



OVERVIEW OF THE IMPACT OF FUEL QUALITY ON SOOT-FREE BUS PROJECT IN ACCRA



Presentation Outline

- Background
- Overview of Ghana's Roadmap on Improving Fuel Quality
- Comparison of Ghana's Fuel Specifications vis-a-vis ARA Roadmap
- Benefits of Fuel Quality
- Impact of Fuel Quality on Soot-free Bus Project
- Challenges and Way Forward



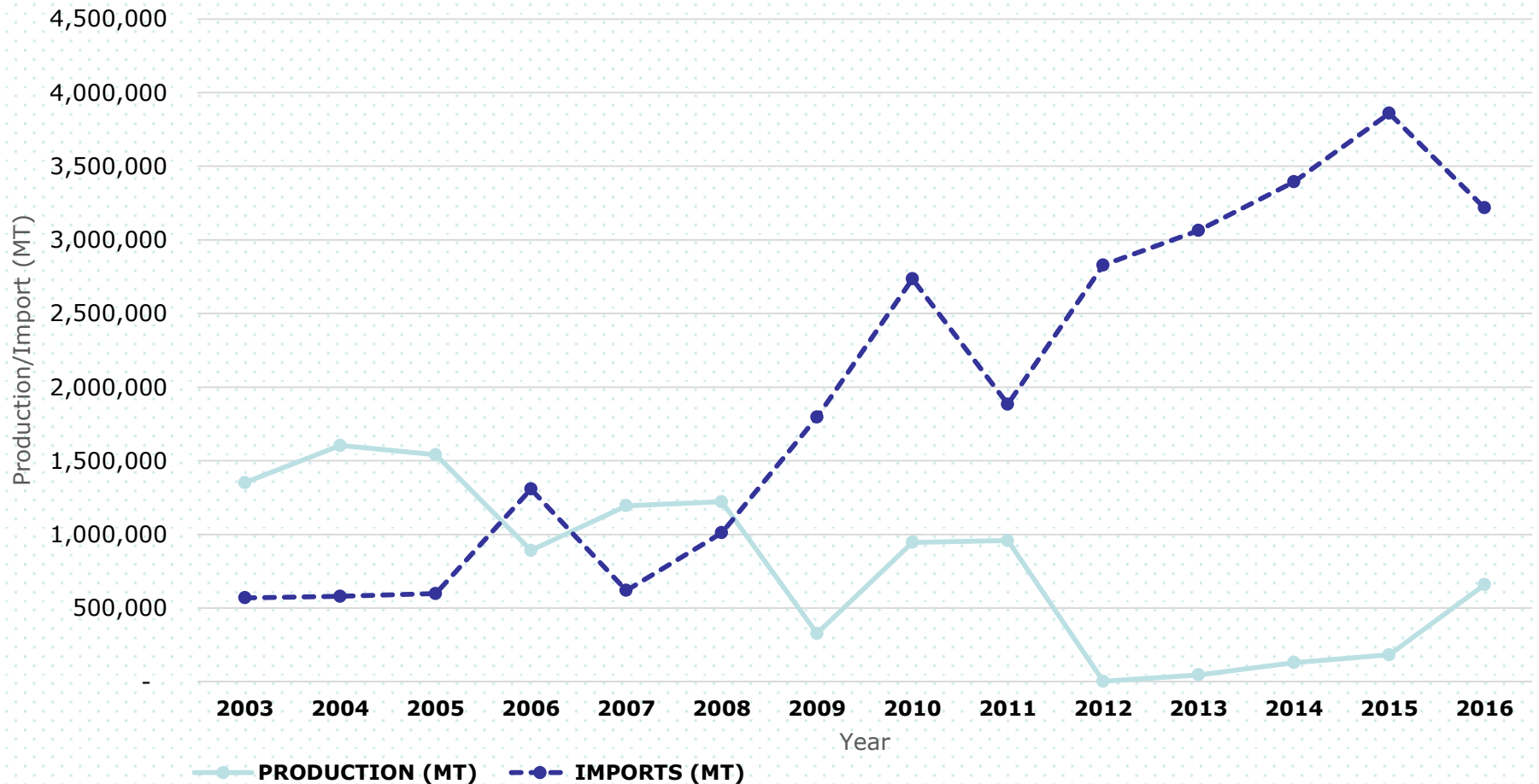
Background

- Average Annual consumption of petroleum products in Ghana is about 3.3 million metric tonnes.
- Imports far exceed production (as per Figure 1). Gasoline/Diesel mostly imported from Europe and LPG imported from Equatorial Guinea, DR Congo, Nigeria and Spain.
- Ghana has one major refinery and two mini-refineries : TOR with production capacity 45,000bpsd, Platon Gasoil with capacity 1,700bpsd and Akwaaba Link with capacity of 4,500bpsd.

Background



PRODUCTION vs IMPORTS (Figure 1)



Background

- Dirty Fuels and Old vehicles are a Health burden



- Vehicular exhaust emissions are a major contributor to air pollution in Ghana. The largest emitters being older vehicles
- Vehicle pollution is linked to premature mortality from cancer, stroke, heart and lung diseases.
- Vehicle pollution also leads to lost work days, school absenteeism, and decreases in agriculture productivity.

Overview of Ghana's Roadmap on Improving fuel quality



December 2003

- Lead in Gasoline was phased out

2013

- National Standard Sulphur level in diesel reviewed from 10,000ppm to 3,000ppm (Note: import specifications restricted to 5,000ppm since 2008)
- The National Standard Sulphur level in Petrol maintained at 1,000ppm
- The National Standard for Cetane index revised from 40 in 2005 to 45 in 2013.

Overview of Ghana's Roadmap on Improving fuel quality



- Following the workshop organized by UNEP in Abuja, Ghana accelerated the process of revising the sulphur level in fuel to comply with AFRI-4 Specifications.
- Sub-regional workshop on sulphur reduction in fuels held in Ghana from October 31-November 1, 2016.
- Technical Committee on fuel standards in Ghana has revised standards for both diesel and gasoline.
- Sulphur levels in diesel has been revised from 3,000ppm to 50ppm effective 1st July, 2017
- Sulphur level in gasoline from 1,000ppm to 50ppm effective 1st July, 2017

Comparison of Ghana's Current Specifications vis-à-vis ARA Roadmap



Gasoline	Ghana	AFRI-1	AFRI-2	AFRI-3	AFRI-4
Ron, min	91	91	91	91	91
Mon, min		81	81	81	81
Lead Content	Unleaded	Unleaded	Unleaded	Unleaded	Unleaded
Sulphur Content, % mass, max	0.1	0.1	0.05	0.03	0.015
Benzene content, % vol, max	1.5	To be reported	To be reported	5	1
Diesel	Ghana	AFRI-1	AFRI-2	AFRI-3	AFRI-4
Sulphur content	0.3	0.8	0.3	0.05	0.005
Density @15°C Kg/M ³	820/870	800/890	820/880	820/880	820/880
Cetane Index	45	42	45	45	45



What are the Benefits of Fuel Quality ?

1. Reduced Emissions

2. Healthier Population
– guarantees
Economic Growth

Benefits

3. Better Investor
Confidence

4. Meet internationally
agreed goals eg UNEP
(Afri 4 by 2020)



What are the Benefits of Fuel Quality?

5. To match fuel quality with vehicle technology

6. Economic Advantages-facilitate regional trade and cooperation (Co-loading)

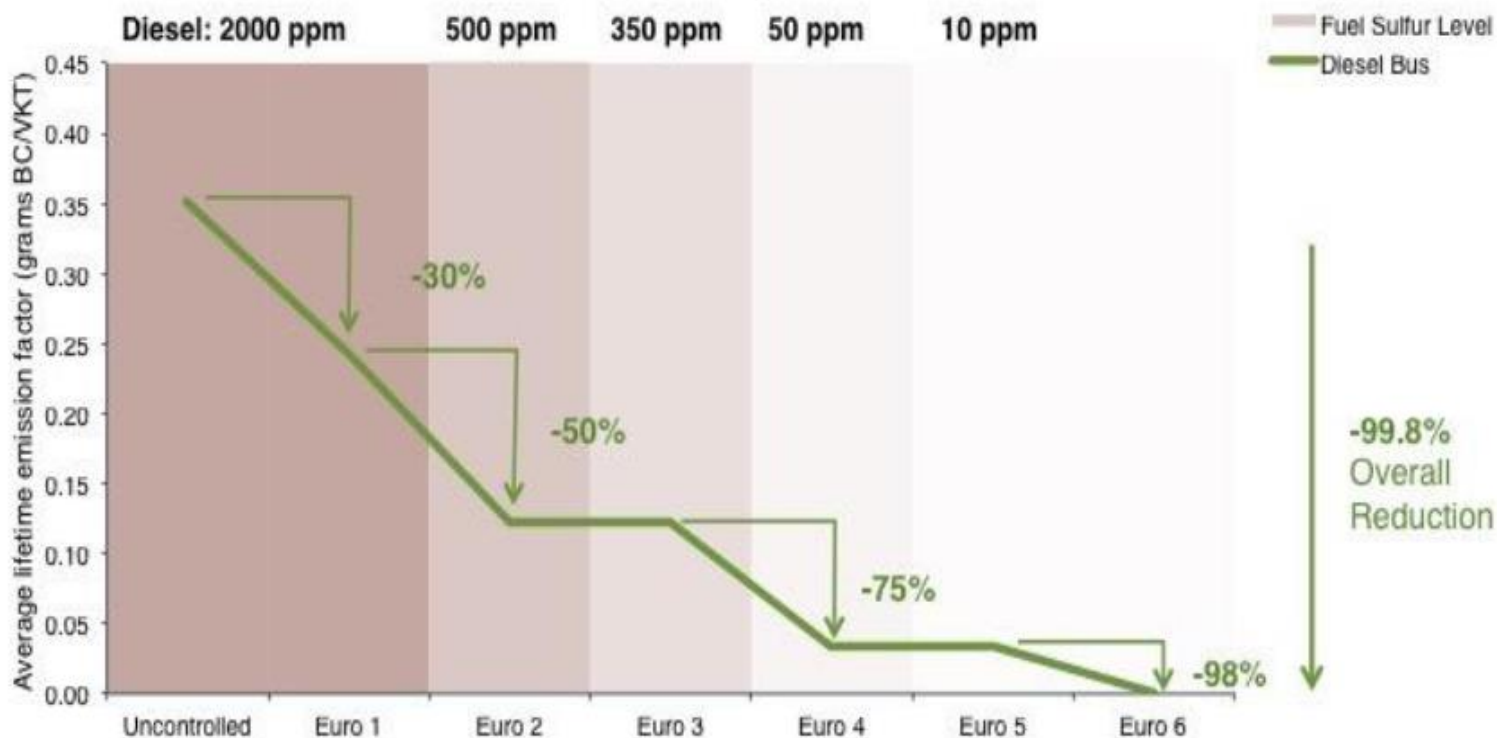
Benefits

7. Environmental concerns

8. Lower costs for the end consumer and government leading to a corresponding improvement in economic growth.

Impact of Fuel Quality on Soot-Free Bus Project

- The Figure below shows stages of black carbon emissions control for urban bus fleets in Europe



Source: International Council on Clean Transportation (ICCT), 2015

Impact of Fuel Quality on Soot-Free Bus Project



- A country with access to 50ppm diesel sulphur content can reduce black carbon by 75% compared to a country with access to 500ppm.
- A country with access to 10ppm diesel sulphur content can reduce emission in diesel black emissions by 98%.
- Diesel black carbon can be reduced through changes in vehicle engines and fuels.

Challenges



- Upgrading existing refineries to meet agreed standards. TOR is currently able to refine at 1500ppm.
- An investment of about USD120m required to upgrade TOR to produce fuel quality of 50ppm or less by 2020.
- Market for TOR's products until 2020.
- Aged vehicles with older engine technologies will not enable full benefits of improved fuel quality.



Way Forward

- Engagement of stakeholders on implementation of the revised specifications.
- Import restrictions on aged vehicles.
- Economic Incentives and Disincentives

