Calculation of fuel consumption and CO$_2$ emissions in Côte d'Ivoire: Methodology and Results

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Sub-regional workshop on sharing results and policy strategies for the implementation of the Global Fuel Economy Initiative in ECOWAS countries

Abidjan, July 11-13, 2017

Le GFEI

GFEI: Global Fuel Economy Initiative

- L'Initiative Mondiale pour l'Economie du Carburant (GFEI)
  - Partenariat de 6 organisations

  - Promouvoir les améliorations réelles d'économie de carburant et le déploiement maximal des technologies d'économie de carburant

  - Aider les gouvernements et les acteurs du transport à promouvoir une plus grande économie de carburant

Source: https://www.globalfueleconomy.org/

GFEI: Le problème

Le nombre de véhicules légers sur la planète pourrait tripler de 2010 a 2050, avec la plus grande partie de cette croissance observée dans les économies émergentes

2030 2X v. 2005_____

2050 3X v. 2005_____
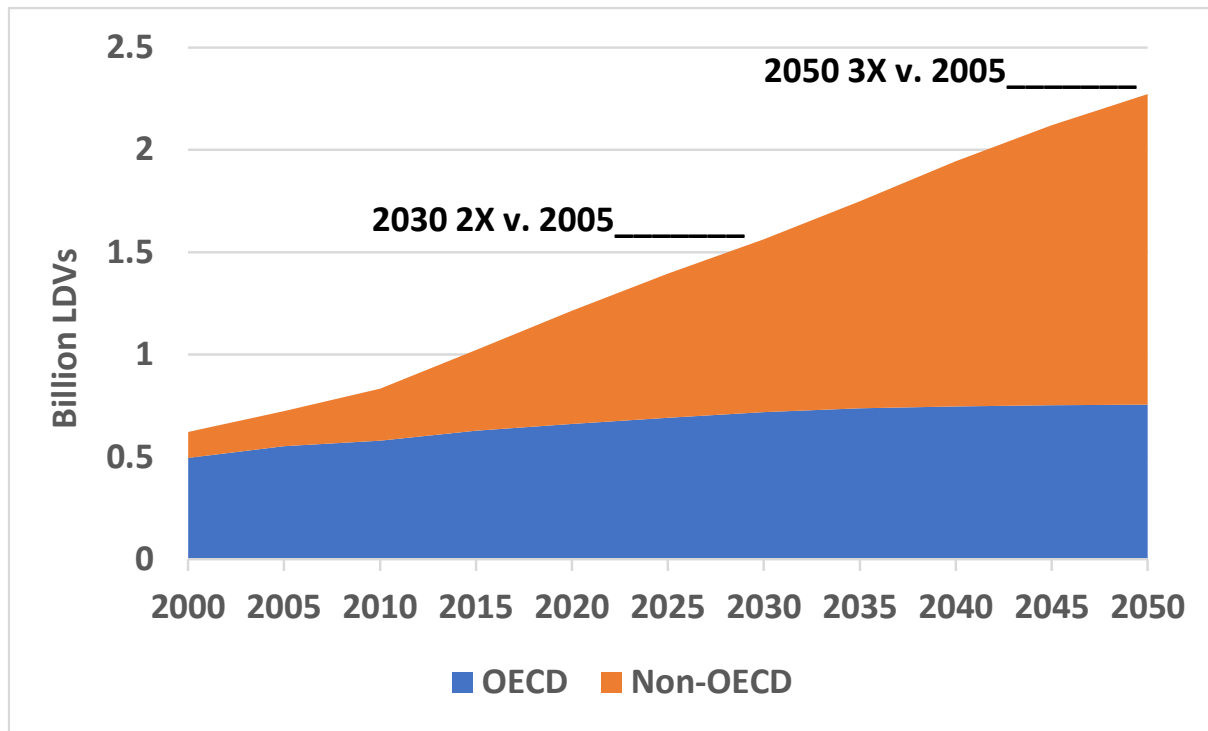
- Pollution de l'air ambiant
- Changement climatique
- Encombrement des voies
- Accidents

Etc.

GFEI: Objectifs

Doubler l'économie moyenne de carburant de tous les véhicules neufs d'ici 2030
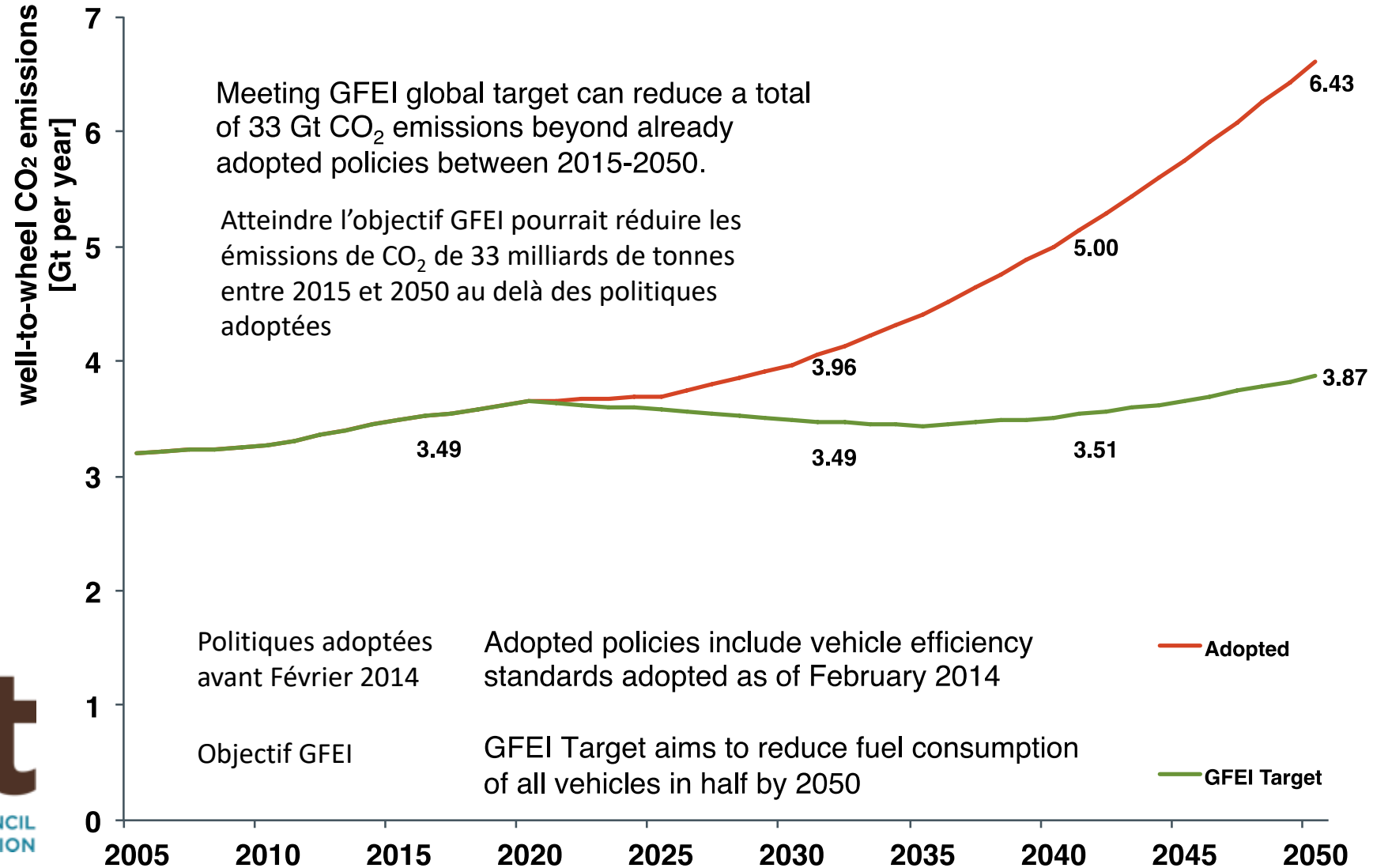
Doubler l'économie moyenne de carburant de tous les véhicules d'ici 2050

Atteindre la cible de 100 pays s'engageant a agir pour l'économie de carburant, conformément aux objectifs du GFEI ('*100 pour 50 d'ici 50*')

Source: https://www.globalfueleconomy.org/

Atteindre l'objectif GFEI stabilisera les émissions de CO_2 liées aux véhicules légers , malgré la croissance du parc automobile

Meeting GFEI global target can reduce a total of 33 Gt CO_2 emissions beyond already adopted policies between 2015-2050.

Atteindre l'objectif GFEI pourrait réduire les émissions de CO_2 de 33 milliards de tonnes entre 2015 et 2050 au delà des politiques adoptées

well-to-wheel CO_2 emissions [Gt per year]

- 6.43
- 5.00
- 3.96
- 3.49
- 3.49
- 3.51
- 3.87

Politiques adoptées avant Février 2014	Adopted policies include vehicle efficiency standards adopted as of February 2014
Objectif GFEI	GFEI Target aims to reduce fuel consumption of all vehicles in half by 2050

— Adopted
— GFEI Target

2005 2010 2015 2020 2025 2030 2035 2040 2045 2050

THE INTERNATIONAL COUNCIL
ON CLEAN TRANSPORTATION

Avantages de l'économie de carburant

| Réduction des émissions de CO_2 | Amélioration de la qualité de l'air | Réduction de la dépendance en pétrole | Economies financières |

300 fewer power stations
The **33Gt** of CO_2 that could be saved between 2015 and 2050 is roughly the equivalent of closing **300** coal power stations over the same time period.

From associated improved vehicle emissions standards

$2 trillion savings
A total of **$2 trillion** could be made in fuel savings by 2025, **$500 billion** of which would fund the costs of initiating a transition to electric vehicles.

Source: https://www.globalfueleconomy.org/

Côte d'Ivoire new vehicles fleet analysis

Côte d'Ivoire new vehicles fleet analysis

Data

The 2015 database

Type Commercial	Genre	Marque	Places	Puissance	Carburant	PTAC	Cylindrée (cm3)	Consommation L/100km	Emission de gaz CO2 (g/km)	Nombre
RANGER 4*4 DC	CAMIONNETTE	FORD	5	10	GAS-OIL	2937	2,493			161
DUSTER	VOITURE PARTICULIERE	RENAULT	5	9	ESSENCE	0	1565			144
CANTER FUSO	CAMION	MITSUBISHI	3	13	GAS-OIL	6500				111
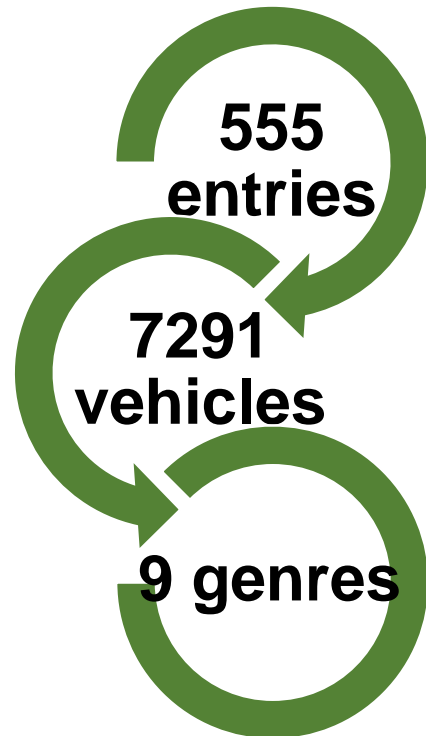
555 entries

7291 vehicles

9 genres

Genre de vehicules (Heavy-duty vehicles)

Buses (*Autocar-buses*)

Trucks (*Camion*)

Genre de vehicules (Light-duty vehicles)

Passenger cars (*Voiture particuliere*)

Light Trucks (*Camionnette*)

Genre de vehicules (Agricultural and construction equipment)
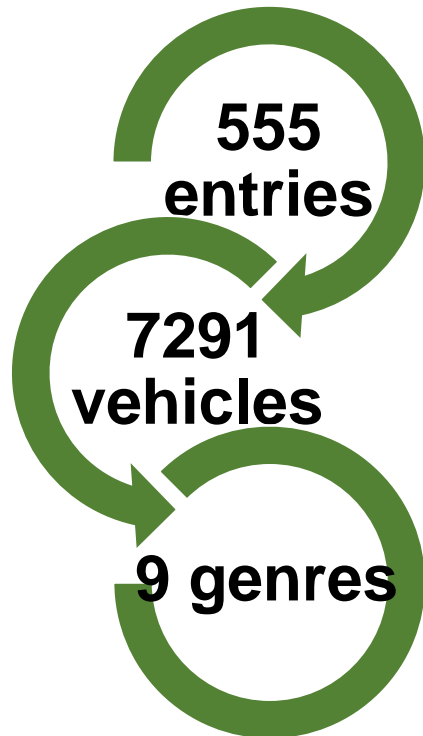
Chariot elevateur

Plateau

Tracteur agricole

Tracteur routier

Vehicule a usage specifique

The 2015 database

A focus on Light-duty vehicles: motor vehicles having at least *four wheels* and for the carriage of *passengers and goods*, comprising *no more than eight seats* in addition to the driver's seat, and having a maximum mass ("technically permissible maximum laden mass") *not exceeding 3.5 tons* by the European Commission (Transport Policy 2015).

555 entries

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Genre de vehicules (Heavy-duty vehicles)
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❌

Genre de vehicules (Light-duty vehicles)
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Light Trucks (*Camionnette*)

✅

Genre de vehicules (Agricultural and construction equipment)
Chariot elevateur
Plateau
Tracteur agricole
Tracteur routier
Vehicule a usage specifique

❌

The ideal database

- Information required

Vehicle Make	Vehicle Model	Variant	fuel_type	Model Year	Gross Vehicle Weight	engine_capacity (ccm)	Body Type	transmission_type	emission_standard	Number of vehicles registered	Fuel Consumption (L/100km)	CO2 emissions (gCO2/km)
Fiat	Fiat Scudo		Diesel	2015	2780	1997		M	5			
Peugeot	Peugeot Expert		Diesel	2015	2060	1997		A	5			
VW	VW Touran		Petrol	2015	1955	1197		M	6			
Renault	Renault Scenic		Petrol	2015	1945	1197		M	5			
Renault	Renault Scenic		Petrol	2015	1655	1197		M	5			
Skoda	Skoda Roomster		Petrol	2015	1800	1198		M	5			

- Additional information

N	O	P	Q	R	S	T
Year of first registration	Seats	New or secondhand import	Doors	footprint	Kerbweight	etc.

Côte d'Ivoire new vehicles fleet analysis

Methodology

Data preparation

- The database includes all vehicles (heavy-duty, light-duty, agricultural and construction equipment) in 2015

- We extracted all "motor vehicles having at least *four wheels* and for the carriage of *passengers and goods*, comprising *no more than eight seats* in addition to the driver's seat, and having a maximum mass ("technically permissible maximum laden mass") *not exceeding 3.5 tons* by the European Commission

- Nearly 36% of the entries were removed and the analysis was conducted on 355 entries

Calculation of fuel consumption and CO_2 emissions

- The methodology assumes that all LDVs are imported from the European Union

- The International Council on Clean Transportation (ICCT), a GFEI partner) has compiled in a database all light-duty vehicles in the European Union, with attributes including fuel consumption and CO_2 emissions.

- The data was extracted from the EU database with all required details

Example: Mitsubishi camionnette L200 gasoil

http://1001carreviews.com/mitsubishi/mitsubishi-l200-2015-2016/

2015 Côte d'Ivoire database

Type Commercial	Genre	Marque	Plac	Puissan	Carburant	PTA	Cylindrée (cm	Consommation L/100k	Emission de gaz CO2 (g/km	Nomb
L200	CAMIONNETTE	MITSUBISHI	3	10	GAS-OIL	2550	2493.143854			68

2015 EU database

Manufactu	OEM	Segment	Model	fuel_type	transmissi	driven_wh	origin_mar	emission_	Total	CO2_Emis	fuel_cons_combined_averag
Mitsubishi	Mitsubishi	G Pick-Up	Mitsubishi L200 Pick-Up	Diesel	A	All	Japan	4	2	233	8.8

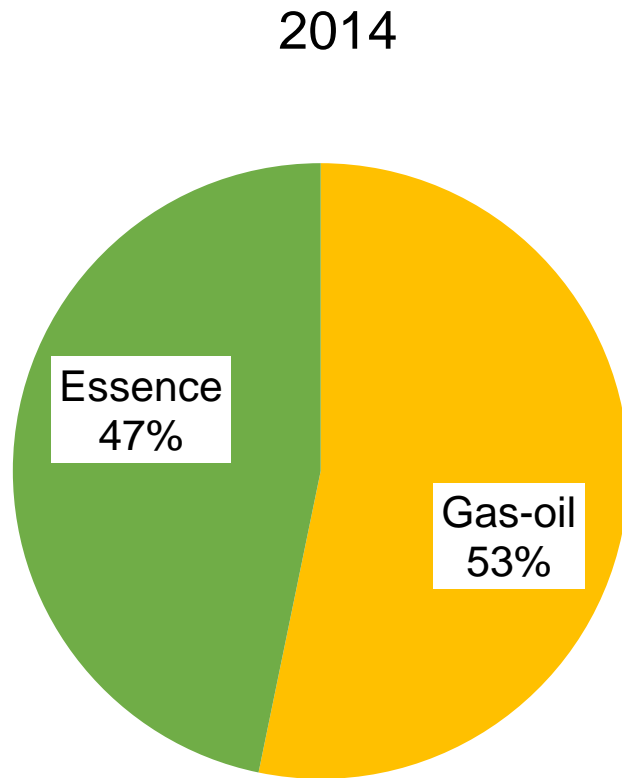# Côte d'Ivoire new vehicles fleet analysis

Results

Résultats

	Fuel consumption (l/100km)	CO_2 emissions (gCO_2/ km)
2015	7.98	189.73
2015 (Top 10)	8.04	204.73
2014(Top 10)	8.46	216.7
2013 (Top 9)	8.47	215.5

Comparaison 2008-2015
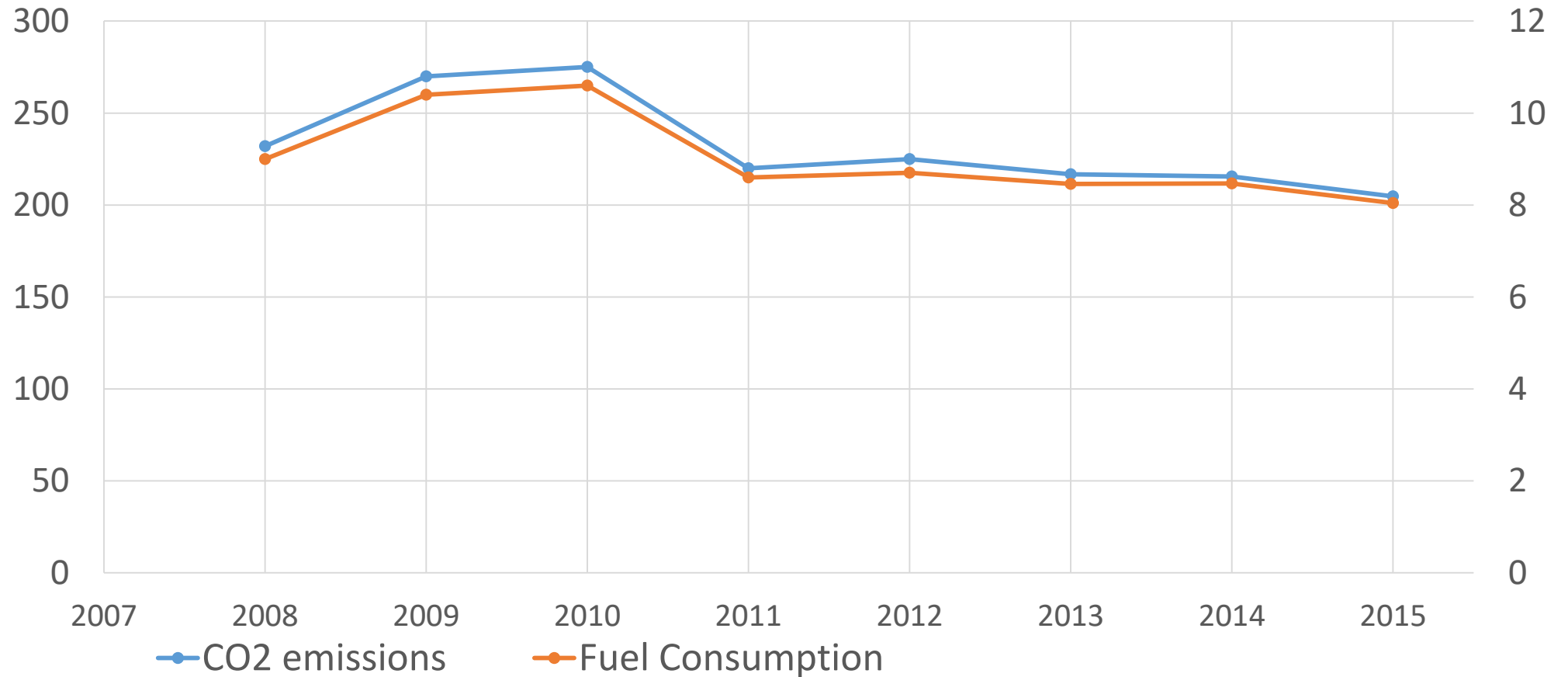
Increasing share of diesel vehicles in top 10 models

2014

Essence 47%

Gas-oil 53%

- Gas-oil
- Essence
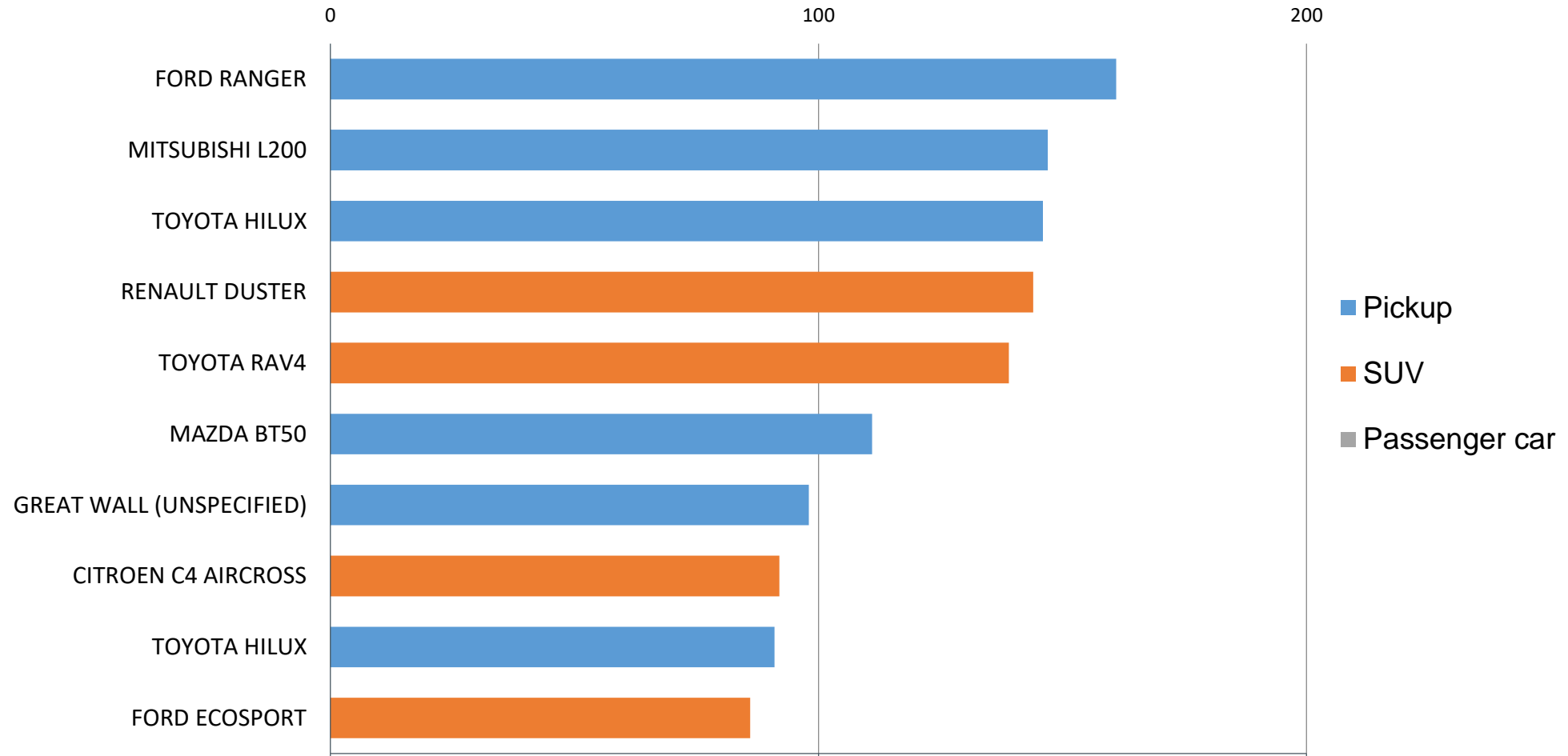
2015

Essence 38%
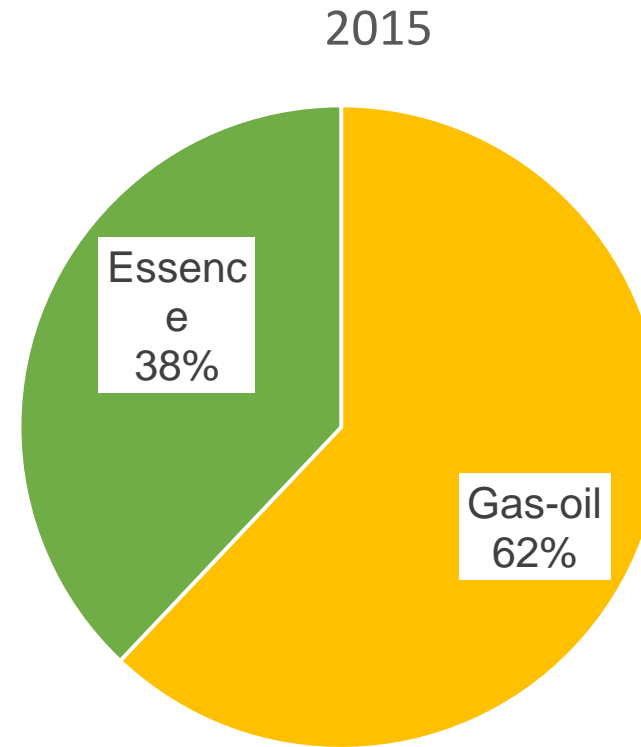
Gas-oil 62%

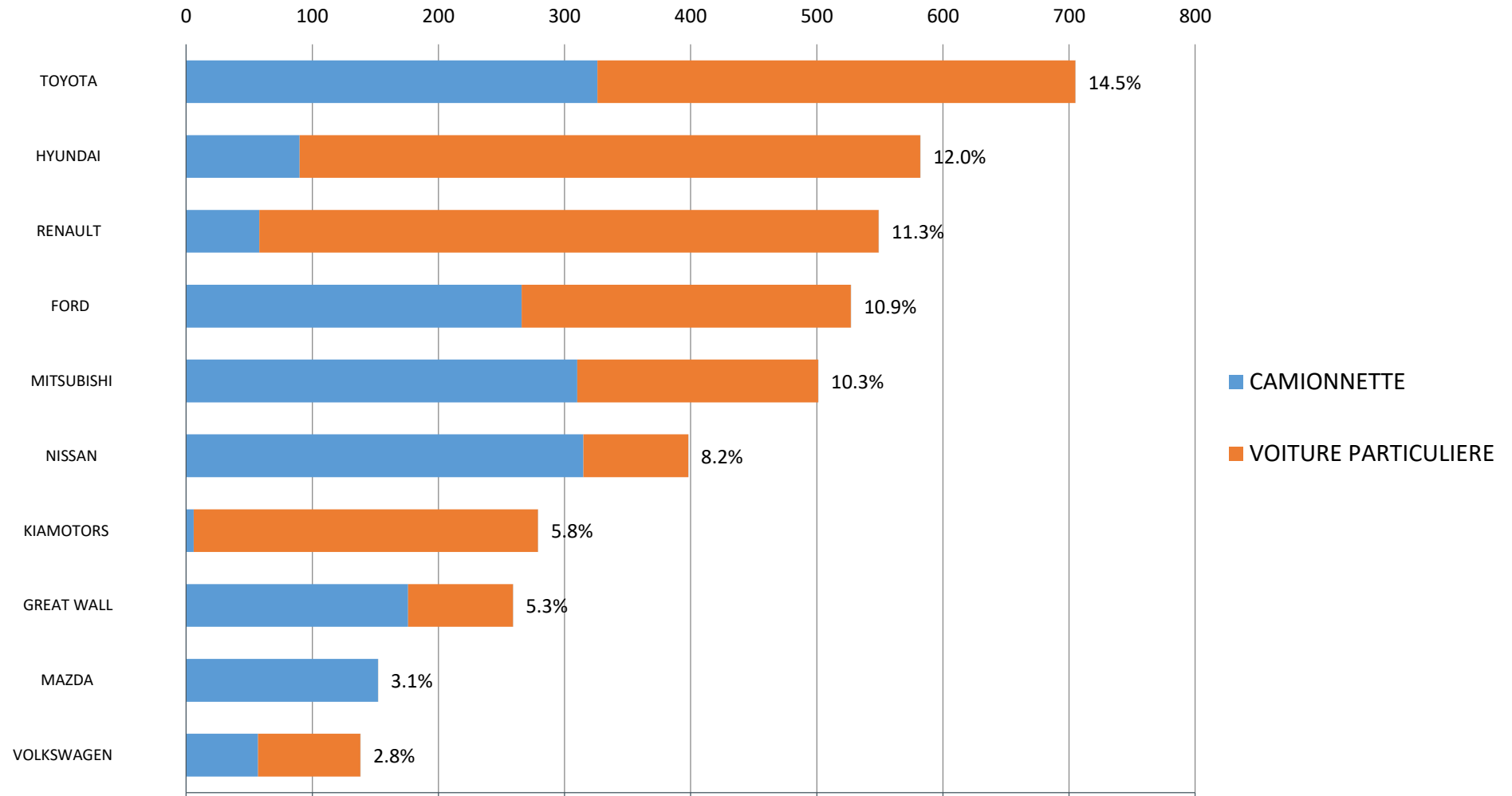Les véhicules gasoil non contrôlés sont sources de pollution de l'air

2014 data is based on BestSellingCars.com and 2015 from Cote d'Ivoire's database

The market

Camionnettes et véhicules utilitaires dominent les modèles les plus vendus

Les 10 marques les plus vendues

Chart showing the 10 most-sold brands with CAMIONNETTE (blue) and VOITURE PARTICULIERE (orange):

- TOYOTA — 14.5%
- HYUNDAI — 12.0%
- RENAULT — 11.3%
- FORD — 10.9%
- MITSUBISHI — 10.3%
- NISSAN — 8.2%
- KIAMOTORS — 5.8%
- GREAT WALL — 5.3%
- MAZDA — 3.1%
- VOLKSWAGEN — 2.8%

The way forward

The way forward

- Continue building a robust database
- Compile data for motorcycles, tricycles, buses
- Understand the end-of-life of vehicles
- Integrated transportation policies
- Mass Transit BRT

Merci
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(remerciements: the ICCT)