV was launched in 2002 the majority of developing and transitional countries were still using leaded fuel. A total of 82 countries were still using leaded petrol in September 2002 when the PCFV was formed. Today, mainly from PCFV support, only 6 countries still use leaded petrol. The PCFV Petrol Campaign has on-going programs in these 6 remaining countries and a complete elimination of leaded gasoline is within reach.

A recent study (Global Benefits from the Phase-out of Leaded Fuel - Journal of Environmental Health: December 2012) estimates the contribution to the global economy of eliminating leaded petrol at US$2.4 trillion/year (4% of global GDP). This monetary saving is calculated by measuring social benefits such as heightened IQ levels and reduced criminality, in addition to health savings from reductions in illnesses such as cardiovascular disease.



Graph showing drop in blood lead level in Ghana after phasing out lead

This global effort to end the use of leaded petrol also means 1.2 million fewer deaths per year, of which 125,000 are children.



The global maps above show the countries that were still using leaded petrol at the time of the PCFV formation in 2002 and the global state as of April 2014. Most notably, the Sub Saharan Africa region managed to shift from predominantly leaded to unleaded in a couple of years.

The PCFV Petrol Campaign has been successful. Today only 6 countries still use leaded petrol, a significant decrease in usage from the 82 in September 2002.

Another major benefit of eliminating lead in petrol is that it allows the effective utilization of vehicle emission control technologies in petrol vehicles. The elimination of leaded petrol allows the introduction of emission controls like the catalytic converter. Catalytic converters have been shown to reduce harmful pollutants such as carbon monoxide, hydrocarbons, and nitrogen oxides emissions by 50 - 90%. Even a minute amount of lead can poison a catalytic converter and impair its function. Catalytic converters are now standard in all new vehicles worldwide. The PCFV supports countries that have already adopted lead free petrol to only import vehicles that are fitted with catalytic converters.

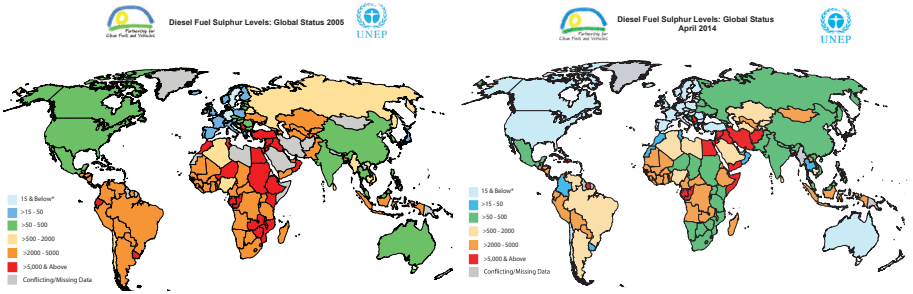
The Diesel Campaign

Extensive practical experience and scientific assessments around the world have shown that lowering sulphur levels in fuel results in a number of benefits. Low sulphur fuels decrease the amount of emissions from vehicles that are harmful to health, and allow for the use of more advanced technologies (even further reducing pollutants), thus greatly improving air quality. In 2005, PCFV partners agreed to promote and support the global reduction of fuel sulphur levels to 50 ppm or less. As a main means of implementing this goal, the PCFV Diesel Campaign supports developing and transitional countries to lower the level of sulphur in vehicle fuels, in particular diesel fuel. While developed countries have reduced fuel sulphur levels to 50 or even 10 parts per million (ppm), the situation in developing countries is very different and levels are, on average, 2,000 ppm and can reach as high as 10,000 ppm in diesel fuels.

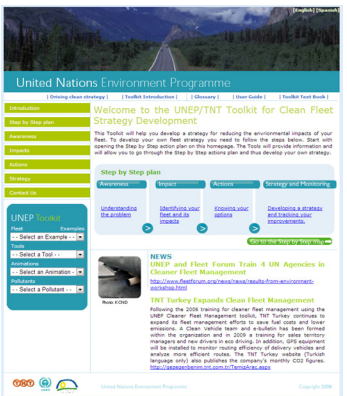
The PCFV Diesel Campaign supports developing and transitional countries to lower the level of sulphur in vehicle fuels to 50 ppm. Developing countries have, on average, 2,000 ppm diesel fuel sulphur levels that can reach as high as 10,000 ppm. The PCFV has supported and continues to support many developing and transitional countries, particularly in Africa, Asia, Latin America and Eastern Europe, to set targets to move to the PCFV goal of 50 ppm and below in the next few years.

Advances in engine and component technologies are continuous, especially for diesel vehicles; these technologies require the use of lower sulphur fuel and the PCFV employs its systems approach to ensure that both cleaner fuels and vehicle technologies are introduced at the country level.

Major progress has been made with switching to low sulphur fuels in many developing and transitional countries, particularly in Africa, Asia, Latin America and Eastern Europe, and many more have set targets to move to 50 ppm and below in the next few years– see maps below showing national diesel sulphur status in 2005 and 2014. For example, in Latin America and the Caribbean region, 3 countries have achieved 50 ppm sulphur level in diesel fuels since 2005 and many more require the use of 50 ppm in cities.



Once low sulphur fuels (of 50 ppm or less) are available, countries can introduce vehicle emission standards for both light and heavy duty vehicles that are 'technology-forcing', or require clean vehicles technologies, including advanced emission control devices such as particulate filters and catalysts. The ultimate aim is the use of particulate filters that can significantly lower PM and BC emissions. Some developing and transitional countries are already importing state-of-the-art diesel vehicles enabled by the availability of cleaner fuels.



This campaign also incorporates the clean fleet management toolkit. The toolkit aims to train fleet managers to operate their vehicle fleets more efficiently and sustainably, and allows managers to

measure a fleet's carbon footprint, savings in fuel/vehicle maintenance and reductions in emissions. The toolkit also outlines the practical and cost-effective solutions available to minimize emissions while improving fuel economy. This interactive toolkit has been successfully used by an international freight company - the TNT - for its fleet in Turkey with a 9% reduction in CO2 emissions and fuel cost savings in the first 15 months of use - even as the fleet grew by 15%. Over 600 fleet owners, operators and managers in 58 countries in Africa, Asia, Europe, Latin America and the Middle East have been trained in use of the toolkit over the past five years.

Key Accomplishments of the PCFV

- > The PCFV has supported over 100 countries globally towards moving to cleaner fuels and vehicles.

- > When the PCFV was launched in 2002 the majority of developing and transitional countries were still using leaded fuel and today only six countries using leaded fuel remain.

- > Major progress has been made with switching to low sulphur fuels in many developing and transitional countries, particularly in Africa, Asia, Latin America and Eastern Europe. In 2002 most developing and transitional countries did not have low sulphur fuel standards. Today countries are moving to low sulphur fuels and many have set targets to move to 50 ppm and below in the next few years.

- > In 2006 the PCFV received the UN 21 Award from the UN Secretary General Kofi Annan for substantive UN programming. The PCFV has also received positive independent evaluations from the European Commission (EC), UNEP and the US Environmental Protection Agency (USEPA).

Institutional Framework

The Partners

The PCFV partners are from both developed and developing country national governments, non-governmental and international organisations, and the fuel and vehicle industries. Following the re-launch in October 2012, partners were given the opportunity to reconfirm their support to the renewed focus of the PCFV. As of April 2014, 72 partners had re-confirmed their interest, and membership remains global. These partners are the driving force behind the PCFV accomplishments and their commitment is key to PCFV's continued success.

The Advisory Group

The Advisory Group, which is representative of the broad range of partners, provides guidance on strategic and financial issues, as well as advice on general management of the PCFV Secretariat.

The Secretariat

The PCFV Secretariat is located at the United Nations Environment Programme headquarters in Nairobi, Kenya. The Secretariat administers the day-to-day operations of the PCFV, such as supporting countries to prepare and implement cleaner fuel and vehicle strategies, organising meetings, responding to requests for support and information, and liaising with partners. The Secretariat also maintains an information database on its website of clean fuels and vehicles for all developing and transitional countries.

The Donors

Since its formation, several organisations have consistently provided financial support to the PCFV to fund country-level implementation, in cooperation with partners, of the PCFV's programme of work approved during the Global Partners Meetings. This core group of partners are recognised in PCFV products, materials, and events. The PCFV also fully recognises the invaluable contributions that many partners, and non-partners, make at all levels.

Clean Air Patron

In 2012, Patrick Makau became the first-ever Clean Air Campaigns Patron. Makau is a former marathon world record holder and is well aware of the impact of air quality on health and physical performance. He promotes the PCFV as a way to reduce vehicle emission through cleaner fuels and vehicles.

Patrick Makau - Clean Air Patron © Patrick Makau

National- and Regional-Level Support

The PCFV promotes the adoption of cleaner fuels and vehicles in developing and transitional countries and regions by supporting:

- The preparation of action plans to achieve both the global elimination of leaded petrol and a graduated decline of sulphur in diesel and petrol fuels.
- The development and adoption of cleaner fuel standards and cleaner vehicle requirements by providing a platform for the exchange of experiences, successful practices and technical assistance between developed and developing countries.
- The development of public outreach materials, educational programmes, and awareness campaigns.
- The use of economic and planning tools for clean fuel and vehicle analyses in local settings, and supporting the development of enforcement and compliance programmes.
- Fostering key partnerships between government, industry, NGOs, and other interested parties within and between countries, in order to facilitate the implementation of clean fuel and vehicle commitments.

The PCFV has supported over 100 countries globally towards moving to cleaner fuels and vehicles. Examples of the kind of support provided by the PCFV include:

- Regional, sub-regional and national consultative meetings focused on clean fuels and vehicles. This includes Global PCFV Partners Meetings to discuss the direction of the PCFV work, and the latest trends in automotive emissions.
- Establishment of in-country task teams and technical working groups to prepare national clean fuel and vehicle strategies and supporting legislation.

Blood lead testing in Yemen © UNEP/PCFV

- Research studies such as blood lead level testing and ambient air quality monitoring to support decision makers with evidence on the need to move to cleaner fuels and vehicles.
- Public outreach, primarily through media campaigns.
- PCFV working group guidance on issues of concern for countries in the move to cleaner fuels and vehicles, and website updates to monitor progress.

Evaluation and Recognition of the PCFV

In recognition of its work, the PCFV has received several positive independent evaluations and awards. For example, in 2006 the PCFV received the UN 21 Award from the UN Secretary General Kofi Annan for substantive UN programming. The PCFV has also received positive independent evaluations from the European Commission (EC), UNEP and the US Environmental Protection Agency (USEPA).

In 2010, an EC evaluation described the PCFV as follows: "*The project pursues ambitious objectives in regard to improving the quality of fuels and vehicles in developing countries. It is efficiently managed by UNEP and has achieved so far very significant results, with important long-term benefits on the environment, human health and global warming*". In 2011, independent third party evaluation by the USEPA on the design and implementation of the PCFV's lead phase-out campaign concluded that "*Through a qualitative analysis and review of the literature on voluntary partnerships, the evaluation found PCFV's Lead Campaign to be particularly well conceived, timed, designed, and implemented*".

For more information please contact:
United Nations Environment Programme
Partnership for Clean Fuels and Vehicles
P. O. Box 30552, Nairobi, Kenya
Tel: +254 (0) 20 7623223
Email: pcfv@unep.org
www.unep.org/transport/pcfv/