Workshop on the Finalization of Leaded Gasoline Phase-out and on Urban Air Quality in Countries of Central and Western Africa

Dakar, Senegal ? June 14 – 15, 2005

Workshop recommendations

Session 1– Finalization of Leaded Gasoline Phase-out – Technical Specifications and Harmonization of Fuel Quality

The countries of Western and Central Africa have made very significant progress with leaded gasoline phase-out. The main objective of the 2001 Declaration of Dakar, namely the complete phase-out of leaded gasoline by 2005, should be achieved in the entire region.

Countries with refineries:

- The refineries in Nigeria, Cameroon, Ghana, Côte d'Ivoire, and the Republic of Congo have already switched to unleaded gasoline. The representatives of the refineries in Senegal and Gabon have confirmed their decision to switch to unleaded gasoline in July and October 2005, respectively.

- The only decision not yet known is that of the Government of Angola regarding the Luanda refinery. The problem of the quality of unleaded gasoline has not been resolved (93 RON, under the SADDEC Agreement, and /or 91 RON; with or without MMT).

Importer countries:

- The representatives of Benin, Burkina Faso, and Guinea confirmed that their countries have already switched to unleaded gasoline.

- The representatives of the Democratic Republic of Congo and of Togo confirmed that their countries have decided to import unleaded gasoline only.

- The representatives of Mali, Gambia, and Niger confirmed that their countries will stop importing leaded gasoline as soon as the supplier refineries in the region are in a position to provide them with unleaded gasoline.

Refiners expressed their concern regarding the dismantling of gasoline lead additive facilities (TEL). They are willing to participate in a survey that may be conducted by IPIECA in the months ahead on this process, as well as on its technical and financial aspects. The survey should establish guidelines and procedures to be followed, as well as investments to be made. The participants asked that the World Bank take into account the findings of the survey when considering possible financial assistance. In their poverty reduction programs, countries should establish priority environmental actions, including measures to eliminate the infrastructures that will no longer be used for gasoline lead additive purposes.

In an initial effort to harmonize unleaded gasoline octane levels most of the governments in the region have decided to adopt a single grade (91 RON) of unleaded regular gasoline. With the exception of Nigeria (90 RON) and special gasoline used by fishermen (87 RON), most of the unleaded gasoline that will be sold in this region will be 91 RON.

There was a consensus among persons attending the meeting that increasingly lower limits should be established with respect to the sulfur content of gasoline and diesel fuels. In their view, these limits should be determined as soon as possible, so that air quality improvement programs can be launched. However, establishment of the maximum sulfur content will depend on the configuration of refineries, the automobile fleet, the amount of pollution in cities, and in general, the economic conditions prevailing in the countries. The fact that significant investments will need to be made by refineries makes the need for this assessment even greater.

Efforts to improve the quality of fuel should be accompanied by measures to reduce fuel adulteration. Policies to reduce air pollution, including improving the vehicle fleet, cannot be successful without ensuring the quality of the fuel supplied to consumers. The costs associated with the illegal sale of fuel and the systematic adulteration of its quality are very high, from both an environmental and public finance standpoint. The participants agreed to attend a workshop to address these specific problems.

Pursuant to the June 2001 Declaration of Dakar, IPIECA presented a methodological approach for the development and harmonization of technical specifications in the region. This approach is a gradual one, with specification levels defined as AFRI-1, AFRI-2, AFRI-3, etc., and involves the adoption of increasingly restrictive limits in keeping with developments in the different countries of the region. The simultaneous implementation

of these changes in countries with shared logistical and petroleum supply infrastructures is recommended.

Workshop participants recommended the development of a process of consultation between IPIECA and refiners, with a view to drafting a proposal on the harmonization of technical specifications in the region which can be presented at the conference to take place around March 2006, in Cape Town.

In view of the progress made with leaded gasoline phase out, the participants recommend that attention be turned to improving the automobile fleet, in particular to regulations governing the age of vehicles to be imported and the proper functioning of catalytic converters in gasoline-powered vehicles that are added to the fleet (new and used cars). The monitoring of vehicle emissions might be needed in order to adopt measures aimed at withdrawing heavily polluting vehicles from urban traffic. Public information campaigns should be organized on measures linked to the new regulations applicable to vehicles.

Session 2: Improving the Urban Air Quality

Any intervention aimed at reducing air pollution should take into account the special conditions existing in each city. In particular, it is important to establish the pollutants of concern and their most likely sources. This entails, amongst others, measuring ambient concentrations of common air pollutants (such as particulate matter, oxides of sulfur and nitrogen, carbon monoxide, ozone, and lead), identifying which pollutants are present at concentrations high enough to cause a public health concern, and estimating which emission sources are likely to be major contributors to the elevated ambient concentrations.

Air Quality Management Plan. For each city involved, the ability to implement a meaningful air quality management plan is important. Such a plan would facilitate not only the preparation of a list of the critical urban air pollutants and their sources; it could also be used to study the different options for reducing air pollution, in consultation with the various actors.

Air quality management plans offer a fail-safe mechanism for avoiding the adoption of solutions that may be too costly, ill-suited to problems, or would create difficulties at the implementation level.

In some cases, the promotion of public transport that is clean, attractive, and affordable could contribute significantly to reducing both air pollution and congestion in urban areas. This fact is being brought to the attention of governments.

This workshop has already facilitated the identification of four common areas:

1. Catalytic converters: At the conference, it was acknowledged that once the transition to unleaded gasoline has been completed (by the end of 2005 in virtually all the countries of the region), all gasoline-powered vehicles newly registered in each country from that point on should be equipped with functioning catalytic converters. Of course, this recommendation applies to all imported vehicles, whether they come from Europe, Asia, or North America. In the case of imported vehicles, this recommendation does not entail any additional cost, in as much as these vehicles already have catalytic converters. It is also important to ensure that exporter countries are kept abreast of developments. It is not advisable to re-equip the old fleet of vehicles with catalytic converters. In addition, vehicle replacement strategies need to be carefully targeted at proven high polluters to be cost effective. Awareness-building campaigns aimed at providing information to the public on the benefits of good vehicle maintenance should also be conducted.

2. The following observation can be made with respect to two-stroke engines:

In several large cities, the pollution created by two-stroke engines accounts for a significant portion of atmospheric pollution. In the case of Cotonou, the presentation made at the conference showed that daily CO emission stood at 83 tons, 59 percent of which is generated by two-wheelers, and daily HC emission stood at 36 tons, virtually all of which is generated by two-wheelers. In Ouagadougou, the number of motorized two-wheelers is increasing sharply, given that more than 25,000 new mopeds are sold each year, most of which have two-stroke engines. Two-stroke engine vehicles also generate significant levels of fine particulate matter (PM), a pollutant that is likely to have the greatest cost in terms of damage to human health. Therefore, an evaluation of these PM levels needs to be conducted in these cities.

The difference in cost between two-stroke and four-stroke engines is relatively small, and will narrow further over time as a result of economies of scale. It is important to encourage the use of four-stroke engines through tax incentives (in particular, by reducing the import taxes on four-stroke engines) and limiting, to the extent possible, the number of licenses granted for the import of additional two-stroke engines, particularly those with engines larger than 50 cc.

Measures should also be adopted to prevent the use of improper oils. Specifically, the sale of non-certified oils, usually sold in bulk, should be banned. In order to ensure that these measures can be effectively observed, it is extremely important to conduct meaningful awareness-building campaigns that target drivers on the one hand, and points of sale, on the other. The Asia experiments, which took the form of organized clinics, are extremely appealing and could be replicated.

Lastly, it is important to bear in mind that all these measures can only be fully effective when they are accompanied, or at least preceded, by a commitment from the government authorities to prohibit the introduction of additional two-stroke engines in the vehicle fleet.

3. Diesel: In several Sub-Saharan African countries, the motorized vehicle fleet is mostly diesel-powered (not only buses and trucks but also cars). Lowering pollution from this source therefore entails improving the actual quality of fuel, the functioning of engines, and the maintenance and use of vehicles (in many cases, vehicles are used beyond their maximum capacity).

- Reduction in diesel sulfur content down to 500 wt ppm is likely to help reduce particulate emissions from vehicles in operation. It is noted that governments should study, on a case-by-case basis, the need for and consequences of reductions in sulfur levels (particularly in terms of investments in construction of new hydrodesulphurization units).

- A limit on fuel sulfur of 500 wt ppm will pave the way for EURO II diesel engines, resulting in further reduced emissions.

- For further reductions in sulfur content (i.e., below 500 ppm), improving diesel-operated vehicles through the use of new technologies and better maintenance of these vehicles will be a prerequisite.

4. This workshop also facilitated greater awareness of the level of urban pollution in the cities of Lagos, Ouagadougou, and Cotonou, as well as the identification for each of the type of support that the Sub-Saharan Africa Clean Air Initiative can provide. Funding for these studies should be provided following the completion of the terms of reference, planned some time prior to September 2005. These studies will be aimed in particular at:

- Monitoring air quality for up to one year and strengthening, through this monitoring, local capacity in this area;

- Building awareness among all the actors concerned, and in the case of cities experiencing a particular problem with mopeds (Ouagadougou and Cotonou), conducting clinics with moped drivers;

- Developing an air quality management plan, using a participatory approach, which will address the health effects of the various scenarios (progressive replacing of two-strokes with four-strokes, improving the quality of the oil used, reducing sulfur in diesel, greater use of public transport, etc.).

5. Beyond the financing which should be soon granted for conducting studies in Cotonou, Ouagadougou, and Lagos, the Air Quality Initiative in Sub-Saharan Africa (CAI-SSA) is ready to consider the funding of studies in other cities of the Region. To this purpose, interested parties must address their request for support directly to the Initiative, describing in particular how the recommendations and measures, defined in the studies under CAI-SSA financing, would fit into the national/local Air Quality Management strategy.

6. The presentation by EPA Ghana on the air quality monitoring project of Accra generated strong interest among the participants.