



E-LEADER Conference in Tokyo
Eco-Drive mind and IoT

ASUA, Inc.
Hiroshi Maji
Kaito Kanatani

Company Profile

Company name : **ASUA,Inc.**
CEO : **Hiroshi Maji**
Established in : **15th January 1994**
Head office : **1-11 Koganedori,Nakamura-ku,Nagoya**
Tokyo Head office : **5-9-8 Ginza,Chuo-ku,Tokyo**
Capital : **30milliom yen**
Line of Business : **Consulting**



Nagoya



Tokyo

Education of managers and drivers in Logistics
Eco-Drive Support project(for government, municipality and company)
Development of messages by Big Data analysis

Number of Employees
(entire group) : **226 (as of 1st July 2018)**

Eco-Drive Business

Develop Eco-Drive for ordinary companies and logistics companies



Ordinary companies

1,800



Logistics companies

1,200

Proven consultation for 3000 companies in Japan

Eco-Drive Business

Entrusted Business

【Ministry of the Environment】

Eco-Drive Contest Bureau

Eco- Drive Promotion Bureau

【Ministry of Economy, Trade and Industry】

Eco-Drive Support project for municipality

【TOKYO TRUCKING ASSOCIATION】

Green Eco Project

【Eco-Mo Foundation】

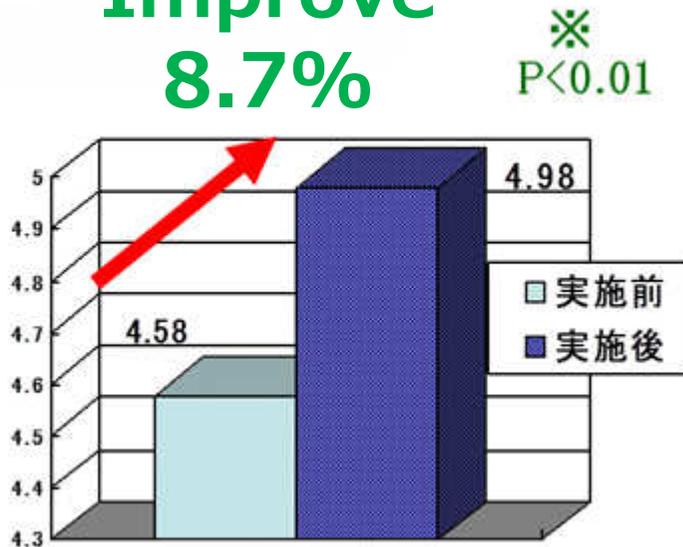
Eco-Drive Activity Concours



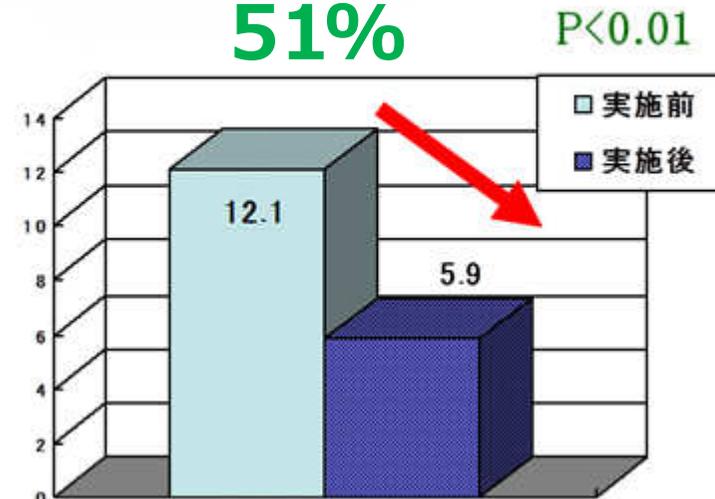
Eco-Drive Business

Result of Eco-Drive Education

Fuel Efficiency
Improve
8.7%



Traffic Accidents
Reduce
51%

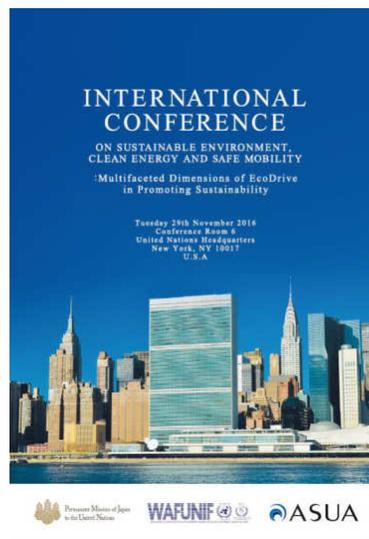
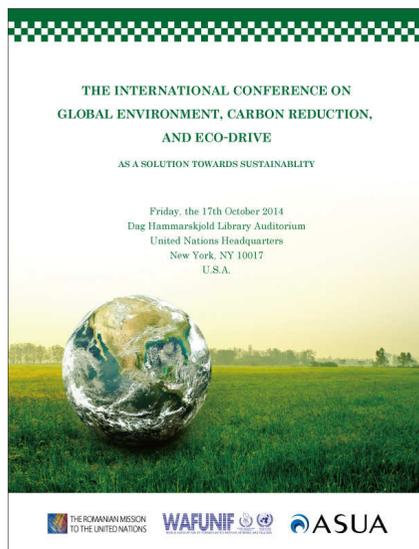
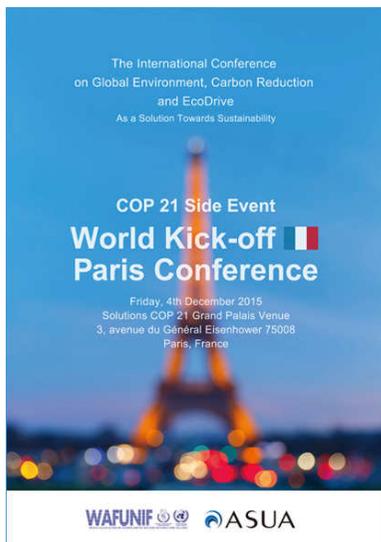


※Wilcoxon signed-rank test

Presented by Hiroshi Maji, Nobuyo Kasuga, Taro Ishi, and Yasuhiro Daisho
at Automotive Engineers Meeting on 25th May 2006

**Eco-Drive has a meaning in
expanding to the world**

UN Eco-Drive Conference Eco-Drive Declaration



UN Eco-Drive Conference

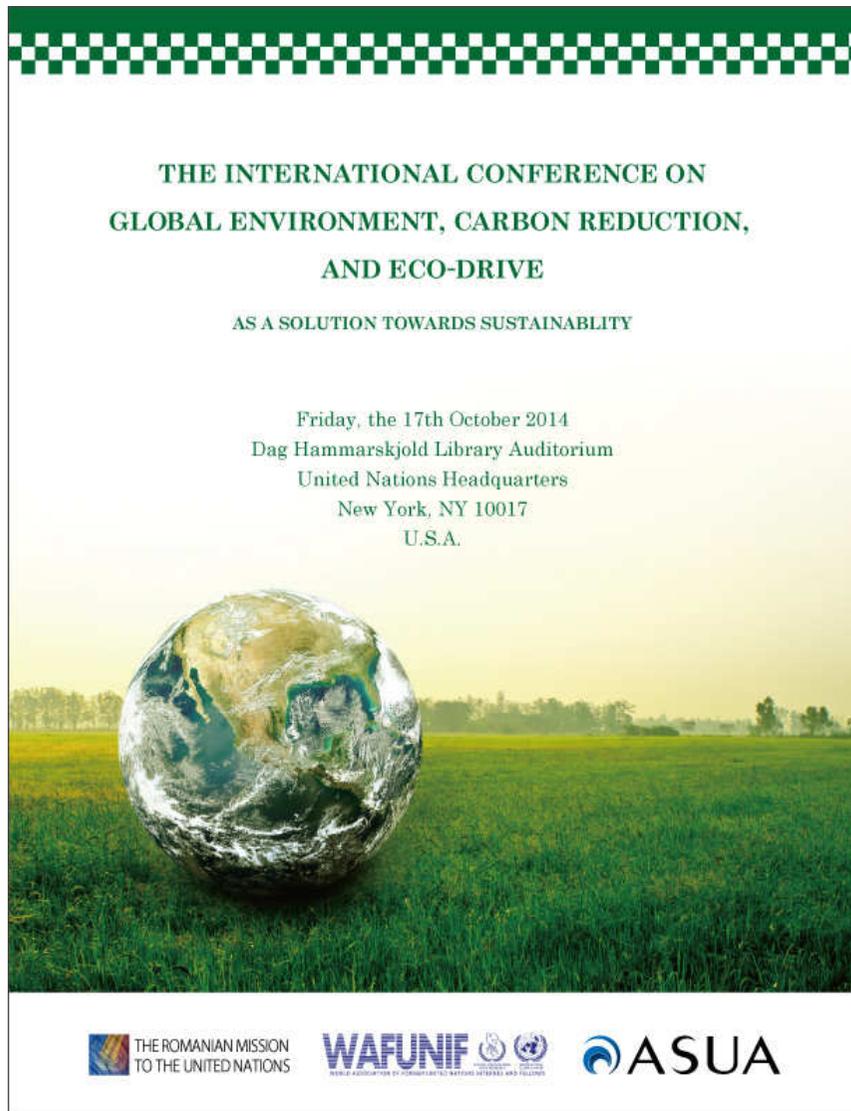
Eco-Drive to the World

We held UN Eco-Drive Conference
at UN headquarter on 17th Nov 2014

Host : WAFUNIF Co-host : ASUA

Supported : JAMA·AAM

Ministry of the Environment



THE INTERNATIONAL CONFERENCE ON
GLOBAL ENVIRONMENT, CARBON REDUCTION,
AND ECO-DRIVE
AS A SOLUTION TOWARDS SUSTAINABILITY

Friday, the 17th October 2014
Dag Hammarskjold Library Auditorium
United Nations Headquarters
New York, NY 10017
U.S.A.



THE ROMANIAN MISSION
TO THE UNITED NATIONS

WAFUNIF

ASUA



UN Eco-Drive Conference

国連エコドライブ名古屋カンファレンス
GLOBAL ENVIRONMENT, CARBON REDUCTION, AND ECODRIVE
AS A SOLUTION TOWARDS SUSTAINABILITY

**Japan Kick-off ●
Nagoya Conference**

2015 10.20 [Tue.]
ミッドランドスクエア
ミッドランドホール（オフィスタワー5階）
名古屋市中村区名駅四丁目7番1号

環境と地域創生を考える
イベントサロン2015名古屋
イベント学会 第18回研究大会
同時開催

WAFUNIF   

UN Eco-Drive Conference at Nagoya

on 20th Oct 2015

Host : WAFUNIF

Co-host : ASUA

Supported : JAMA etc...

Ministry of the Environment

Supported by

JAMA

一般社団法人
東京都トラック協会



一般社団法人
日本損害保険協会
The General Insurance Association of Japan

SONPO

名古屋市

Sponsors

TOYOTA NISSAN HONDA



DENSO

豊田自動織機

Joint Hosting



MANAGEMENT OF PERFORMANCE
E-DRIVE

UN Eco-Drive Conference

The International Conference
on Global Environment, Carbon Reduction
and EcoDrive
As a Solution Towards Sustainability

COP 21 Side Event
World Kick-off 
Paris Conference

Friday, 4th December 2015
Solutions COP 21 Grand Palais Venue
3, avenue du Général Eisenhower 75008
Paris, France



**UN Eco-Drive conference in Paris
On 4th December 2015**

Host : WAFUNIF

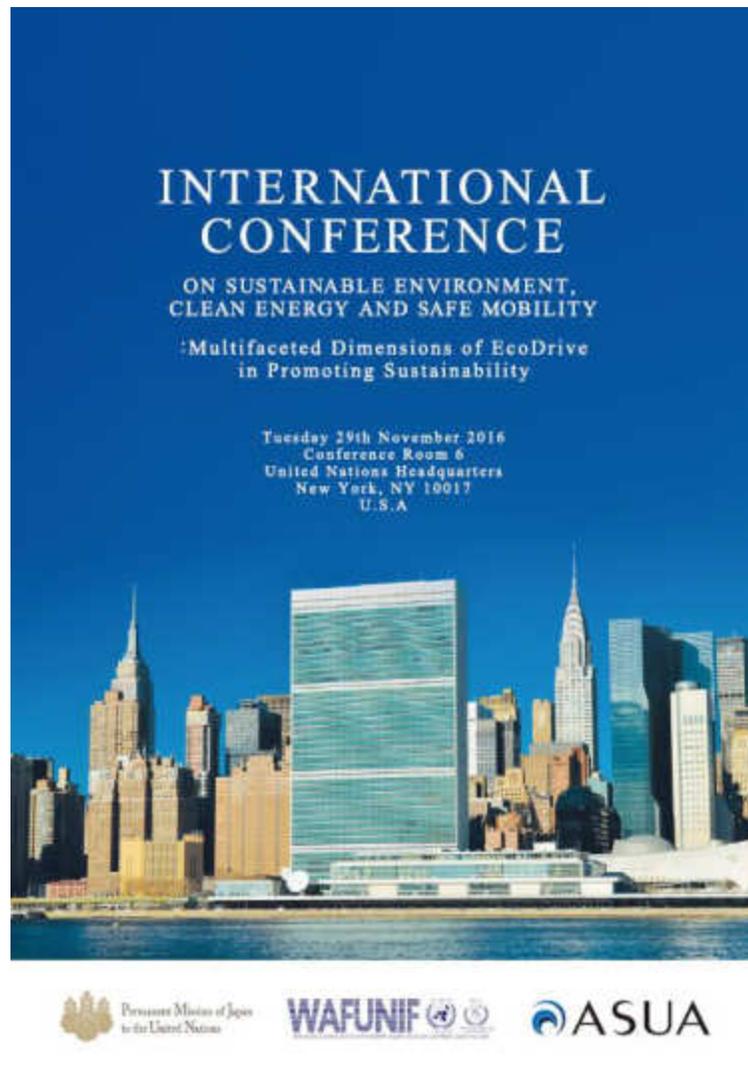
Co-host : ASUA

Supported : JAMA, ASEA, AAA

**Venue : COP21 side event
Grand Palais**



UN Eco-Drive Conference



29th November 2016
UN Eco-Drive conference

Host : WAFUNIF

Co-host : ASUA

**Supported : Permanent Mission
of Japan to the United Nations**
JAMA · AAM · ACEA
MOE · METI



UN Eco-Drive Conference

■ WAFUNIF

THE **W**ORLD **A**SSOCIATION OF **F**ORMER **U**NITED **N**ATIONS **I**NTERNES AND **F**ELLOWS

WAFNIF is organized by interns, trainees from UN counties which join all over the world. In 1978, it was established at UN headquarter beyond the bureau and organization.

It is only one organization to dispatch staff and developing country in the world through other organization.

Especially, focuses on “**Education**”.
Therefor, held Eco-Drive and **aware importance of environmental measures and Eco-Drive education.**



Dr.Hassan
president of
WAFUNIF

UN Eco-Drive Conference

■ What is Eco-Drive ?

Eco-Drive is **mindset** and **method** when you drive. Enhancing Eco-Drive to the world, **changes people is mind beyond difference of culture**, creates fun to drive, improves fuel consumption, reduces air pollution and car accident.

The point is, **Eco-Drive is 21th century driving style.** Eco-Drive is not only method, **but also one of the tools that helps us from personalities, have kindness, and make good relationship with drivers sharing the road.**



UN Eco-Drive Conference

■ Improvement by Eco-Drive

Accelerating gently and driving slowly
According to Eco-Drive, reduce fatigue
and stress and make people peacefulness.

As a consequence, **we can drive safely and calm**, and which leads to improve fuel consumption and reduce CO2 emission and car accident. **Eco-Drive fosters conscientious driving by educating and encouraging motorists to engage the better part of their human nature when driving a vehicle.** In order to succeed our mother earth to next generation, promoting Eco-Drive nurtures our heart living on the earth.



UN Eco-Drive Conference

SESSION 04
Introduction of EcoDrive Declaration

We Developed an **Eco-drive declaration** that can overcome borders, race and economic disparity barriers

Eco-Drive to the world!

EcoDrive
Declaration



UN Eco-Drive Conference

Preamble

Driving is an indispensable part of daily life for many in the world. Through motorization, living standards improved in large and small ways. Cars can be the key that unlocks freedom, mobility and convenience, but motorization has also created major problems with far reaching implications:

- ◆ There are over 1.2 billion cars in the world, which emit substantial amounts of Carbon Dioxide (CO₂) into the atmosphere, causing far-reaching negative effects on the environment and quality of life.
- ◆ Automobile accidents abound; the World Health Organization reports that traffic accidents caused 1,250,000 deaths in 2010 (latest year available).

Automobile manufacturers continue to develop technological improvements to address those issues. These solutions include Next Generation vehicles, which use alternative fuel sources as well as vehicles equipped with Advanced Driver Assistance Systems (ADAS).

In order to further reduce emissions globally, more efficient systems should be used. This integrated approach should cover all elements effecting emissions on roads – enhanced fleet renewal, improved vehicle technology, infrastructure investment and how the car is used. We believe that drivers can participate in the global solution as well by their driving behavior. That is the idea of “EcoDrive”.

The practice of EcoDrive is based on good driving principles. In general, it's about smart, relaxed, fuel-efficient and safe driving. Among other things, it teaches driving fuel-efficient with smart acceleration and deceleration, and keeping a vehicle's momentum. Our research shows that merely adding those three small driving tips gain 10% improvement in fuel efficiency for city driving.

More importantly, responsible and smart driving (one of EcoDrive) changes the way we drive collectively with positive impact for the environment and road safety. As it encourages healthy and safe driving habits, the EcoDrive mindset inspires a culture of social responsibility. With EcoDrive, drivers learn to keep calm even when the situation is not optimal; for example, they learn to smartly plan with time to spare which leads to a more relaxed motoring - a healthier choice, both mentally and physically as this behavioral change reduces stress.

Please note: to successfully participate in EcoDrive, cultural boundaries must be respected. Therefore, small aspects have to be adjusted for each country acc. to cultural specifics.

Scope

EcoDrive is a lifestyle change that can become a lifestyle evolution. Our vision consists of three pronged approach:

1. Governmental regulations and policies are adopted with the aim of encouraging lower emissions, healthier and safer driving. This should focus not only on improving the environmental performance of the vehicles, but also stimulating policies to better use of cars and better use of infrastructure.
2. Responsible driving is helping to reduce CO₂ emissions, which is a commonly shared policy supported by Governments and industry.
3. Drivers, mindful that they can directly shape a better world through their actions, contribute with a smart driving behavior modification through EcoDrive including avoiding distracted driving such a texting while driving.

Target Outcome

EcoDrive is an easy and effective solution to establish. When promoted globally, EcoDrive can make a significant difference in CO₂ reduction; fuel efficiency; traffic congestion reduction; and accident prevention. EcoDrive techniques also encourage a cultural shift that inspires social responsibility to balance, consider needs of other road users, and a respectful use of resources. In summary, EcoDrive is a substantial contribution to greener and safer driving that can multiply into an enormous positive global effect.

UN Eco-Drive Conference

Guiding Principles of EcoDrive:

1. Reduces CO2 levels, which positively contributes to our future.
2. Saves lives by reducing accidents.
3. Preserves fuel resources.
4. Makes driving safer, more relaxed and convenient.
5. EcoDrive lowers stress, which improves health.
6. EcoDrive encourages courtesy and culture of respect, which strengthens a feeling of well-being among all of us.
7. EcoDrive can be done anytime, anywhere and by anyone.

1. Reduces CO2 levels, which positively contributes to our future.

The earth is warming and CO2 is a reason. By practicing EcoDrive, CO2 emissions can be reduced significantly (up to 15%, 2015 TML Study “Integrated approach to reducing CO2 emissions of passenger cars”), which will help improve the future of the earth.¹

2. Saves lives by reducing accidents.

The World Health Organization reports that traffic accidents caused 1,250,000 deaths in 2010 (latest year available). EcoDrive counters this issue; professional drivers who apply the EcoDrive technique have fewer traffic accidents than other professional drivers.

3. Preserves fuel resources.

EcoDrive conserves fuel, no matter the form (i.e. electric, hydrogen, petrol, etc.). Even though technology greatly increased fuel efficiency, the fuel efficiency of the best “eco car” still depends on how you drive it. EcoDrive maximizes the driving experience, potentially increasing the intelligent use of natural resources.

4. Makes driving safer, more relaxed and convenient.

Resisting “jack-rabbit” starts and avoiding the need to “hit the brakes” makes driving safer, more relaxed and convenient for everyone on the road. Caring about the experience of others leads to prudence, care, caution and planning. This is the cornerstone of mindfulness and respect – and we firmly believe that mindfulness and respect leads to a more peaceful world.

5. EcoDrive lowers stress, which improves health.

When a human being is stressed, the heart rate rises and the blood pressure increases – and over time, this causes negative health effects. Further, stress can trigger a seizure or stroke for a person with an underlying health problem – and if this happens while driving, the consequences can be dire. The skill set developed through EcoDrive reinforces a calm and conscious mindset which encourages the skill set developed through EcoDrive – this is a satisfying stress-management feedback loop that inspires “grace under pressure” when behind the wheel of an automobile.

UN Eco-Drive Conference

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Education and respect are the foundation of good behavior. EcoDrive encourages drivers to behave respectfully on the road, which translates to patient and thoughtful driving. Courtesy is catching! This includes avoiding all forms of distracted driving such as improper use of mobile devices. It is recommended that drivers refrain from taking their eyes off of the road.

7. EcoDrive can be done anytime, anywhere and by anyone.

EcoDrive changes the way we drive. These simple changes encourage an important shift in the driver's mindset and behavior on the road – globally. They remember that they are their own precious cargo and outside the vehicle are partners. They learn to “let go” because they understand that even when things are not optimal, a calm driver is a safe driver.

EcoDrive promotes safer driving; limits stress; and improves comfort; students of the technique evolve into patient and considerate drivers. Further, the good new habits learned through EcoDrive can be practiced and perfected by any driver in any vehicle on any road, anywhere in the world.

EcoDrive is cultivated in the small space between the engine and the trunk, yet it's effect expands throughout the world.

¹ See for example TML study: <http://www.tmluven.be/project/aceacars/home.htm>

UN Eco-Drive Conference

Methodology:

1. Accelerate Gently.
2. Maintain a steady speed and keep a safe distance to the car in front.
3. Slow down by releasing the accelerator.
4. Make appropriate use of air conditioner.
5. Do not idle the engine while standing still.
6. Plan your trip to avoid congested route.
7. Check the tire pressure regularly.
8. Avoid unnecessary loads to reduce weight.
9. Respect Parking rules and regulations.
10. Monitor the Fuel Efficiency.

1. Accelerate gently.

When speed is increased at a relaxed pace, it boosts fuel efficiency by 10%. Aim for a speed of 20km/h in 5 seconds, which is a gentle acceleration that contributes to safer driving. Using lowest possible engine speed (rpm) helps improving fuel efficiency; especially low rpm driving at steady speed saves fuel and reduces CO2.

2. Maintain a steady speed and keep a safe distance to the car in front.

Maintain a steady speed because tailgating leads to unnecessary acceleration/ deceleration, resulting in 2-6% better fuel efficiency (or: lower fuel consumption) measured in urban and suburban areas.

3. Slow down by releasing the accelerator.

Rather than engaging the breaks, release the accelerator to slow down at traffic lights, stops signs and gridlock; this behavior corresponds with a 2% gain in fuel efficiency.

4. Make appropriate use of your air conditioner.

The AC function is for cooling and dehumidifying only so select the temperature wisely. Please note that the continuous use of AC function at 25°C (77F) when outside temperature is 25°C results in a 12% loss of fuel efficiency.

5. Do not idle the engine while standing still.

When waiting or loading/unloading, make a habit of turning your engine off rather than let it idle. Ten minutes of engine idling with the AC off wastes 130cc of fuel.

6. Plan your trip to avoid congested routes.

Check traffic information to avoid congested areas and save time and fuel. Ten minutes of unnecessary driving in a one-hour trip results in a 17% drop in fuel efficiency.

7. Check the tire pressure regularly.

Driving on tires that have air pressure lower than 50kPa (0.5kg/cm³) could decrease the fuel efficiency by 2% in urban areas and 4% in suburban areas. Additionally: underinflated tyres are a safety risk. Timely replacement of motor oil, oil filters, etc. also contributes to improved fuel efficiency.

UN Eco-Drive Conference

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8. Avoid unnecessary loads to reduce weight.

Weight is a key factor in fuel efficiency performance. Driving with 100kg of unnecessary weight causes a 4% loss in fuel efficiency. Another factor is aerodynamic drag, which can be reduced by removing exterior rack equipment when not used.

9. Respect parking rules and regulations.

Illegal or imprudent parking causes traffic congestion, which leads to lower fuel efficiency, increased emissions and a higher risk of accidents.

10. Monitor the fuel efficiency.

If possible, monitor fuel efficiency with vehicle's onboard equipment. Otherwise, calculate fuel efficiency at the time of refueling to full tank with this equation: Distance driven (km) ÷ Refueled amount (Liter) = fuel efficiency (km/L).

Please note: to successfully participate in EcoDrive, cultural boundaries must be respected. Therefore, small aspects will be adjusted for each country.

Recent case of Eco-Drive (utilizing IoT)



Recent case of Eco-Drive (utilizing IoT)

- Insurance companies

※please confirm each insurance discount information by yourself

立ちどまらない保険。

MS&AD Aioi Nissay Dowa Insurance Co., Ltd.



Insurance discount depending on Safe driving score (max 80% discount) ※

- <Main Function>
 Safe driving score
 Safe driving advice
 Drive report map
 Confirm operation of Prevention safety device etc..



Sompo Japan Nipponkoa Insurance Inc.



楽しく安全に運転できるカーナビアプリ



Insurance discount depending on driving diagnosis (max 20% discount) ※

- <Main Function>
 Approach Alarm/Notice
 Safety drive diagnosis/score
 Sudden Behavior Alarm/Drive recorder /Travel history etc..



Sony Assurance Inc.



Drive Counter



Insurance discount depending on diagnosis(max 20% discount) ※

- <Main Function>
 Recording sudden start/stop
 Sudden behavior Sound notice function
 Counting smooth start/stop etc..

More insurance company (Mitsui Sumitomo Insurance Company, Limited, Tokio Marine & Nichido Fire Insurance Co., Ltd. and more.) take actions on the service for safety drive support

Recent case of Eco-Drive (utilizing IoT)

- Automakers

TOYOTA



<Main Function>

Check condition of own car (engine oil, brake oil and more)

Indicate the location of own car in the map

Diagnose our driving from safety and eco point of view automatically

Recording driving history etc...

Nissan



<Main Function>

Indicate the location of own car in the map

Indicate driving data between engine start to stop per day and month

Info message about car inspection, discount etc...

Set destination only speaking with operator

HONDA



<Main Function>

Searching a route

expect leaving and arrival time

Searching parking area

Drive note (look back own driving history)

Fuel efficient history etc...

Recent case of Eco-Drive (utilizing IoT)

- Smartphone Apps

Separate from martphone apps by automakers and insurance companies as previously stated, there are drive recording apps and managing fuel efficient apps.

<Reference : Drive Recorder Apps> ※Reference: <https://matome.response.jp/articles/1117>



Safety Sight-接近アラート&ドライブレコーダー
開発: 損保ジャパン日本興亜
★★★★★ 3.28 1件の評価



マルチドライブレコーダ2
Multi Drive Recorder 2



< Reference : recording fuel efficient app >



順位	車種名	写真	実燃費	WLTCモード燃費 10-15モード燃費
1	トヨタ ピクシス エポック		25.55km/L	35.2km/L
2	トヨタ ヴィッツ (ハイブリッド)		24.62km/L	34.4km/L
3	トヨタ カローラアクシオ (ハイブリッド)		24.58km/L	33.0km/L



車種別平均燃費 (ReCoo 登録車実測値)			
ノマド 型式: CFEV 平均燃費: 10.27	デリカ 型式: CV5W 平均燃費: 8.64	アルトラバン 型式: HE21S 平均燃費: 13.71	レガシイ 型式: 6PS 平均燃費: 11.08

エコドライブニュース	エコドライブイベント情報
平成30年度エコドライブ活動コンクール 応募締切 [2018年07月03日 00時00分]	国連エコドライブカンファレンス開催 [2016年11月22日 17時00分] エコライフ・フェア2015 (東京 代々)

Recent case of Eco-Drive (utilizing IoT)

- Utilizing IoT Devices(OBD II ・ GPS ・ Acceleration sensor)

OBD II

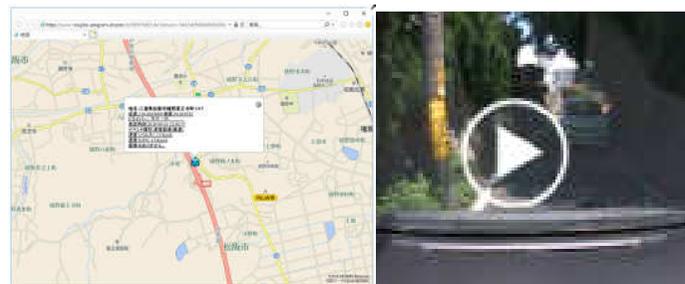


Monthly

aprx. ¥3,000~/car※

Danger behavior notice mail
 Monthly report (driving data)
 Indicating danger behavior spot
 Rental car reservation
 Daily report automatic creation

GPS

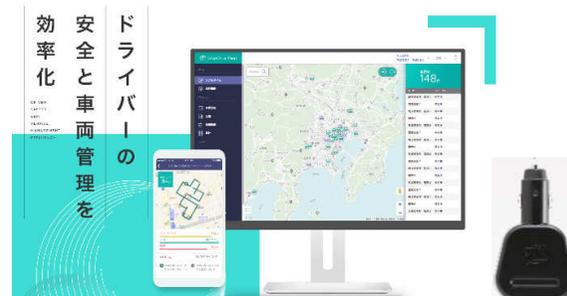


Monthly

aprx. ¥3,000~/car※

Safety driving support service for manager combination of drive recorder and telematics.
 Share the video of danger driving to manager

Acceleration sensor



Monthly

aprx. ¥3,000~/car※

(Additional charge :Initial cost ・Device cost)
 On time location system
 Visualization of own driving behavior
 Driving history・daily report etc...

※please confirm each fee of insurances by yourself

Recent case of Eco-Drive (utilizing IoT)

- Utilizing telematics (Sangetsu Corporation)

34 offices / 1,256 employees / 475 vehicles

Mounting "Orix e-telema" on all vehicles from 2014
(Monthly aprx. ¥3,000円/car)

Confirm driving route and driving behavior (acceleration, brake, over speed, Idling time)

By of setting goal for each driving behavior and managing progress each office by telematics, this 4 types of driving behavior (figure on the right) improved dramatically in 2017

Fuel Efficiency : Improving aprx. 23% (compared with 2014)

Accident : Decreasing aprx. 55% (compared with 2013)

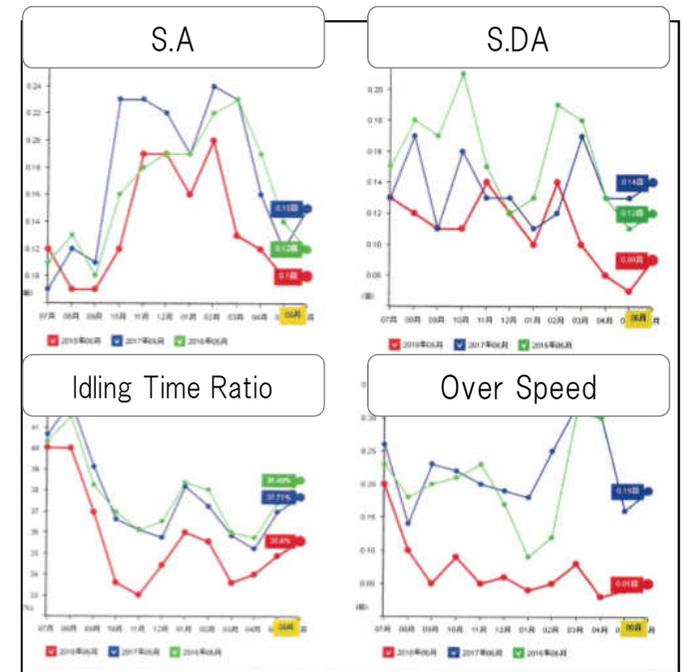
<setting goal of telematics>

- 1. Over Speed: over 110 km
- 2. Sudden Accelralation: over 0.3G
- 3. Sudden Braking: over 0.4G

On average Under 0.1 time in a month



Top page of Orix telematics



Safety driving behavior history past 3 year

— Fiscal 2017 25

Message service for AIOI Insurance

Collect operation information transmitted automatically from car navigation system, and provide “**Monthly Report**” which analyzes safe driving characteristics

あいおいニッセイ同和損保

MS&AD INSURANCE GROUP

If your driving is safe and Eco-Drive, you will get insurance **discount**



-Safe driving score
-Insurance discount
A score that accumulated vehicle operation information for each month. In the insurance fee column, the insurance premium for the relevant monthly run is displayed. Driving premium discount amount based on safe driving score is also displayed and you can realize the result

アドバイス	保険料推移
このたびは、「タフつながるクルマの保険」にご加入いただき、ありがとうございます。これから、毎月お届けするアドバイスを参考に、安全運転に努めましょう。	
【評価振り返り】 今回の総合得点は95点でした。 最高のメダル3つ獲得、おめでとうございます！	
【今回のいいね！ポイント】 ブレーキ 月間500km走行しましたが、急減速のない、とても素晴らしい運転ができていたようです。 急減速の少ない運転は、燃費向上にもつながります。	
【今回の改善ポイント】 アクセル 急加速の約60%が高速道の走行でありました。 カカトが固定されていない状態でのアクセル操作は、踏み込みすぎてしまう可能性があります。出発する前に、カカトが床につき、親指の付け根で踏み込める位置に座席の位置を調節しましょう。	

Monthly Report
Display detailed advice guided from driving data in one month's . generated Advice individually according to the driving characteristics of each subscriber

IoT Communication Business

We apply those success TOYOTA and AIOI to
other industries as a ...

IoT Communication Business



BIG DATA × **Message** → **Behavior change**

It's not uniform message.
It's "**Personal Message**" to encourage behavior change.



人との「つながり」をより良くする会社。

Human Relations Company



Corporate Message

動機を動かせ。明日を動かせ。

Good Motivation for Tomorrow



Eco-Driving Promotion by Eco-Mo Foundation

Hirotsugu Maruyama
General Manager

Dec. 7, 2018

What is Eco-Mo Foundation

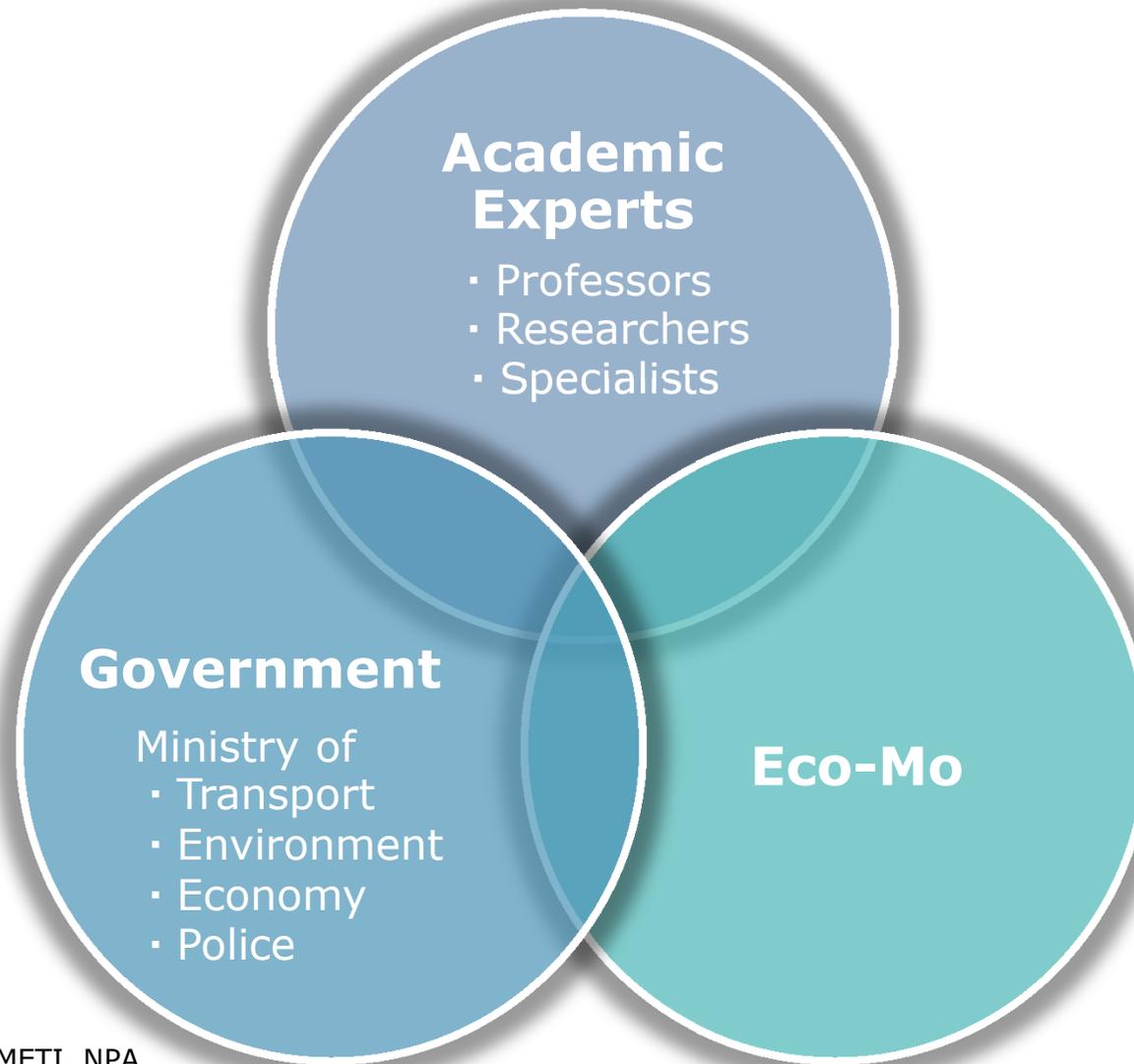
HISTORY

- In **1994**, Minister of Transport approved the **establishment** of the Foundation for Promoting Amenities of Transport.
- In **1997**, **renaming** of the organization to "**Foundation for Promoting Personal Mobility and Ecological Transportation**" was approved by Minister of Transport.
- In **2012**, the Prime Minister accredited and **transitioned to** the **Public Interest Incorporated Association**.

MISSION

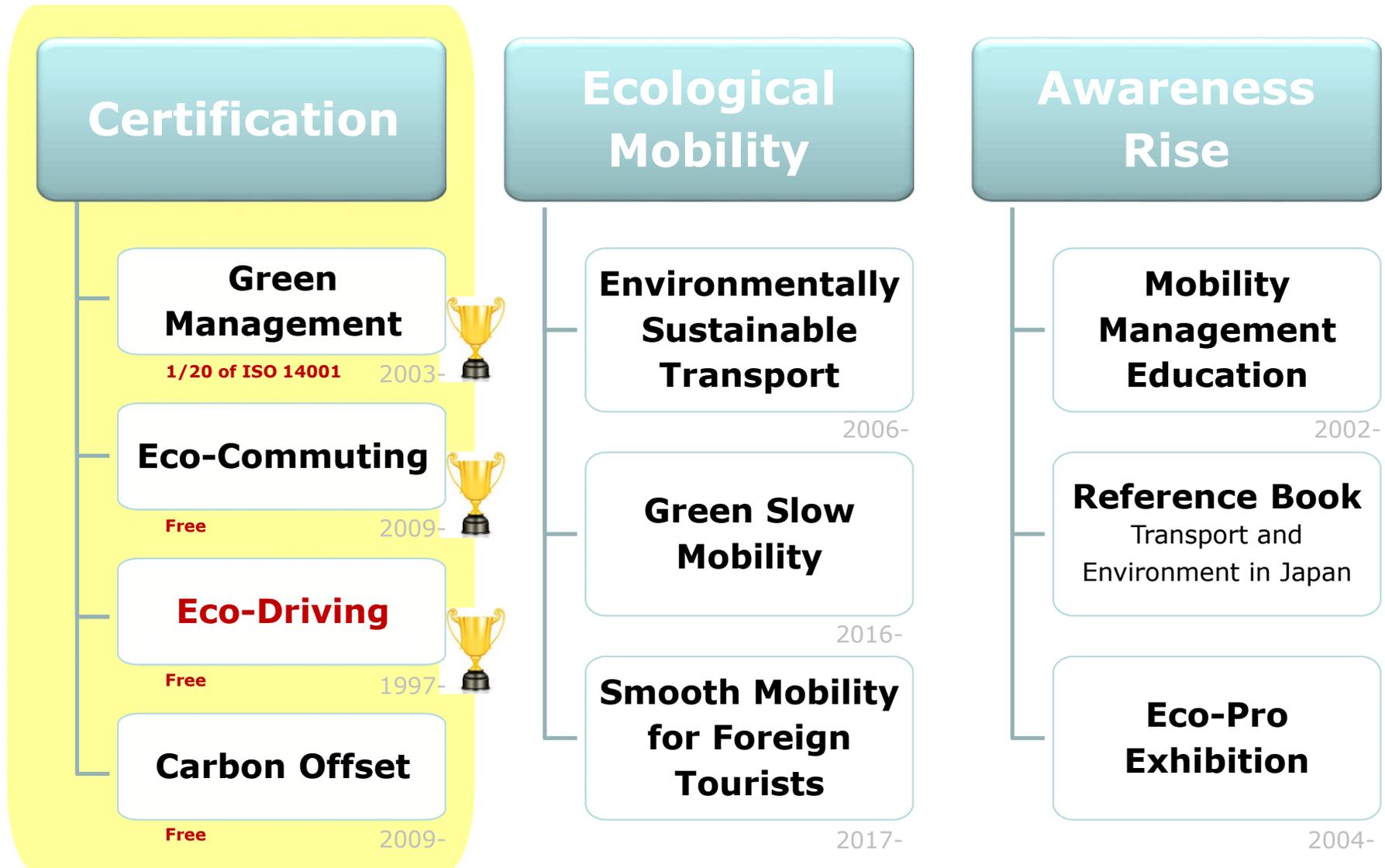
- **Better life for all people** through **sustainable mobility** with **less CO2** and **no barrier**

National level Committee

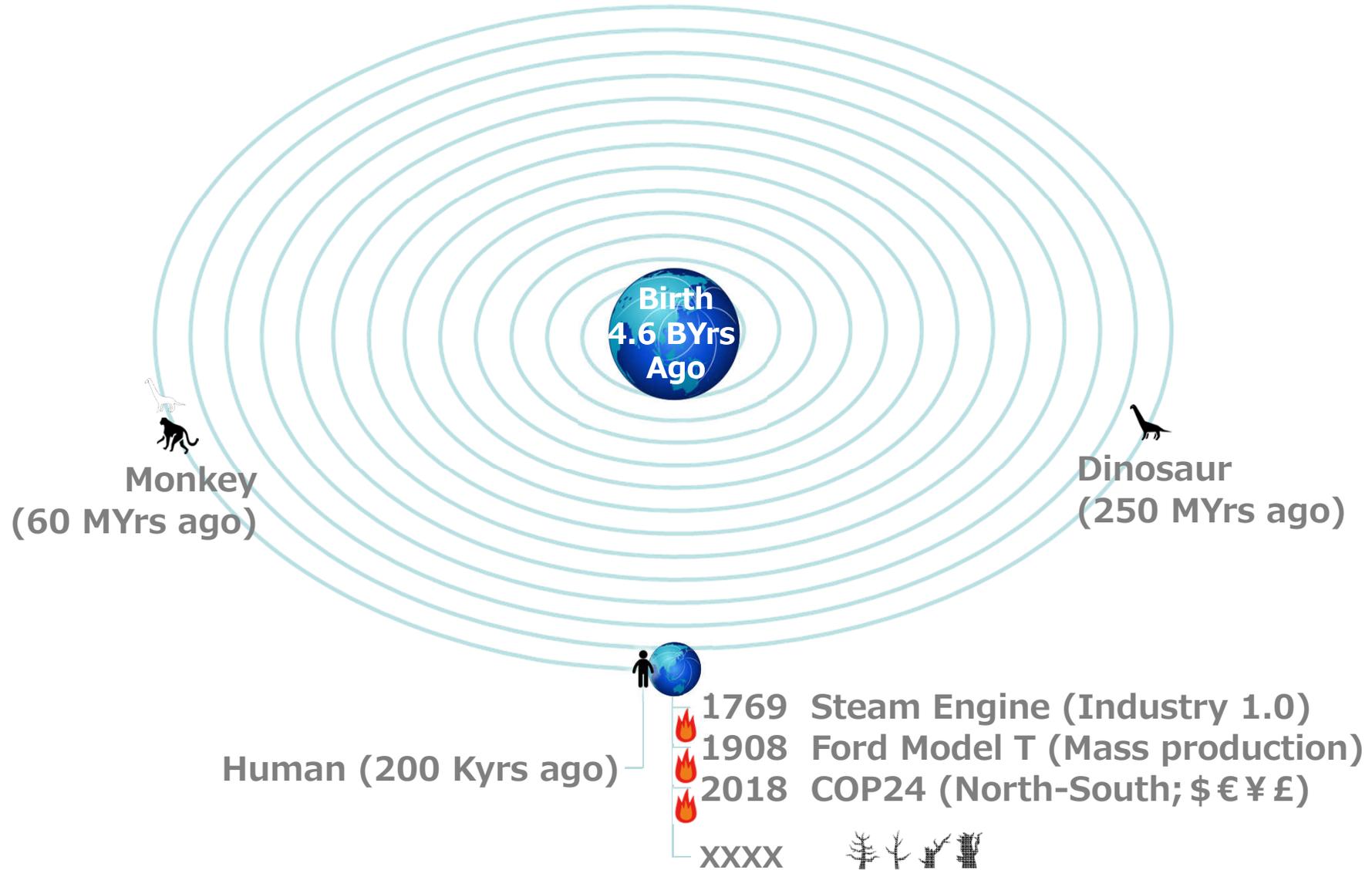


MLIT, MOE, METI, NPA

10 Projects of Environmental Transport Promotion Division



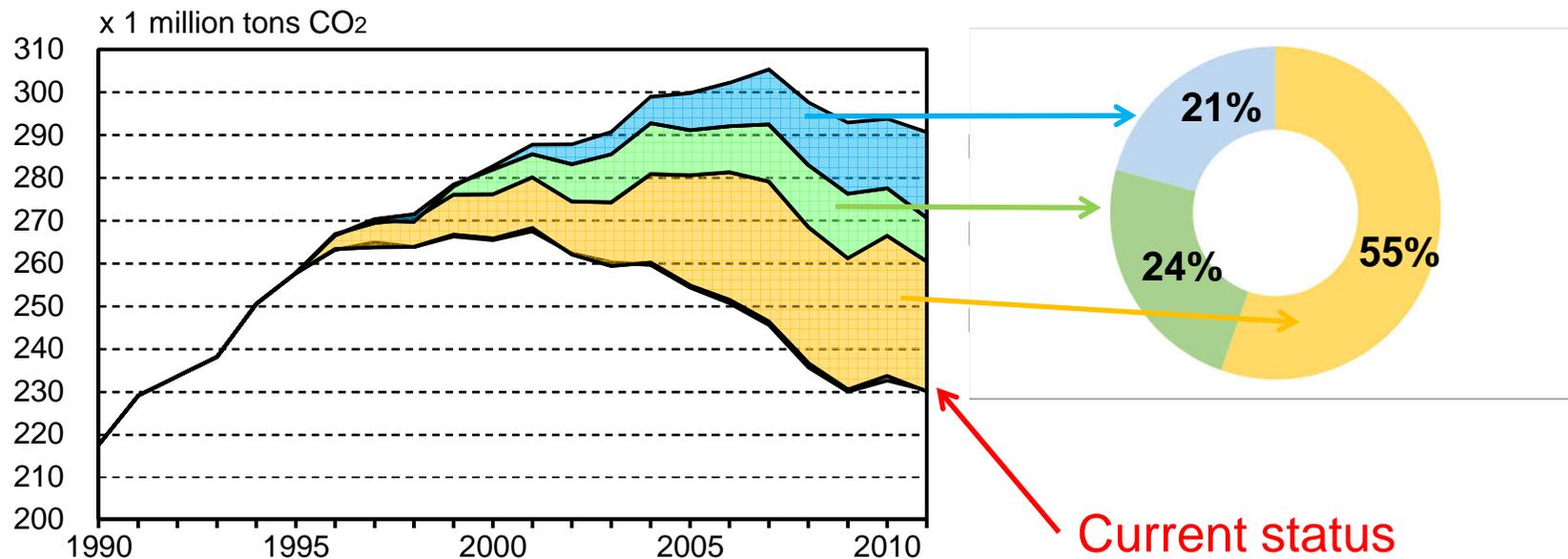
History of the Earth





Factors Contributing of CO₂ Reduction by Integrated Approach

Main factors to reduce CO₂ in the road transport sector in Japan.



■ Passenger cars

- Improved vehicle fuel efficiency
- Improved traffic flow (reduced congestion)

■ Trucks

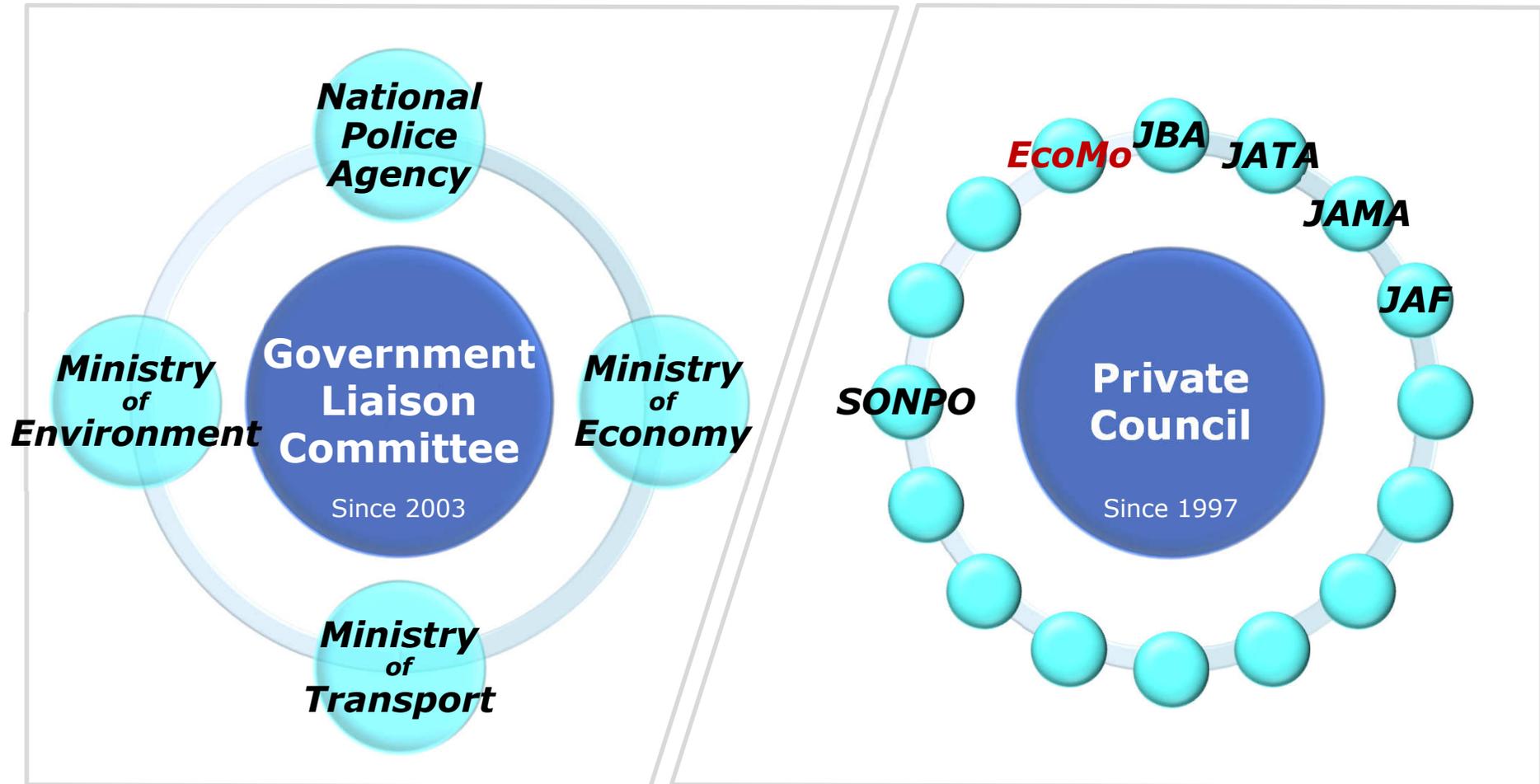
- Improved load efficiency in truck use

■ Trucks

- **Eco-driving**
- Improved traffic flow

Source: JAMA

Eco-Driving Promotion Platform



10 Tips for Eco-Driving (Since 1998)
Eco-Driving Special Month: November

10 Tips for Eco-Driving

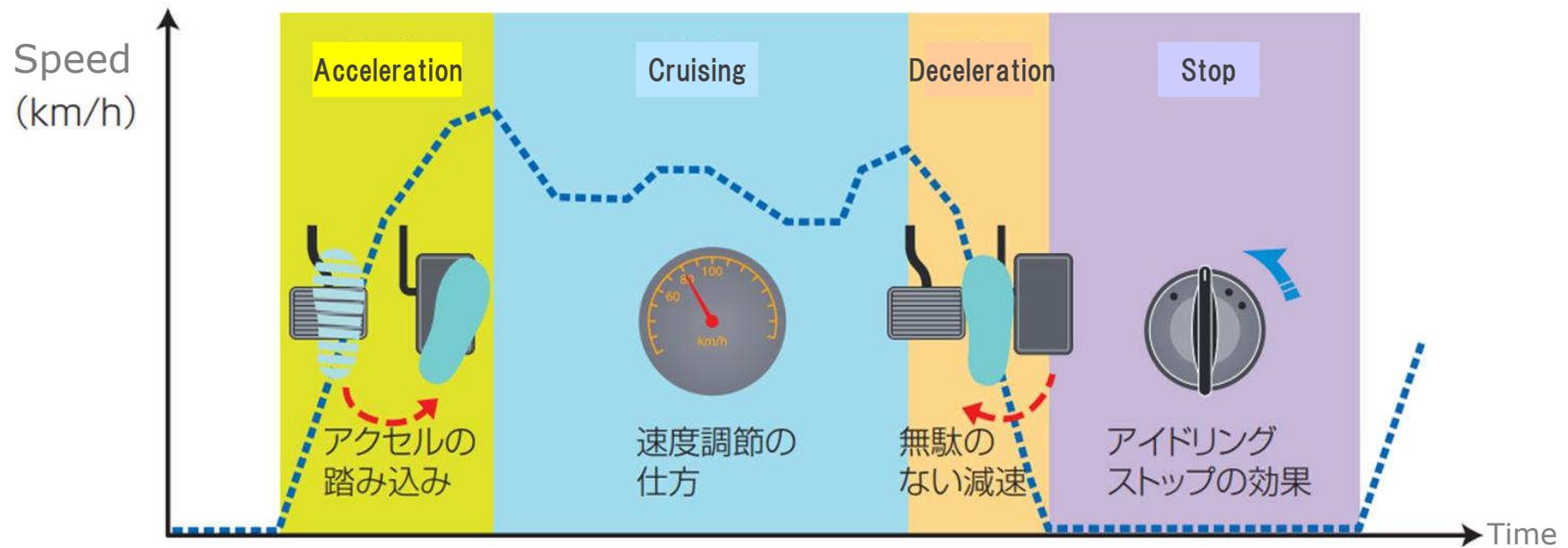
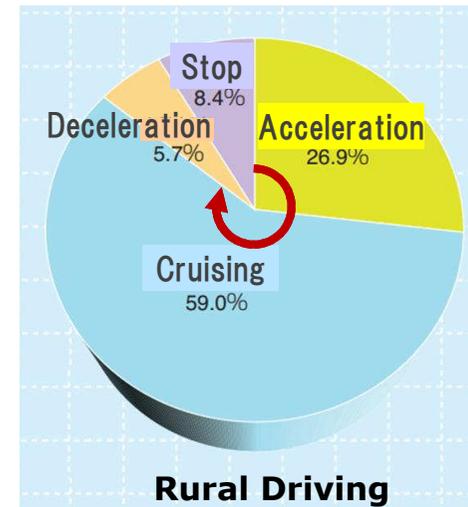
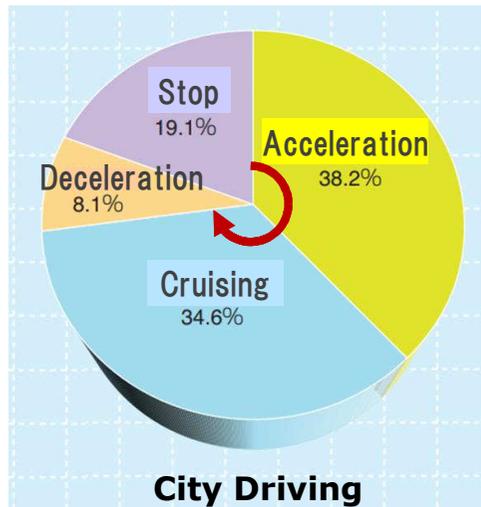


- 1) Accelerate gently
- 2) Maintain a steady speed
- 3) Decelerate by earlier accelerator release
- 4) Limit the use of your air conditioner
- 5) Don't idle your engine
- 6) Provide your itinerary
- 7) Check your tire pressure regularly
- 8) Reduce your load
- 9) Don't make congestion by parking
- 10) Note your fuel economy regularly



Source: Government Liaison Committee on eco-driving promotion

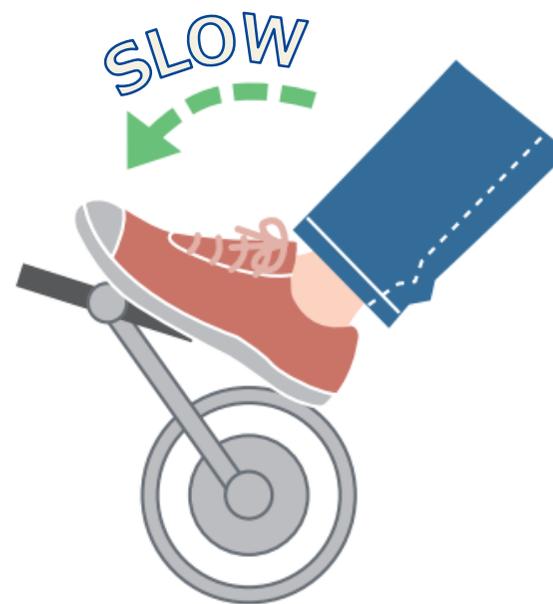
Fuel at each Drive Event



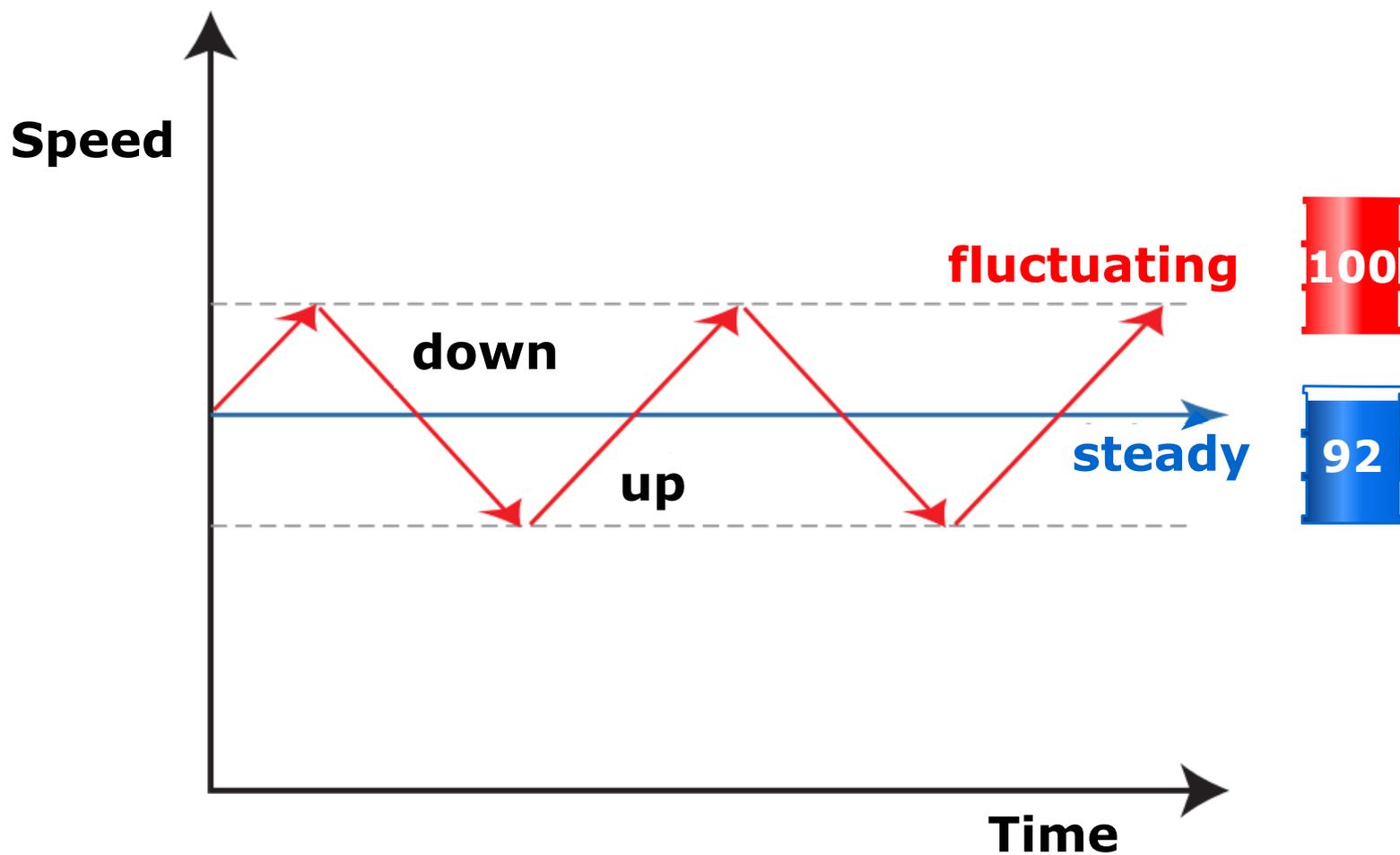
1) Accelerate gently



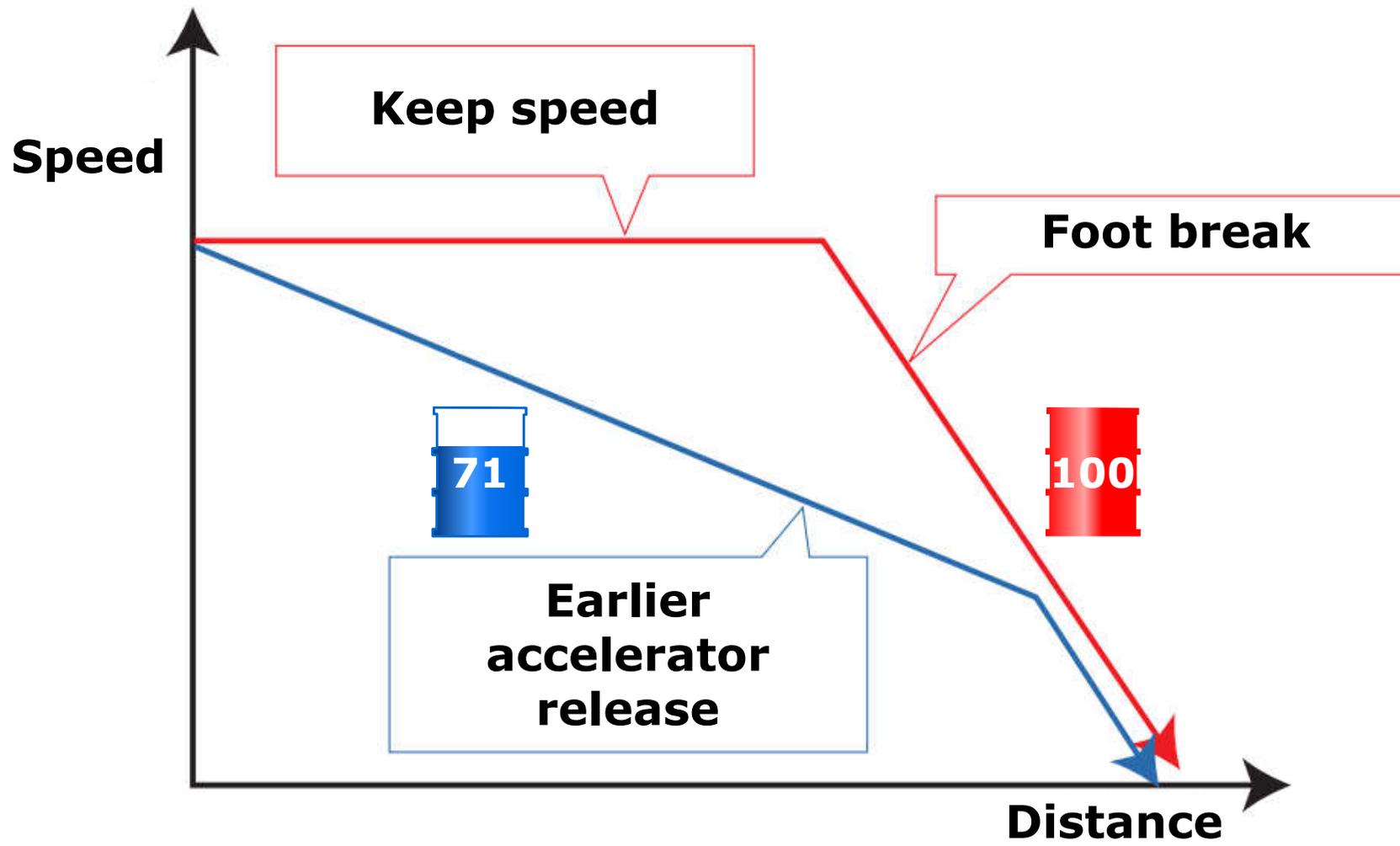
**The acceleration time
from 0 to 20 km/h: 5 sec**



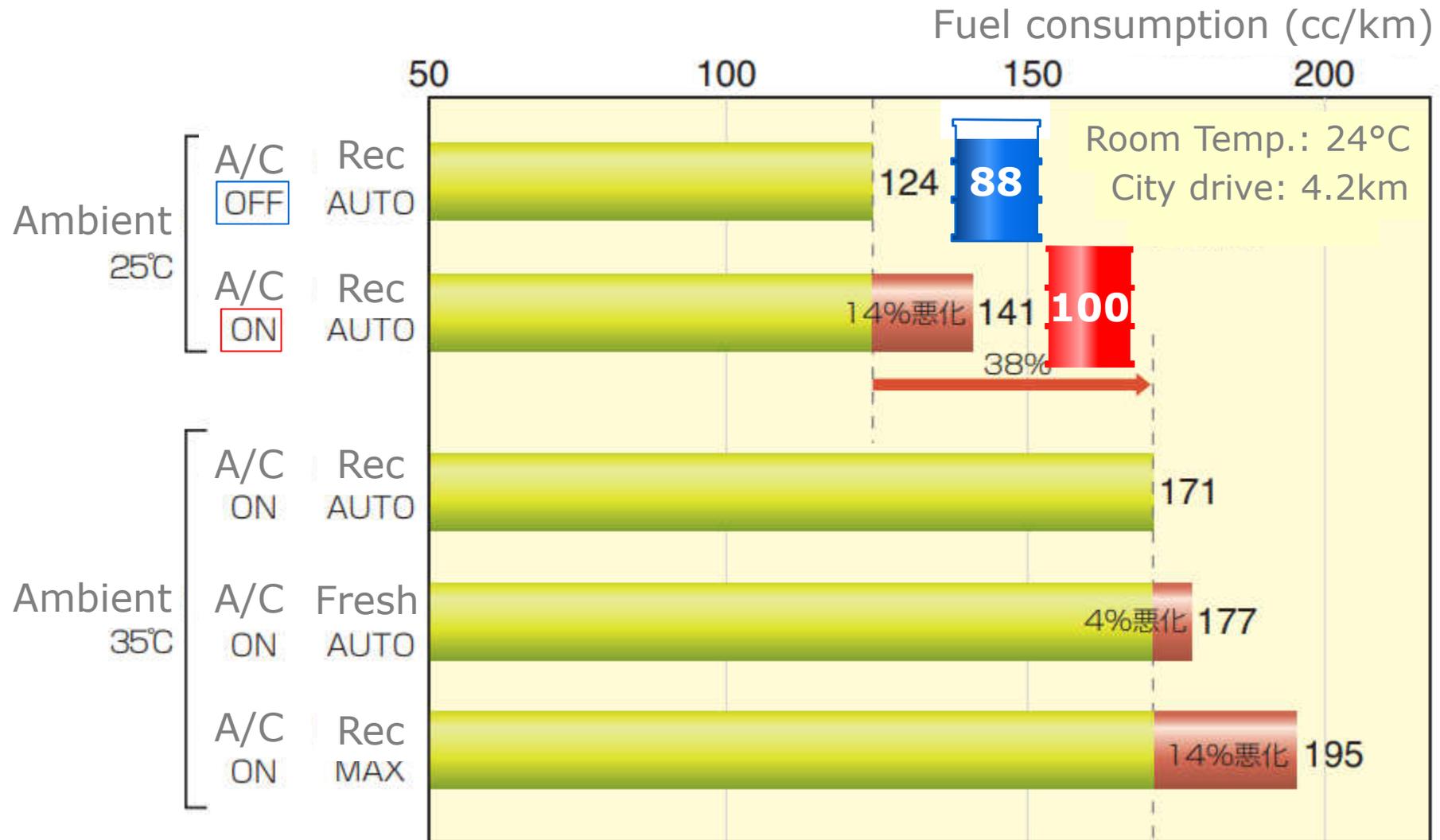
2) Maintain a steady speed



3) Decelerate by earlier accel. release



4) Limit the use of your air conditioner

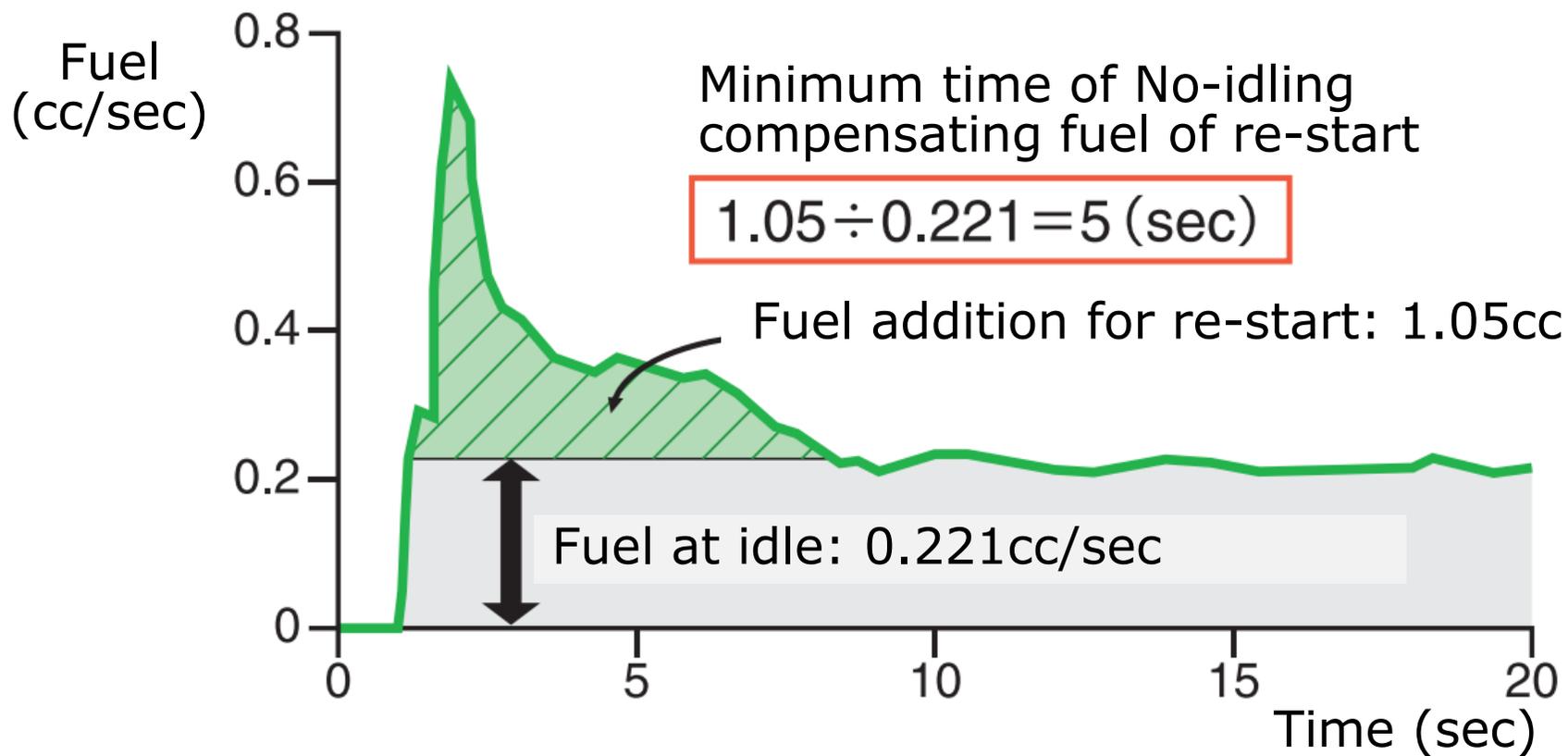


Source: ECCJ

5) Don't idle your engine



	Normal	No Idling
City trip	100	87

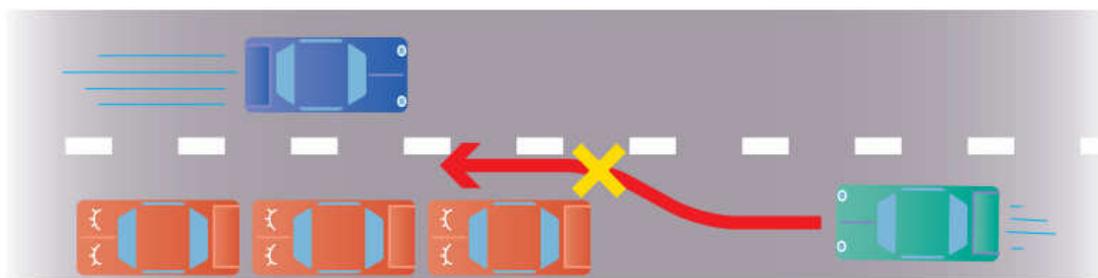
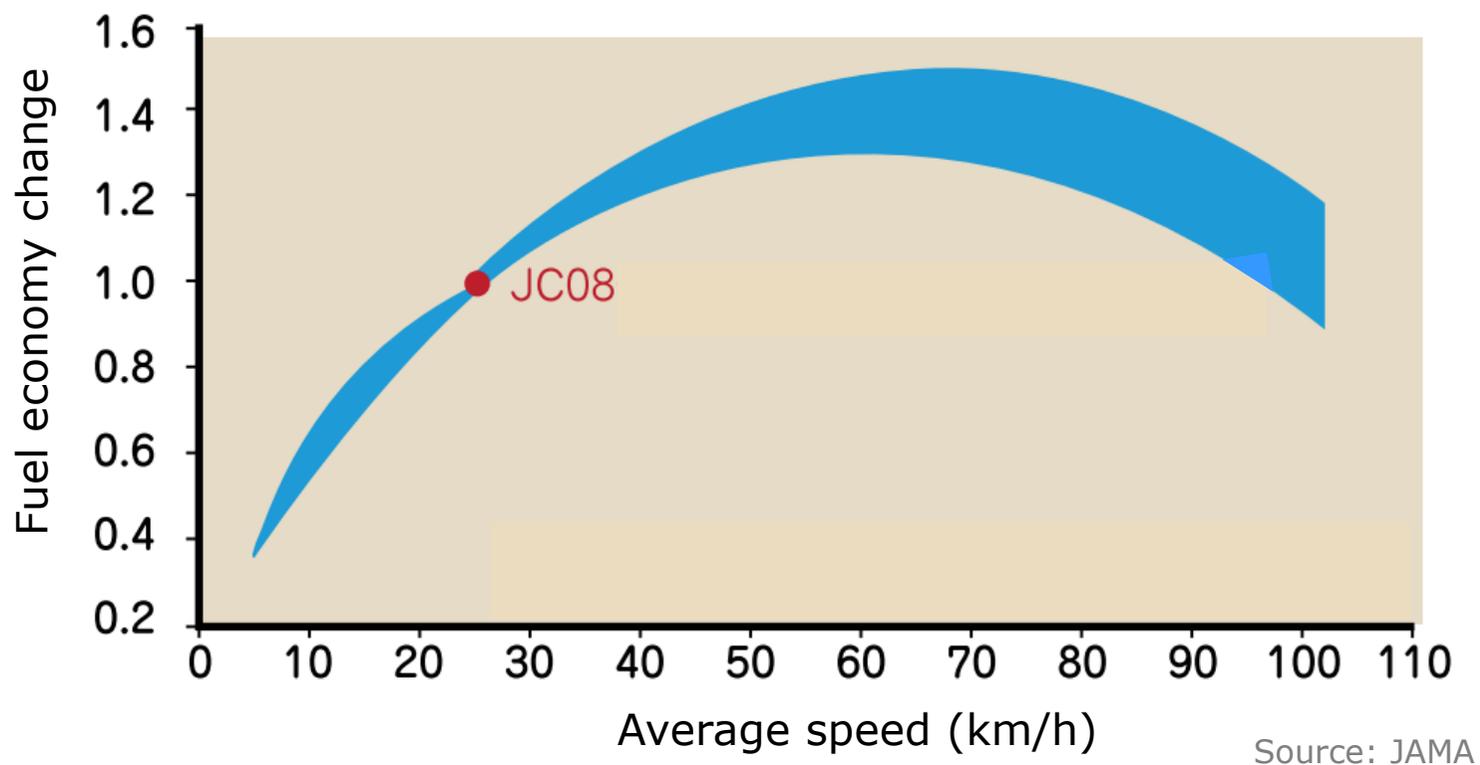


Source: ECCJ



6) Provide your itinerary

9) Don't make congestion by parking

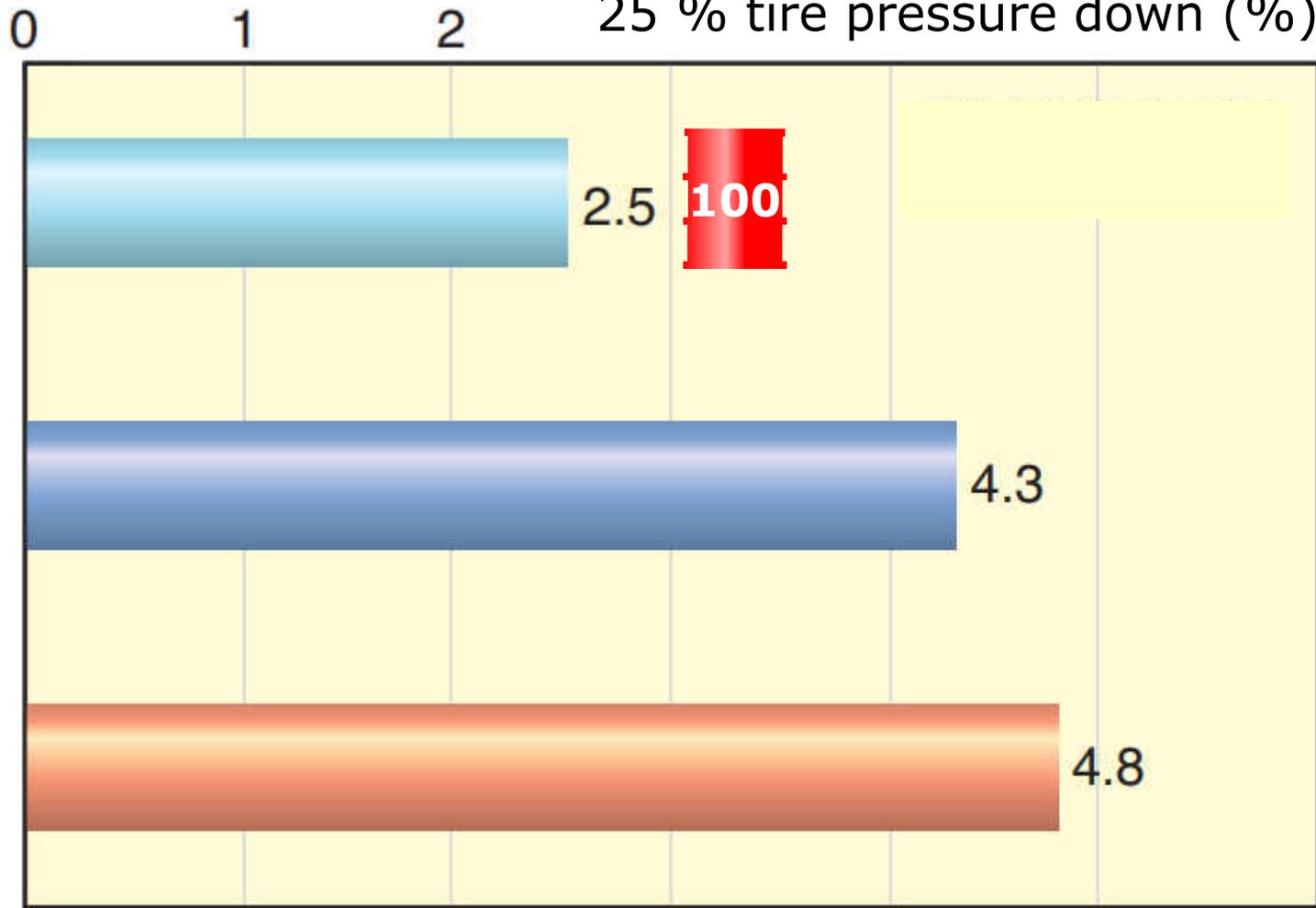


7) Check your tire pressure regularly



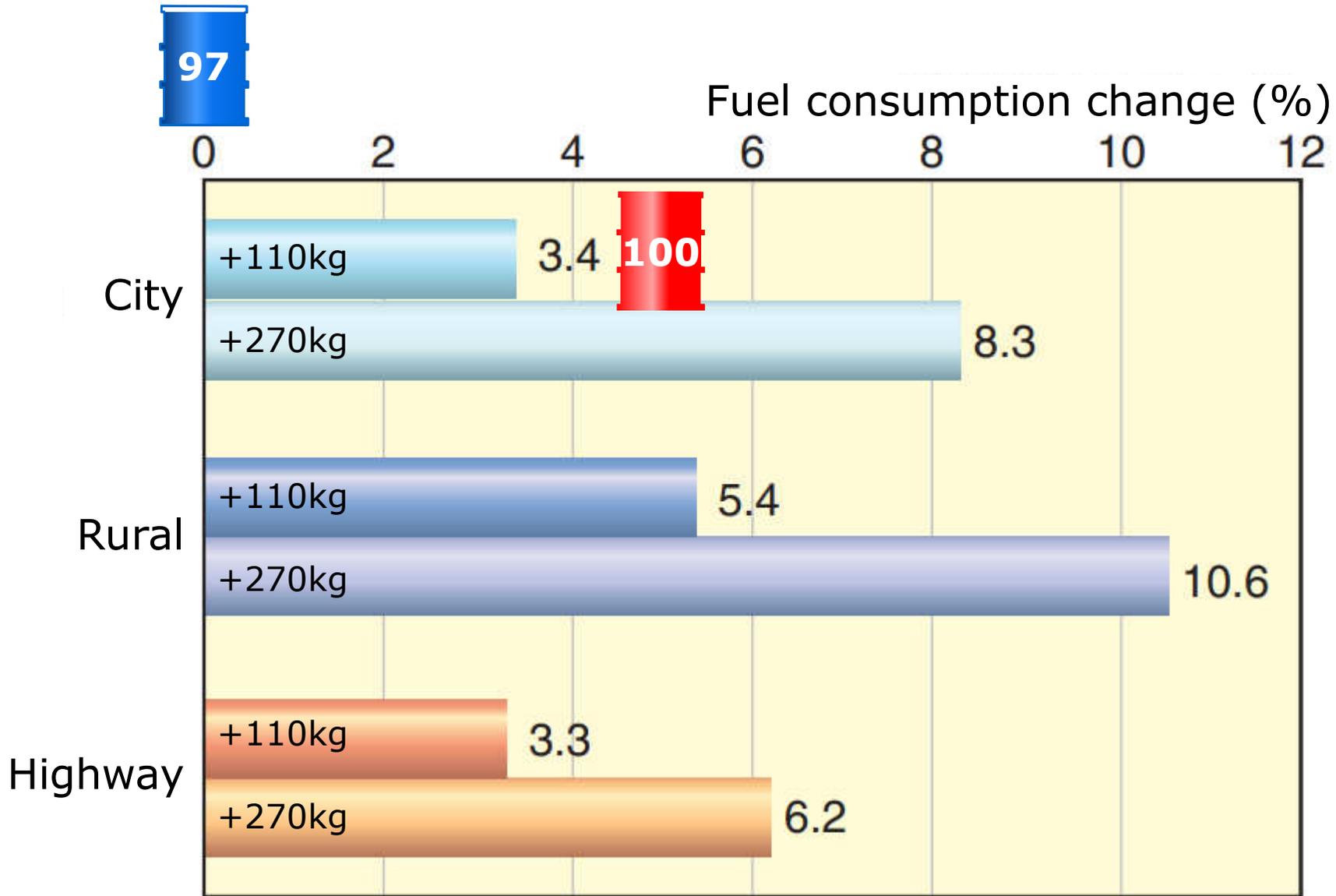
97

Fuel consumption change of 25 % tire pressure down (%)



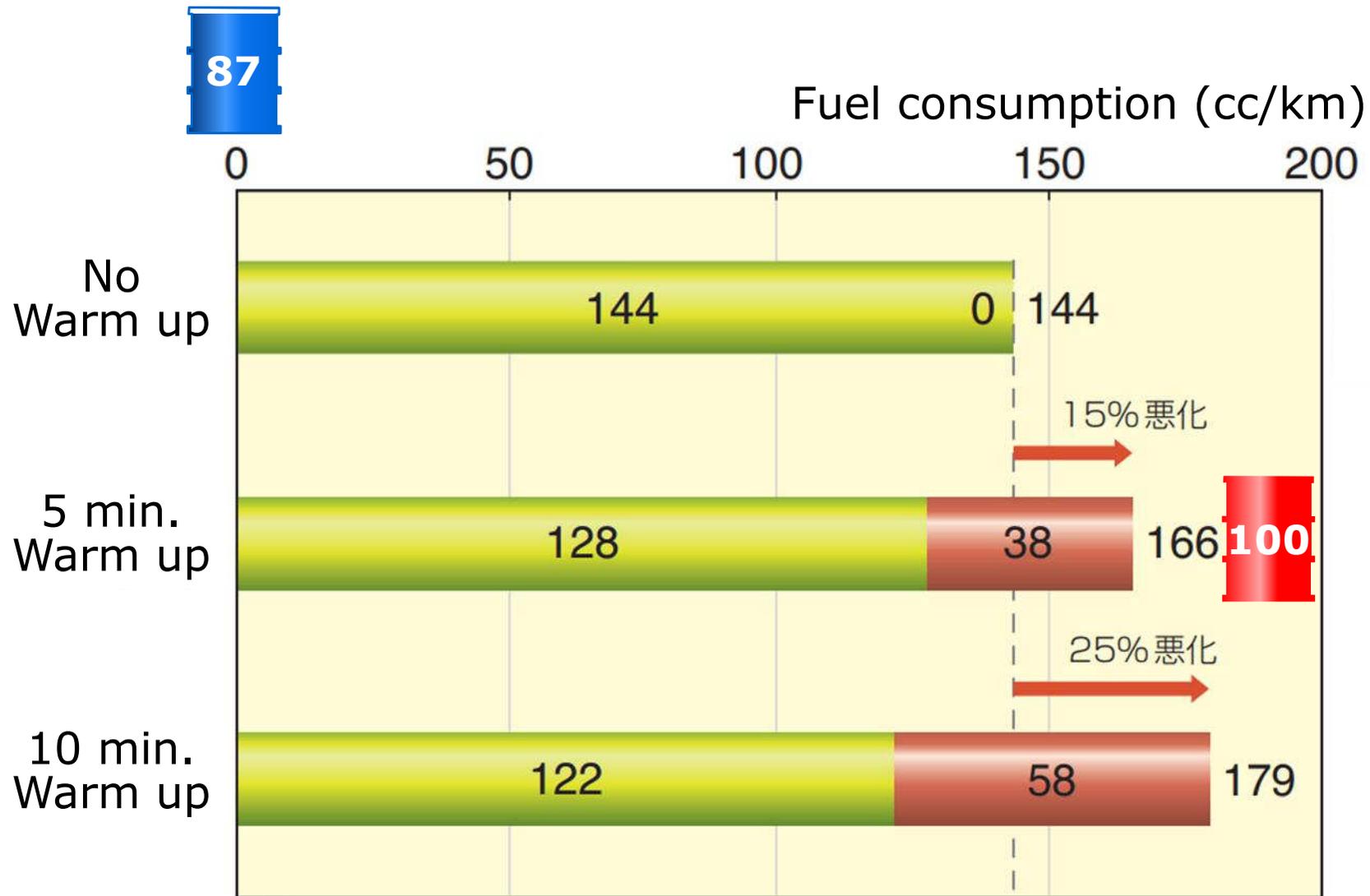
Source: ECCJ

8) Reduce your load



Source: ECCJ

Extra) Proper Engine Warm Up

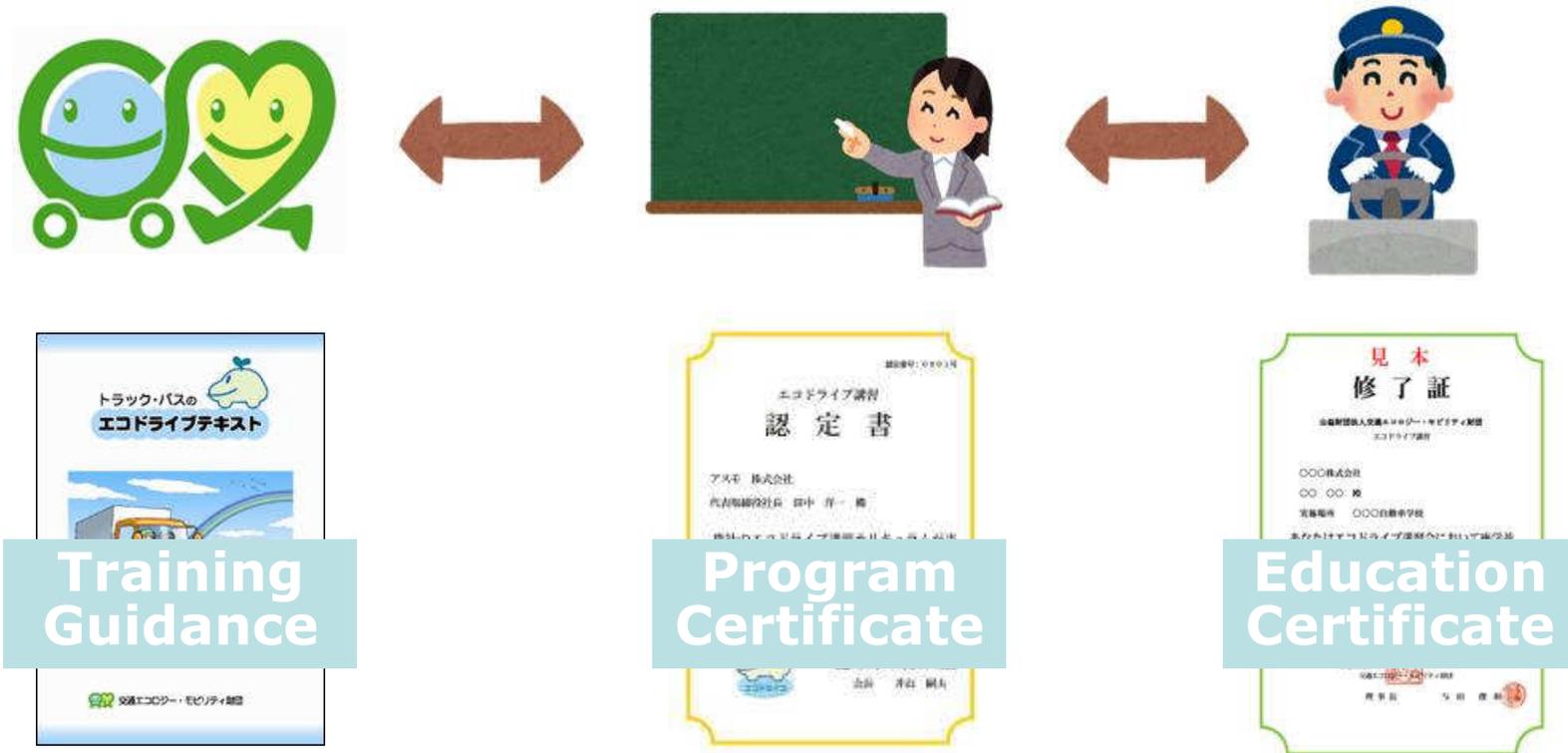


Source: ECCJ

Eco-Driving Certification



- ◆ Certification for training programs of Eco-driving educational organizations (Truck manufacturers, Sales dealers, Local truck associations and Driving schools)
- ◆ Certification for education completion of students



Eco-Driving Training Result



Performance Diagnosis



Students realize real effect of 10 to 30% fuel economy improvement through their own eco-driving practice on road.

Fuel Economy

Measured Data

Each Event FE
Gas Pedal Angle

CO2 Emissions



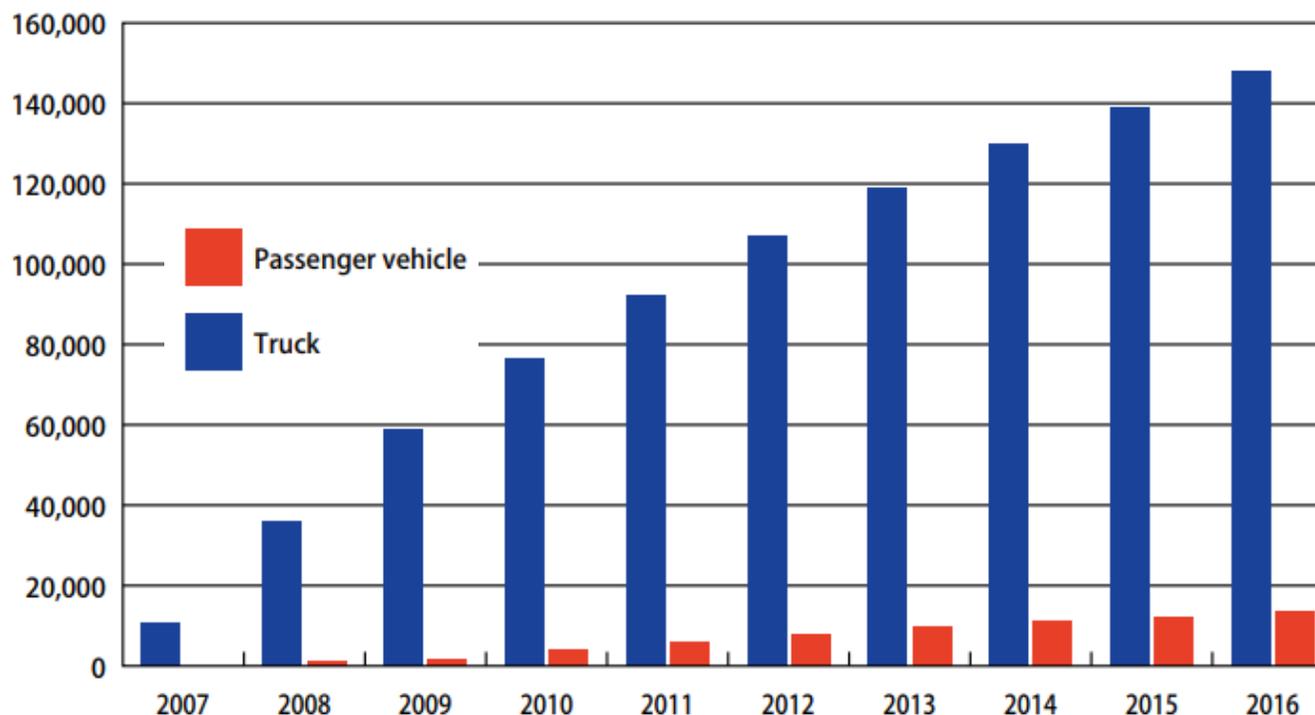
Before & After



- **Number of Certified Organization (Mar 31, 2017)**

Truck and bus	Passenger cars
17	230

- **Accumulated Number of Certified Drivers**



EcoDrive Declaration



2014~2016 ASUA, WAFUNIF, JAMA, Auto Alliance, ACEA

Guiding Principles of EcoDrive:

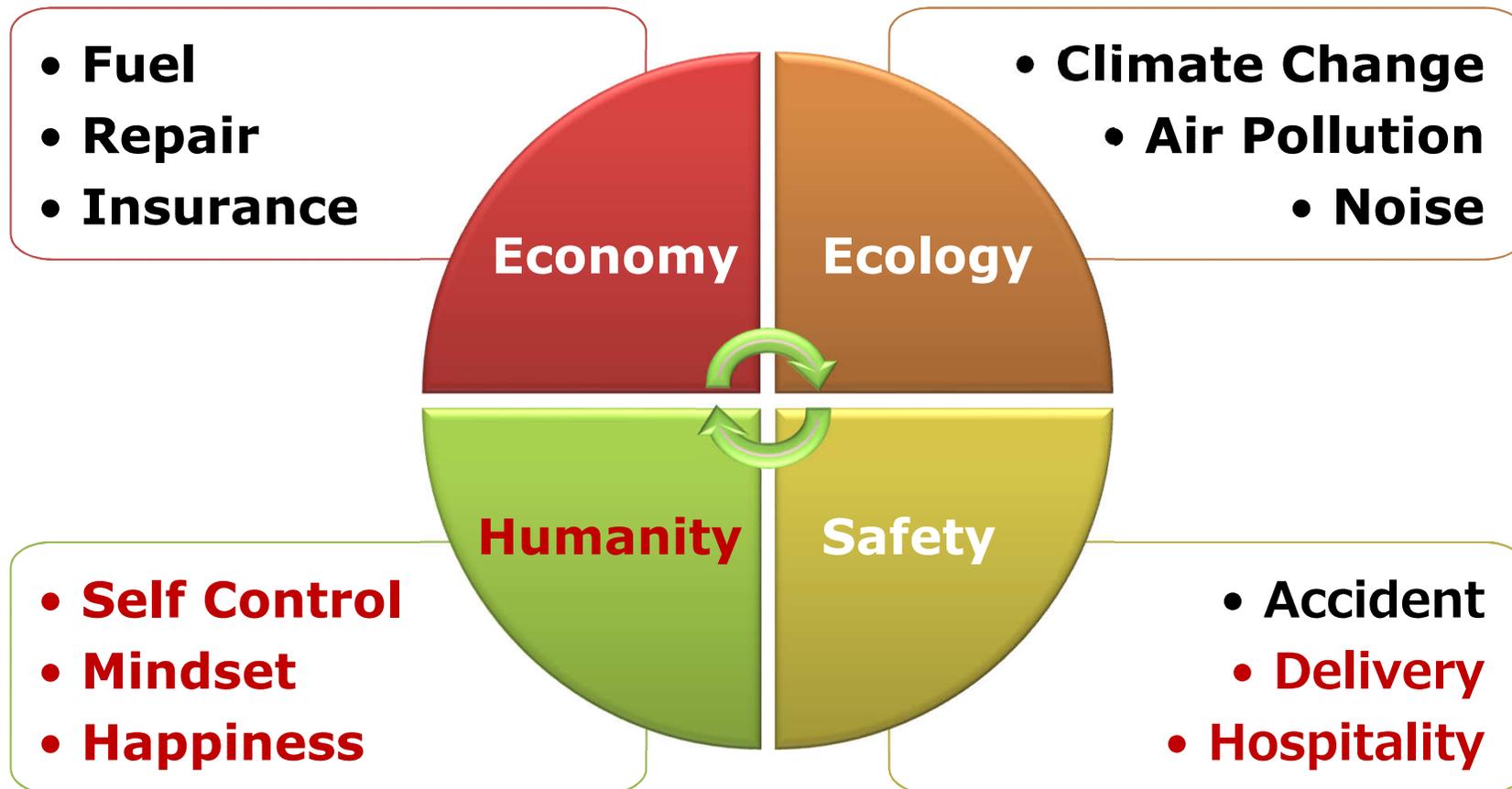
1. Reduces CO2 levels, which positively contributes to our future.
2. Saves lives by reducing accidents.
3. Preserves fuel resources.
4. Makes driving safer, more relaxed and convenient.
5. EcoDrive lowers stress, which improves health.
6. EcoDrive encourages courtesy and culture of respect, which strengthens a feeling of well-being among all of us.
7. EcoDrive can be done anytime, anywhere and by anyone.

<http://www.asua.ne.jp/conference/declaration.pdf>

Methodology:

1. Accelerate Gently.
2. Maintain a steady speed and keep a safe distance to the car in front.
3. Slow down by releasing the accelerator.
4. Make appropriate use of air conditioner.
5. Do not idle the engine while standing still.
6. Plan your trip to avoid congested route.
7. Check the tire pressure regularly.
8. Avoid unnecessary loads to reduce weight.
9. Respect Parking rules and regulations.
10. Monitor the Fuel Efficiency.

Value of Eco-Driving



Thank You

QA