

ACCESSING  
INTERNATIONAL  
FINANCIAL  
SUPPORT  
MECHANISMS FOR  
VEHICLE FUEL  
ECONOMY

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## **Accessing International Financial Support Mechanisms for Vehicle Fuel Economy**

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### **Abstract**

In developing economies, there can be the perception that due to their relatively low total fuel consumption vehicle fuel economy should not be a priority.

Total fuel consumption could, however, increase by more than 5% per year until 2030, and more than half of this increase is expected to occur within developing countries. The global vehicle fleet is predicted to triple by 2050 with over 80% of the growth occurring in the developing world. Any strategies to reduce dependence on fossil fuels should therefore target vehicle fuel economy in developing countries.

While the demand and necessity for vehicle fuel economy measures is increasing it can be challenging for developing countries to obtain finance to support them. This paper is based on a project funded by the FIA Foundation and supported by UNEP (the United Nations Environment Programme), which led to the development of a practical and concise guide that informs primarily national governments about some of the current sources of international funding that are available that could be used to support vehicle fuel efficiency. This paper provides an insight into the reasons why the guidance document was produced and the diversity of international sources of finance that are available to support the development and implementation of vehicle fuel economy measures. It also provides an insight into some of the factors that applicants could consider from an early stage to increase the likelihood of applications for finance being successful.

### **Keywords**

Fuel economy, financial support, vehicle technologies, emissions, co-benefits, guidance.

### **1. Introduction**

In developing economies, there can be the perception that due to their relatively low total fuel

consumption vehicle fuel economy should not be a priority.

Energy use in land transport will, however, increase by nearly 50% by 2030 and 80% by 2050 (from 2010 levels), and use could increase by up to 130% by 2050 (IEA, 2009). Transport energy use doubled between 1971 and 2006, and nearly all recent growth in oil use has been in the transport sector. Around 95% of energy used in transport derives from oil (IEA, 2009) and the demand for carbon-based fuels is projected to grow more rapidly than in any other sector over the next 25 years. It has been estimated that it could account for 97% of the world's primary oil use over the period 2007 to 2030 (IEA, 2008). This high growth rate is of particular concern given that the transport sector already consumes more than half of global liquid fossil fuels (IEA, 2008).

Total fuel consumption of the international vehicle fleet could increase by more than 5% a year until 2030 as a result of rapid urbanisation and economic growth; more than half of this increase is expected to occur within developing countries (IEA, 2009). The global vehicle fleet is predicted to triple by 2050 with over 80% of the growth occurring in the developing world; it will therefore not be possible to meet the Global Fuel Efficiency Initiative<sup>1</sup> (GFEI) international vehicle fuel economy target (of 4 litres per 100 kilometres) without concerted action in these countries. In many countries, and for all countries on average, fuel economy improvements occurred between 2005 and 2008, but most of this improvement was in OECD countries<sup>2</sup> (IEA/ETP, 2011). This highlights the need for developing countries to adopt policies that address the drivers of fuel consumption, such as inefficient technologies, and the use of large vehicles. While the need for vehicle fuel economy measures is increasing it can be challenging for developing countries to obtain finance to support related activities. It is in this context that the FIA Foundation<sup>3</sup> commissioned the development of an introductory guide to inform national governments about some of the current sources of international funding that are available and could be used to support vehicle fuel economy in developing countries. The guidance document, which was supported by UNEP (the United Nations Environment Programme)<sup>4</sup> is introduced in this paper.

The introductory guide<sup>5</sup> was not intended to be entirely comprehensive, rather it aims to provide a practical 'reference of first resort' for those engaged in identifying funding to promote vehicle fuel economy. It aims to increase awareness of the support that is available and the range of institutions that can provide finance. In the course of the desktop research and interviews with financial institutions that helped to inform the development of the guidance it was, however, apparent that while there are many opportunities for accessing support for vehicle fuel economy activities the level of available support is not sufficient to meet demand or to match the scale of the improvements to vehicle fuel economy that are required to support sustainable development in developing countries.

## 2. The benefits of improving vehicle fuel economy

Improving national vehicle fuel economy can contribute towards the attainment of numerous domestic objectives. The core benefits are outlined below:

**Reducing dependency on expensive (generally imported) oil.** This can increase political independence, energy security and protect economies from the high and volatile price of fossil fuels, increases in which could limit the ability of countries which rely on these fuels to import them. Reducing global automotive fuel consumption by 50% (i.e. by doubling vehicle fuel efficiency in terms of miles or kilometres per gallon) could

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<sup>1</sup> Global Fuel Economy Initiative, <http://www.globalfueleconomy.org/Pages/Homepage.aspx>

<sup>2</sup> It is important to note that there is considerable diversity within 'OECD' and 'non-OECD' country groupings. It is also necessary to note that the energy intensity of the vehicles being used in OECD countries was considerably higher than those in non-OECD countries at the start of the period.

<sup>3</sup> <http://www.fia.com/en-GB/Pages/HomePage.aspx>

<sup>4</sup> <http://www.unep.org/>

<sup>5</sup> The guide can be accessed from:

[http://www.globalfueleconomy.org/Documents/Publications/wp6\\_financial\\_support\\_for\\_fuel\\_economy.pdf](http://www.globalfueleconomy.org/Documents/Publications/wp6_financial_support_for_fuel_economy.pdf).

result in savings in annual oil import bills alone worth over US\$300 billion between 2009 and 2025, and by US\$600 billion by 2050 (based on an oil price of US\$ 100/bbl<sup>6</sup>).

**Improving economic performance.** The development, implementation and enforcement of energy efficient practices can support sustainable economic development – not only by avoiding the costs associated with dependence fossil fuel but also by supporting the creation of employment opportunities. The high price of importing oil can reduce the ability of developing countries to import other commodities, or to invest in areas of economic development. It can also adversely affect foreign exchange balances. In addition, fossil-fuel subsidies in many countries can be costly and even harm a country’s economy and balance of payments, particularly if imported oil prices rise. .

**Safeguarding the quality of life.** High concentrations of air pollutants create health risks, and road transport is the main contributor to emissions of toxic gases in urban areas. Transport is responsible for 23% of global CO<sub>2</sub> emissions from fossil fuels and 15% of all GHG<sup>7</sup> emissions (OECD/ITF, 2010). Enhancing fuel efficiency can reduce health risks from the combustion of fossil fuels and lead to cost savings in health care and fewer productive days lost. It has been estimated that the negative health impacts associated with poor urban air quality in Colombia in 2007, for example, cost the economy approximately US\$698 million a year, which equated to approximately 0.8% of their GDP (Sanchez-Triana et al, 2007).

**Safeguarding the natural environment.** Improving vehicle fuel economy can bring significant environmental benefits, for example in terms of improved air quality and contributing to climate change mitigation. Sources of climate finance are proliferating in response to the fact that CO<sub>2</sub> emissions are increasing. The IEA estimate that CO<sub>2</sub> emissions from the transport sector will increase by nearly 50% by 2030 and by more than 80% by 2050 under a business as usual scenario (IEA, 2009). More than 80% of the predicted growth in CO<sub>2</sub> emissions from the transport sector of developing countries is expected to come from road transport (IEA, 2009). The IEA recommends that policy measures should ‘first and foremost’ consider measures to enhance vehicle fuel efficiency to limit emissions from transport (2010).

The more comprehensive and stringent the vehicle fuel economy measures adopted the greater the scale of ‘co-benefits’ realised.

### 3. Vehicle fuel economy measures

Moving vehicle fleets towards higher fuel economy will be a prerequisite for low carbon, energy efficient economies. The target for improving the average fuel economy (in litre/100km terms) for light vehicles by at least 50% by 2050 (50by50<sup>8</sup>) set by the GFEI, is considered to be achievable through “*existing, cost-effective incremental fuel economy technologies*” (a selection of which are presented in Table 1 below) and behavioural change (Eads, 2011).

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<sup>6</sup> Bbl = barrels. An oil barrel is equivalent to 158.9873 litres.

<sup>7</sup> GHG = Greenhouse Gas.

<sup>8</sup> <http://www.globalfueleconomy.org/Pages/Homepage.aspx>

**Table 1: Examples of the technological improvements that can enhance vehicle fuel efficiency**

Technology	Description	Improvements	Comments
<b>Petrol Vehicles</b>	Spark-ignition (SI) internal combustion engine	On-going improvements in engine and transmission systems Gasoline direct-injection Turbo SI engines	Significant improvements in SI engines are possible: up to 30% improvement in fuel economy compared to existing vehicles.
<b>Diesel Vehicles</b>	Compression-ignition (CI) internal combustion engine	Higher pressure fuel injection Improved management of thermal and exhaust gases Homogeneous charge compression ignition	Improvements in CI engines may be limited by challenges meeting air quality emission standards (particularly for particulates and NOx).
<b>Petrol-Hybrid Electric Vehicles (HEV)</b>	Capturing the energy dissipated in deceleration and braking	Use of more efficient electric motors Regenerative braking Start/stop systems to eliminate engine idling	50% improvement in fuel economy compared to existing petrol vehicles. Vehicles now commercially available. No changes to fuelling infrastructure required.
<b>Other/Non-Powertrain measures</b>	Measures to improve fuel efficiency	Improvements in vehicle aerodynamics Improvements in vehicle tyre rolling friction Vehicle weight reduction	These are well established technologies that can improve fuel efficiency by 10-20%.

Source: Shell (2009).

The technological approaches are only one of many approaches via which vehicle fuel economy improvements can be realised. The main categories of such measures are:

- Maintenance and inspection policies;
- Modifying driver behaviour;
- Improving fuel quality;
- Emissions control technologies;
- Advanced vehicles and fuel; and
- Future vehicles and fuel.<sup>9</sup>

<sup>9</sup> Information about each of these different types of vehicle fuel economy improvements can be accessed from the GFEI Toolkit for Cleaner More Efficient Vehicles. See <http://www.unep.org/tnt-unesp/toolkit/actions/actions.html>.

**Table 2** provides a brief overview of the range of vehicle fuel economy measures that can be implemented. Decisions on their introduction across different categories of vehicle (e.g. light/heavy duty vehicles) and different geographic scales should be part of decision-making, strategy development and funding processes. The level of implementation has been highlighted in the table to give an indication of the respective roles of different actors in improving vehicle fuel economy.

**Table 2: List of policy measures to support vehicle fuel economy improvement**

Type of policy measure	Policy measure	Level of implementation	Impact on fuel economy			
			Improve vehicles	Improve fuels	Improve driver behaviour	Optimise infrastructure
<b>Economic</b>	Fuel taxes	National	<b>X</b>	<b>X</b>	<b>X</b>	
	Vehicle taxes	National	<b>X</b>			
	Financial incentives to speed up fleet turnover	National	<b>X</b>	<b>X</b>		
<b>Technological</b>	Improvements in new vehicle fuel economy	National	<b>X</b>			
	Develop new fuels	National		<b>X</b>		
	Develop smart infrastructure	National/ Local				<b>X</b>
<b>Information</b>	Driver training to in promote more fuel efficient driving practices	National/ Local/ Private				<b>X</b>
	Marketing campaigns to promote the use of green vehicles	National/ Local/ Private	<b>X</b>			
	Improved purchaser information	National/ Private	<b>X</b>			
	The establishment of regional fuel economy frameworks	National/ Local	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Regulatory</b>	Fuel economy standards (regulatory standards and voluntary targets)	National/ Local	<b>X</b>			
	Improve vehicle inspection and maintenance	National/ Local	<b>X</b>			
	Better regulation of the import of used vehicles	National	<b>X</b>			
	Regulatory incentives to speed fleet turnover	National	<b>X</b>			
	Testing new drivers in fuel efficient driving and awareness campaigns	National				<b>X</b>

To have the maximum impact a combination of the policy measures listed in

**Table 2** above should be introduced; individual interventions in isolation may not have the desired impact upon vehicle fuel economy. Economic incentives to increase vehicle fuel economy may, for example, need to be combined with regulatory measures to have an impact upon the demand for fuel efficient vehicles. A mix of more and less expensive measures can bring significant results and this should be considered when investigating potential funding sources. Efforts should also be made to integrate vehicle fuel economy measures with interventions designed to reduce the demand for travel and to shift it to more efficient modes of transport.

The measures outlined in the table above can in principle be adopted by all countries, but as with other types of measure, if they are to be effective then the specific context (such as the economic conditions and vehicle purchasing habits) in which they are to be implemented needs to be considered and the intervention tailored accordingly.

Vehicle fuel economy measures should form part of any comprehensive transport strategy. Indeed UNEP (2011) has outlined a number of ‘enabling conditions’ for the transport sector to play a role in a transition to a ‘green economy,’ a framework in which vehicle fuel economy measures have an integral role to play. These ‘key enabling conditions for green transport’ are listed below, along with the associated links to vehicle fuel economy:

- a) **Design appropriate regulations, planning and information provision.** Vehicle fuel economy regulations can be adopted to influence the usage, type, specifications and number of vehicles permitted. Regulations can relate to fuel economy, vehicle emission levels, fuel quality, vehicle inspection regimes, and measures to encourage high vehicle occupancy. Information provision can also assist through influencing driving behaviour e.g. through eco-driving for commercial vehicle fleets. The GFEI can provide support for national and regional policy-making, and evidence of where different measures have been implemented can be accessed via the GFEI toolkit.<sup>10</sup>
- b) **Set the right financial conditions and economic incentives.** On a domestic level, economic incentives can be used to influence the types of both vehicles and fuels used. Fuel subsidies have a negative impact upon vehicle fuel economy, reducing the financial incentive to use fuel efficiently. A key element of setting the right financial conditions for vehicle fuel economy in many developing countries will, however, necessarily involve leveraging external financial support. While many opportunities for accessing support for vehicle fuel economy exist the level of available support is still not sufficient to meet demand. The operations of international and national financial institutions do not, for example, tend to fully recognise the need for sustainable low carbon transport, with the majority of resources being channelled into infrastructure, particularly in road building.
- c) **Ensure technology transfer and access.** Technology can be used to enhance vehicle fuel efficiency so there is benefit to promoting the use of existing technologies that can enhance efficiency, removing more conventional inefficient vehicles, and investing in new technologies. The fuel economy of the vehicle fleet could be doubled by learning from best practice and diffusing existing energy efficient technologies.
- d) **Strengthen institutions and capacity.** Political institutions, financial frameworks, and technical capacity can be built through the pursuit of vehicle fuel economy measures.

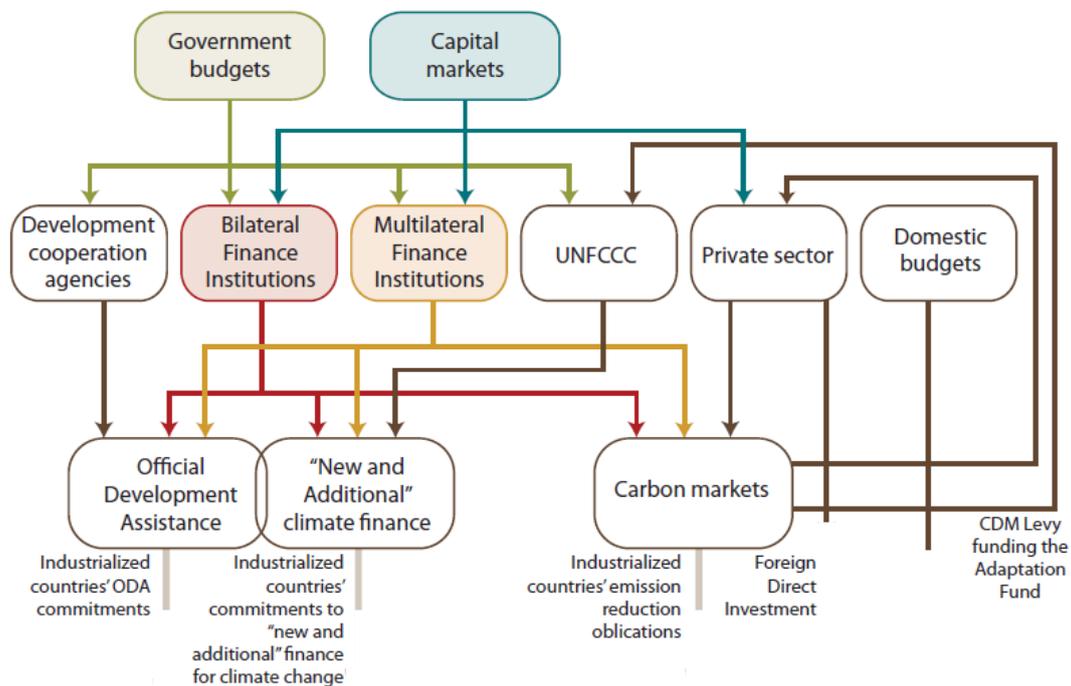
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<sup>10</sup> The GFEI Toolkit can be accessed from <http://www.unep.org/transport/gfei/autotool/index.asp>

#### 4. International financial support

The development and implementation of vehicle fuel economy measures can be supported by international finance from a wide range of sources. Multilateral, bilateral, public, private, tied and untied<sup>11</sup> financial and technical support can be obtained to support vehicle fuel economy measures in developing countries across the world. Figure 1 gives an overview of the main sources of finance (domestic and international) that can in theory be accessed by the national governments of developing countries to support these measures.

**Figure 1: Overview of available sources of international finance that could be used to support vehicle fuel economy measures. Source: Adapted from Atteridge et al, 2009.**



The sources of funding vary significantly in scale, scope and their eligibility criteria. The FIA Foundation commissioned study did not extend to a comprehensive review of related instruments, but rather focused on a broad selection of funds that disburse grants, loans and other forms of financial, as well as technical, support for vehicle fuel economy measures in developing countries.

The authors' review of the strategies and project portfolios of various financial institutions indicate that financial support is potentially available for vehicle fuel economy measures, and that the availability of finance from these sources is likely to increase. This is linked to the increasing international emphasis on the need for climate change mitigation, as well as an expanding recognition of the imperative to improve energy efficiency and reduce the contribution of the transport sector to GHG emissions. It is important to note, however, that while there are many sources of funding available it can still be challenging to obtain finance for vehicle fuel economy measures. This relates

<sup>11</sup> Support that is 'tied' is financial or technical support that is provided with specific conditions attached to its use or with other associated obligations with which the recipient must comply. In contrast 'untied' aid is provided with no associated commitments or obligations.

both to the total volume of funds available and the types of economy-wide interventions competing for these resources. The assessment processes and eligibility criteria of funding streams and mechanisms can also be a barrier to access to funding for vehicle fuel economy measures. There is, for example, an historic preference for project based approaches, and the nature of many vehicle fuel economy interventions tends not to be well suited to this model. The relative difficulty of demonstrating additionality and Measuring, Reporting and Verifying the emission reductions associated with vehicle fuel economy measures can pose a further barrier to accessing related finance.

The need to obtain co-financing can also be a barrier, although not one that is limited to vehicle fuel economy interventions. Many sources of funding require a certain proportion of ‘co-funding’ to be obtained from another source. Sometimes referred to as ‘match funding,’ co-finance is defined by the Asian Development Bank as ‘*financing mobilised from sources other than the borrower or project sponsors to augment its own assistance.*’ The potential sources of co-finance are as broad as the institutions featured in Figure 1 above. Normally there are no restrictions on the organisations from which co-finance can be sourced. The main purpose for co-finance is to increase the impact of finance invested but it can have other benefits, such as establishing better co-ordination between financial institutions.

Institutions requiring co-finance may provide suggestions on where co-finance can be leveraged.

### **Ways to increase the likelihood of obtaining financial support**

There is a large and growing volume of international finance that is potentially available to support vehicle fuel economy activities. National governments that are seeking to access this finance must, however, be aware that vehicle fuel economy measures are just one of many types of measures that can be adopted to reduce emissions from transport. The transport sector is also just one of many sectors where climate change mitigation activities must take place. There are therefore a wide range of interventions that are competing for financial and technical support. Financial institutions should be approached recognising the high level of competition for climate finance.

The authors have identified a number of ways in which applicants can increase the volume of applications, and the success of the applications, made. These are summarised below:

**Increase domestic recognition of the need for vehicle fuel economy.** A number of developing country governments perceive that because their fuel consumption is relatively low, enhancing vehicle fuel economy should not be a priority. Energy generation and distribution does, however, tend to be very inefficient in developing countries and so there is much scope for improvement. Improved fuel economy can put them on a lower carbon trajectory and provide a foundation for sustainable growth. There are also a number of wider environmental, social and economic benefits which are directly linked to the Millennium Development Goals (MDGs)<sup>12</sup>. Co-operation between financial institutions and developing countries is sometimes guided by the MDGs and so developing countries need to be aware of, and communicate, these linkages.

**Have a supportive framework in place.** A number of financial institutions regard a lack of domestic regulatory systems that support vehicle fuel economy, and their enforcement, as barriers to the effective adoption and maintenance of associated projects. Recipient governments therefore need to have structures in place that are conducive to energy efficiency, and this requires broad and widespread support for vehicle fuel economy measures. Developing country governments could demonstrate initiative in this area by developing a foundation for vehicle fuel economy investments. This could include actions such as phasing out leaded fuel, lowering sulphur levels in fuels, and developing systems to control conventional vehicle emissions.

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<sup>12</sup> <http://www.un.org/millenniumgoals/reports.shtml>

**Develop a robust business case.** Vehicle fuel economy measures are just one of many types of climate change mitigation instruments that are competing for finance. Applicants should therefore be able to demonstrate from an early stage why proposed vehicle fuel economy activities are considered to be the most effective type of intervention. A key factor that needs to be conveyed when pursuing climate finance is potential emission reductions, and so a business case should include, for example, details of current emission levels and the potential impact that the proposed intervention could have on these. There are a number of challenges to estimating emission reductions from climate change mitigation activities but there is also a growing body of guidance on how to do so. There are also a number of institutions that can provide related support. The GFEI, for example, provide direct national level support in this regard, advising on issues including data collection and the calculation of baselines for vehicle fuel economy.<sup>13</sup> The guide provides links to a number of different publications introducing the range of vehicle fuel economy measures available which can be a good starting point for identifying measures that could be appropriate. The nature of such measures should be considered in the context of regional and national data and trends on vehicle fuel economy and associated measures, as what works in one context will not necessarily be effective in another. This is an area where national contact points for financial institutions can also provide guidance.

**Initiate dialogue with financial institutions from an early stage.** Many financial institutions take a ‘bottom up’ approach to supporting projects. A proactive approach from governments, in which developing countries specifically state the need for support to enhance vehicle fuel economy, can therefore be welcomed by financial institutions and be beneficial to governments. Financial institutions can, for example, guide them through the process, and also provide support to develop projects and to prepare applications. This communication should be used to communicate the need for such projects, how they fit into wider strategies, and to develop them in alignment with both the domestic context and the strategies of financial institutions.

**Be an informed client.** The application procedure for sources of climate finance can be very bureaucratic and eligibility criteria stringent. Applicants should therefore be fully aware of the criteria and requirements of each institution. A number of climate funds, for example, require that applicants have a process in place for monitoring the impacts of interventions on CO<sub>2</sub>.

**Collaborate with the private sector.** A number of financial institutions provide finance to the private sector - indeed a number are private sector driven - but many vehicle fuel economy interventions need to be led by the public sector. It could therefore be worthwhile for the public sector to collaborate with the private sector, such as vehicle manufacturers. This could have the effect of increasing access to finance, and engagement could also have the potential to lead to broader vehicle fuel economy gains. It could also help countries to avoid barriers that have been experienced in the past, for example where industry has sought to delay the introduction of vehicle fuel efficiency standards.

**‘Package’ vehicle fuel economy measures into a wider ‘bundle’ of measures.** A number of financial institutions may be likely to reject vehicle fuel economy interventions if proposed as individual projects. This is true of single projects in general and is linked in part to the relatively high resource intensity of managing stand-alone interventions. Vehicle fuel economy measures should therefore be packaged within a wider strategy or programme of measures, which could perhaps be collectively targeted at fulfilling objectives such as economic development or poverty alleviation rather than at mitigating against climate change. In instances where packaging vehicle fuel economy measures may not be appropriate, singular measures might be more likely to obtain funding if they’re conducted as a ‘pilot study.’ There are also funding streams for capacity building, which is an important component of fuel efficiency policy development and implementation.

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<sup>13</sup> For more information about the support provided by the GFEI see:

<http://www.globalfueleconomy.org/Pages/Homepage.aspx>

**Follow the UNFCCC<sup>14</sup> process.** The UNFCCC is currently negotiating a range of potential sources of funding that could be used to support vehicle fuel economy measures. These include a Green Climate Fund (GCF), Nationally Appropriate Mitigation Actions (NAMAs)<sup>15</sup>, and a Programme of Activities (PoA) approach for the Clean Development Mechanism (CDM)<sup>16</sup>. These could provide more support for vehicle fuel economy interventions than the current CDM, and financial institutions are already looking to these emerging sources of finance as a way of strengthening their activities in the field of low carbon transport. It is also important to note that while vehicle fuel economy measures can be presented to the UNFCCC to try to secure support for their development and implementation, they can also be reported to the UNFCCC if they have, or are being, implemented unilaterally (without international support). This enables developing countries to demonstrate that they are engaged with the UNFCCC process and are proactively taking domestic actions to reduce their GHG emissions. This presents countries in a positive light to both international institutions and other countries.

## 5. Conclusions

While the demand for vehicle fuel economy measures is increasing it can be challenging for developing countries to obtain finance to support them. The FIA/UNEP guide provides a practical and concise ‘reference of first resort’ for those engaged in securing funding to promote vehicle fuel economy. In doing so it aims to increase awareness, and understanding, of the support that is available.

It is important to note that while there are many opportunities for accessing support for vehicle fuel economy activities the level of available support is still not sufficient to meet demand. The operations of international and national financial institutions do not, for example, tend to fully recognise the need for sustainable low carbon transport, with the majority of resources being channelled into infrastructure, particularly road building.

While there are many sources of funding available it can still be challenging to obtain finance for vehicle fuel economy measures. This relates both to the total volume of funds available and the types of interventions competing for these resources.

Developing countries should demonstrate that they are engaged with the UNFCCC process and are proactively taking domestic actions to reduce their GHG emissions. This presents countries in a positive light to both international institutions and other countries.

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<sup>14</sup> United Framework Convention on Climate Change

<sup>15</sup> NAMAs are voluntary emission reduction measures and are likely to be the main vehicle for climate change mitigation activities under the UNFCCC after 2012. Forty-four developing country Governments have communicated intentions to conduct NAMAs to the UNFCCC and both the content of these submissions and the UNFCCC’s working definition of the NAMA concept highlight the applicability of the concept for climate change mitigation activities in the land transport sector. This includes opportunities for supporting vehicle fuel economy policies, projects and programmes. For an introduction to the NAMA concept see GIZ (2011), and for an overview of the content of NAMA submissions made from a land transport perspective see Binsted (2011).

<sup>16</sup> <http://cdm.unfccc.int/>

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