

Intelligent Freight System

- Efficient Intermodal Integration as Low Carbon Solution in Japan

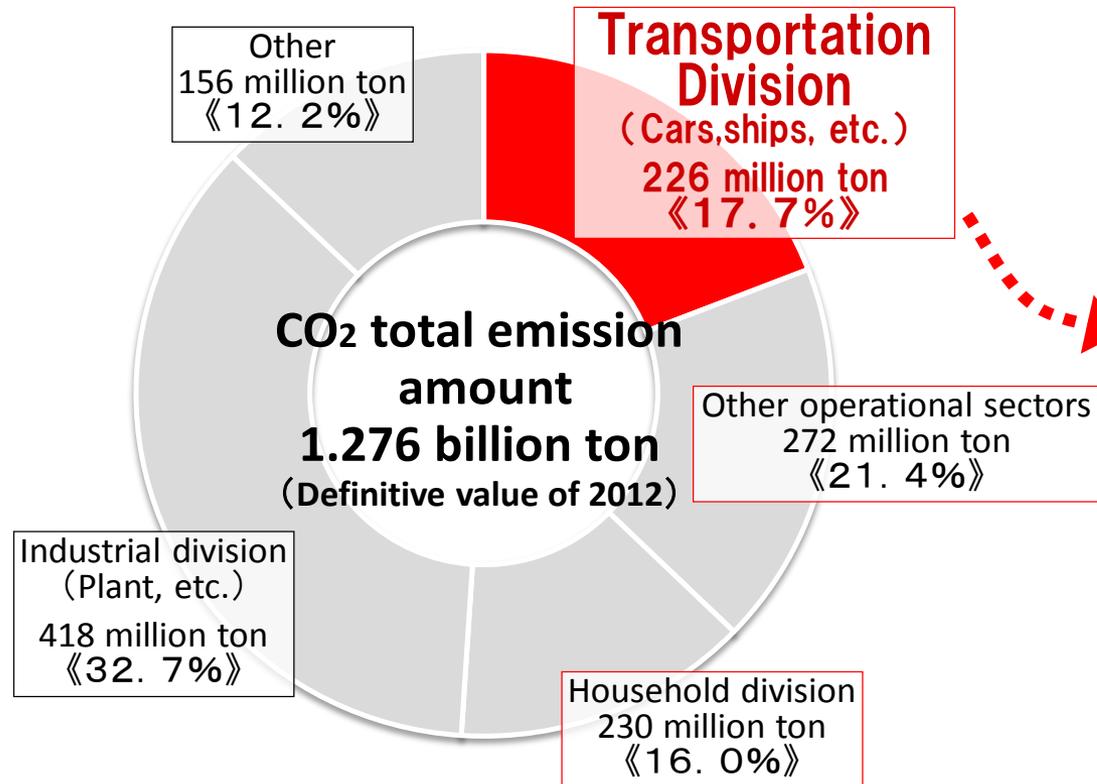
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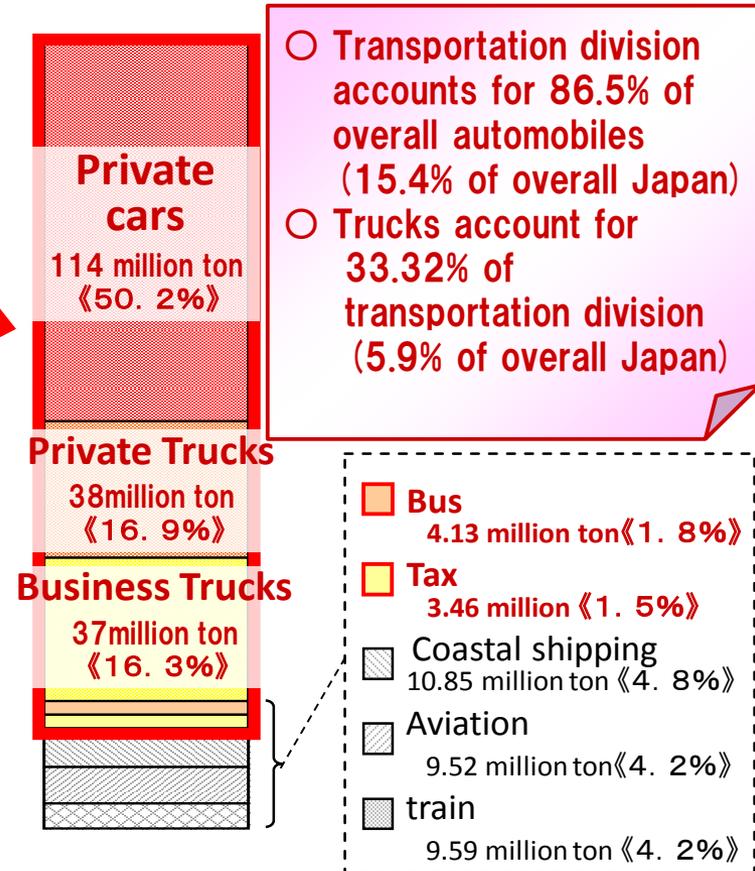
CO₂ Emission Amount of Transportation Department in Japan

- Out of CO₂ emission amount in Japan, emission amount from transportation field accounts for 17.7% of the share.
- The overall automobile accounts for 86.8% of transportation field (15.4% of overall Japan)

CO₂ emission amount per individual division in Japan



CO₂ emission amount in transportation field



- Transportation division accounts for 86.5% of overall automobiles (15.4% of overall Japan)
- Trucks account for 33.32% of transportation division (5.9% of overall Japan)

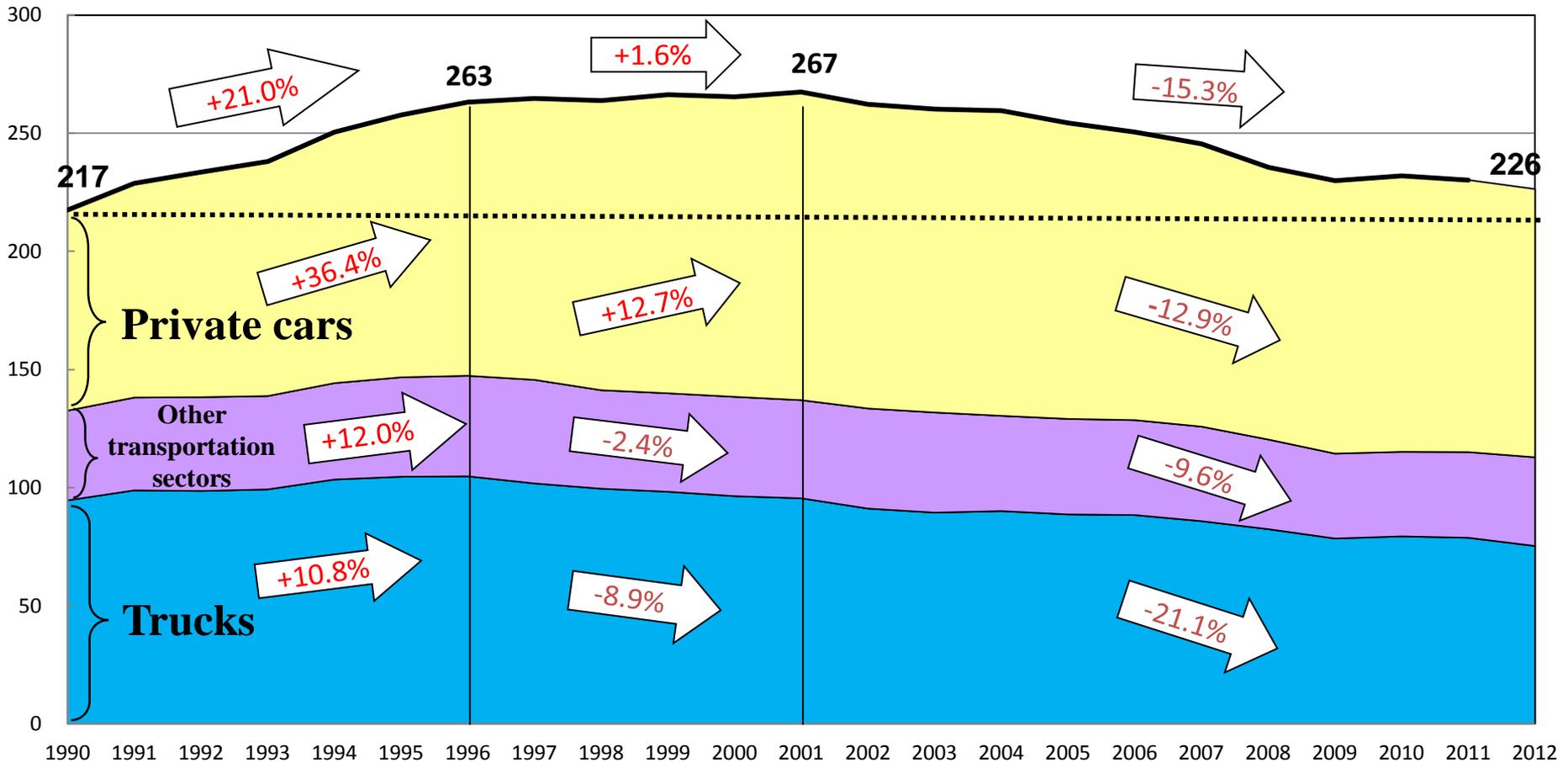
Shift of CO₂ emission amount in transportation division of Japan

○ With 2001 as the peak, the CO₂ emission in transportation division is showing a declining trend.

Carbon dioxide emission amount

(Mt-CO₂)

Definitive value of 2012



Other transportation sectors: bus, taxi, train, ships, airplanes

Low carbonization structure of distribution field



$$\text{CO}_2 \text{ emission} = \text{Transport Volume} \times \text{Efficiency} \times \text{Improving CO}_2 \text{ emission source unit}$$

[Examples]

- Make modal shift from using trucks to trains/ships
- Streamlining of truck transportation through traffic control
- Consolidation of distribution facilities
- Improvement of truck's load factor through joint delivery, etc.
- Streamline through cooperation between distribution operator and goods
- Shift from using private truck to commercial truck
- Reducing service frequency by increasing the size of vehicle
- Active use of information system
- Reducing weigh/size of packaging materials
- Use of third party logistics

- Reducing CO₂ emission source unit of cars, trains, ships, airplanes through technology innovation
- Make a shift from using diesel car to natural gas car with lesser CO₂ source emission unit.
- Improving fuel costs through eco-drive, etc.

(Other examples related to low carbonization of distribution field)

- Low carbonization of sea port
- Low carbonization of warehouse

Low carbonization structure of distribution field



Modal shift(using trucks to trains)



Reducing CO2 emission source unit of ships
airplanes through technology innovation



Make a shift from using diesel car to natural
gas car with lesser CO2 source emission unit.

Green logistics partnership meeting



- Meeting held for the sake of advancing concerned participants such as model shippers, distribution operators to be able to share and exchange their awareness concerning the importance of “green” logistics.
- Host: Ministry of Land, Infrastructure, Transport and Tourism;
Ministry of Economy, Trade and Industry; Japan Institute of Logistics System, Japan Federation of Freight Industries
- Support: Japan Business Federation
- Establishment: April, 2005
- Number of Members: 3,314 (as of December, 2013) . . .
distribution operator, cargo owner enterprise, individual industry groups, thinktank、research institutes, etc.
- Implementation of awarding/introduction of excellent business enterprises, holding discussions, etc. concerning “green” distribution to expand public's voluntary initiative toward CO₂ reduction.

Green logistics partnership meeting



~ Examples of commendation related to Ministry of Land, Infrastructure, Transport and Tourism (2014) ~

Ministry of Land, Infrastructure and Transport minister's secretariat distribution deliberation official commendation

Project Name :

“Streamlining of coal chemical product through modal shift of trains ~ new potential for liquid product transportation through birth of oil freight train & special coal chemical product tank container train”

business operators :

JAPAN OIL TERMINAL CO., LTD, Shin-Etsu Chemical Co., Ltd、Japan Freight Railway Company, VORTEX SEIGUN Co.,Ltd., Kanagawa Express



Special award for “green” distribution partnership meeting

Project Name :

“ ~ Moving toward further evolution of cooperative delivery ~ Realization of CO₂ reduction through coordination with wholesale stores by reducing standby delivery vehicles for cooperative delivery”

business operators :

KONPOU UNYU SOKO, Inc., Kanakan Inc., HOKURIKU CHUO SHOKUHIN CO.,LTD. , HOKURIKU RYOSHOKU



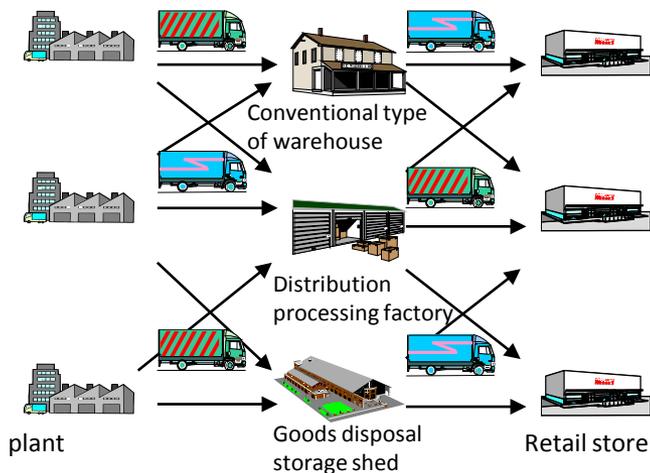
Laws concerning advancement of centralization and streamlining of distribution operation

【Law summary】

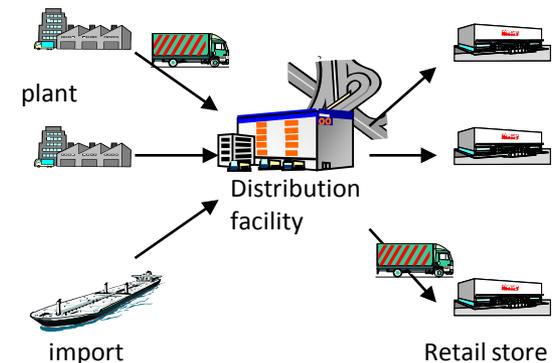
< Basic policy >

- To implement transport/storing/distribution processing in comprehensive manner
- Must make sure transportation and delivery are being streamlined through consolidation/joint transporting, etc.
- Must make sure the plan is centered around distribution operation facilities located near highways/seaport/etc.

Inefficient distribution



Efficient and small environmental load distribution



Planning

Approval

Laws concerning advancement of centralization and streamlining of distribution operation

【Support measures】

- Advancement of comprehensive implementation of distribution business :
Lump-sum obtainment of project approval, etc.
- Servicing of distribution facility base coordinating with social capital :
Providing consideration to special measures for taxation system,
location regulations
- Support for small/mid sized business entrepreneurs, etc. :
financial, etc. support, monetary policy, human resources development

【Effect】

- Advancing of distribution reform, **reduction of environmental load**,
regional vitalization
 - roughly 20% reduction of CO₂ emission amount

Law Regarding the Rationalization of Energy Use



Target transportation division
< Freight and passenger transportation >

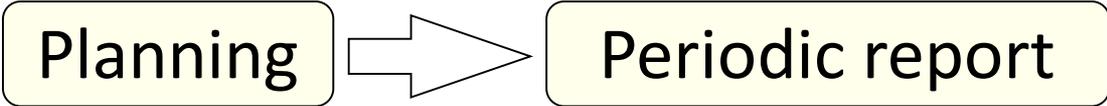


Freight Transportation

Transportation business operator
+
Model shippers

Passenger transportation

Transportation business operator



Law Regarding the Rationalization of Energy Use



Transportation business operator
(Cargo • passenger)

Freight • Entity with passenger transportation as their business
(Includes private transportation)
Truck transportation, coastal shippings, trains, airplanes

Specified transportation business operator
(As of June, 2013 585 companies)

Specification condition

Number of owned trucks : Over 200 trucks
Freight space of coastal shipping : Over 20,000 tons
Number of owned trains : Over 300 trains
Maximum take-off weight of airplanes :
over 9,000 tons

Model shipper

Entity that have transportation business operator transport their goods (includes private transportation)

Specified model shipper
(As of June, 2013 850 companies)

Specification condition

Yearly transportation volume of one's own goods
(Own transportation portion + entrustment portion) is over 30 million tons

Certificate system for green management of transport division

- Draw up manual that will allow business operators to engage in voluntary environmental conservation activities through Eco-Mo Foundation coordinating with the government and affiliated industry entities.
- Eco-Mo Foundation giving certification to business operators with above certain qualified level pursuant to the manual
 - Certifying institution : Eco-Mo Foundation
 - Target categories : truck, bus, taxi storage, harbor transportation, passenger ship, coastal shipping
 - Valid period : 2 years
 - Certification condition : Must perform above certain level of initiatives per individual rating items
 - Registration result : 4,522 cases,
7,313 business office (as of October 20, 2014)



Certificate system for green management of transport division



< Rating Items (For trucks) >

Category	Rating Items
1. Servicing the structure/system for environmental conservation	<ul style="list-style-type: none"> • Draw up of environmental policy • draw up of environmental action plan • construction of advancement system • Implementing environmental education to employees
2. Implementation of eco-drive	<ul style="list-style-type: none"> • Implementation of fuel management • Fuel goal setting • Constructing implementation system • Implementing banning of idling • Servicing of eco-drive promotion method
3. Implementation of low pollution vehicles	<ul style="list-style-type: none"> • Incorporation of newest regulation approved diesel car • Corresponding to region specified low pollution vehicles, etc.
4. Service/inspection of cars	<ul style="list-style-type: none"> • Construction of implementation system • appropriate inspection, implementation of service • inspection based on one's own standard, implementation of service
5. Promoting appropriate disposal of toxic wastes and recycle	<ul style="list-style-type: none"> • Implementing education toward employees concerning toxic wastes • scrapped cars, appropriate management of toxic wastes
6. Promoting environmental conservation of management division	<ul style="list-style-type: none"> • Advancement of environmental conservation in office

Promotion of eco-drive

【Purpose】

Our goal is to reduce CO₂ emission from transportation division through promotion of eco-drive that can easily be implemented by ordinary citizens as the measure against global warming



地球と走ろう 環境にやさしいエコドライブ

- 1 ふんわりアクセル「Eスタート」**
やさしい発進を心がけましょう。
経済の消費より少し遅やかに加速する（最初の半秒で速度が20%目安です）だけで11%燃費削減が期待できます。やさしいアクセル操作は安全運転にもつながります。発進に余裕を持って、ゆったりとした発進で運転しましょう。
- 2 加減速の少ない運転**
車間距離は余裕をもって、安全な定速走行に努めましょう。
車間距離に余裕をもつことが大切です。車間距離を余裕に保ち、減速にゆとりのある走り方をすると、減速の機会も少なくなります。その分市街地で渋滞、発進での燃費削減効果も期待できます。また、同じ速度であれば、坂のアップダウンはありますが燃費はほとんど変わりません。交通の状況に応じ、できるだけ減速動作の少ない走行運転をしましょう。
- 3 早めのアクセルオフ**
エンジンブレーキを積極的に使いましょう。
エンジンブレーキを早めにかけると、燃料の消費が抑えられる（燃費カット）ので、2%燃費削減が期待できます。止まる直前になったら、早めにアクセルから足を離して、エンジンブレーキで減速しましょう。また減速したか、減速する場合はエンジンブレーキを多用しましょう。
- 4 エアコンの使用を控えめに**
車内を冷やし過ぎないようにしましょう。
気象条件に応じて、こまめに温度調節の調整を行いましょう。特に夏場に設定温度を下げていないことがポイントです。気温を適切に保つと、エアコンが稼働すると、1.2%燃費削減が期待できます。
- 5 アイドリングストップ**
慣用なアイドリングを止めましょう。
10分間のアイドリング（ニュートラルレンジ、エアコンOFFの場合）で、130cc1台あたりの燃費を消費します。燃費が1%減り燃費削減効果は、10%の燃費削減効果に相当するアイドリングを止めましょう。
- 6 電機運転は適切に**
エンジンをかけたらずで出発しましょう。
現在販売されているガソリン車を車庫においておくと燃費は悪いです。車庫内でも特別な対応が必要。走りながら燃費を測る「クルマアプリ」がおすすめです。燃費を測ることにより走行時の燃費は改善しますが、より燃費を測るには100kmの燃費計測が必要となりますので、全体の燃費削減効果は限定的です。
- 7 道路交通情報の活用**
出かける前に計画・準備をして、渋滞や道路情報等の情報をチェックしましょう。
1時間のドライブで、遅く走って10分燃費に走行すると、14%燃費削減効果に相当します。渋滞や道路情報等を事前に把握して、行き先及びルートを決めたらしく渋滞を回避しましょう。また道路交通情報をチェックして渋滞を避ければ燃費と時間の節約になります。スマートフォンアプリ等で道路交通情報や渋滞情報を活用しましょう。
- 8 タイヤの空気圧をこまめにチェック**
タイヤの空気圧を適正に保つなど、推奨気圧を遵守しましょう。
タイヤの空気圧が適正より5%以上低い状態で100km走行した場合、燃費が2%削減、一方で4%燃費、それぞれ燃費が低下します。また、安全運転のためにも推奨気圧を遵守しましょう。
- 9 不要な荷物は積まずに走行**
不要な荷物を積まないようにしましょう。
100kgの不要な荷物を積むだけで、3%燃費削減が期待できます。車の燃費は荷物の量にも影響します。不要な荷物の情報は、車から下りましょう。
- 10 駐車場所に注意**
渋滞などをまねくことから、濡れ駐車は避けましょう。
交通の妨げになる場所や駐車は交通規制を受ける可能性があります。濡れ駐車は燃費の低下にも影響します。濡れ駐車は燃費の低下にも影響します。濡れ駐車は燃費の低下にも影響します。濡れ駐車は燃費の低下にも影響します。

エコドライブ普及推進協議会
事務局 交通エコロジー・モビリティ財団



Accelerate gently "e-start"

10 tips for eco-driving

Promotion of eco-drive

【Content of measures】

- Promotion of eco-drive popularization and promotion conference activities (1997~)
 - Holding of symposium, distribution of flyers, etc.
- Issuing of eco-drive course certificate and course completion certificate (as of end of February, 2014)
 - Issuing of course completion certificate, fuel analysis software, providing of posters, etc., issuing of eco-drive correspondence

	Number of certified organization	Number of course completion certification for 2013	Total number of course completion certification
Trucks(2007~)	16	11,132	118,136
Cars(2008~)	237	1,535	9,491

- Competition event to encourage eco-drive activities and have so far received application from over 1,000 business offices.

New initiatives to reduce wasteful transportation volume

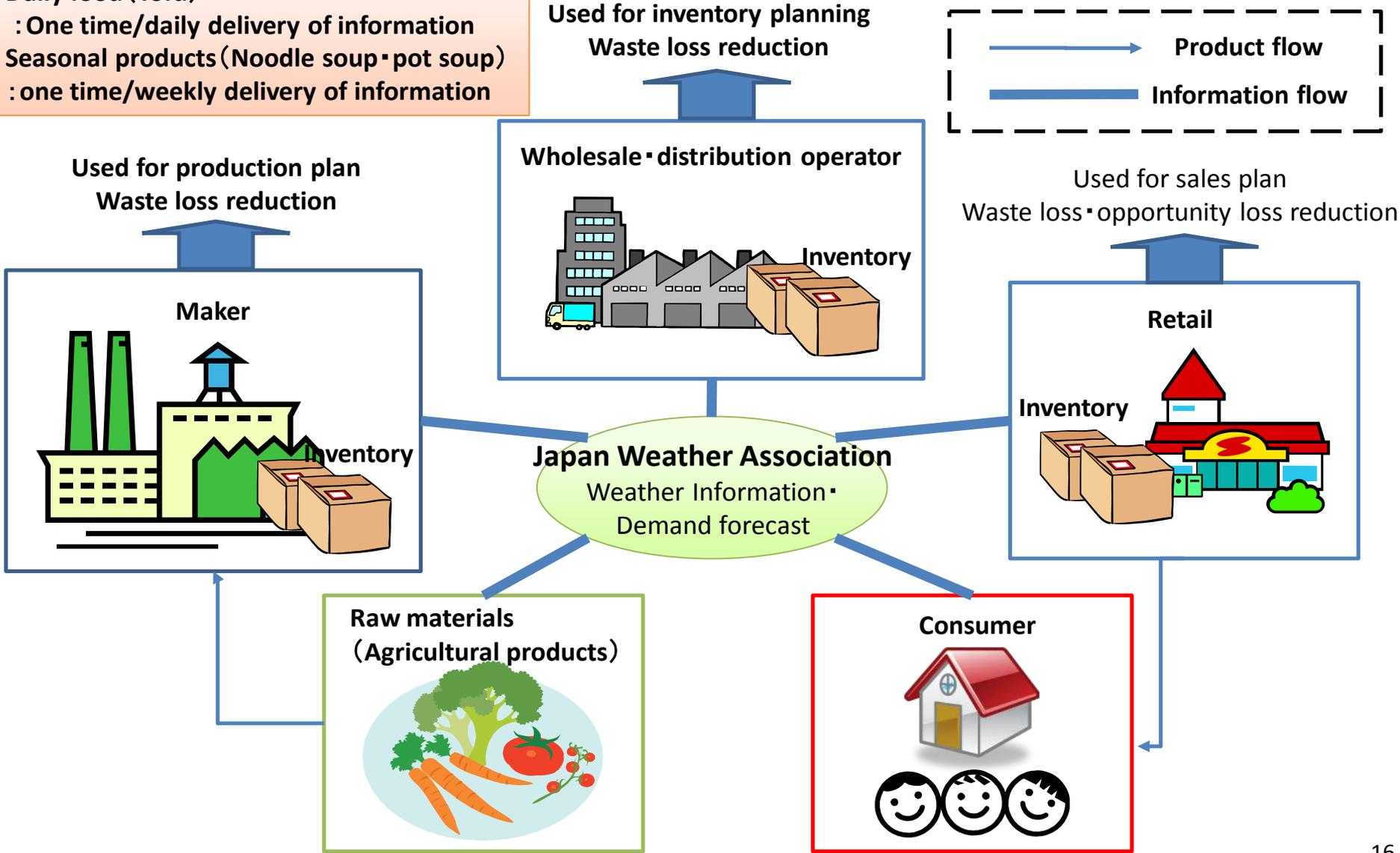
~Demand forecast improvement /information sharing thorough weather data~

- Occurrence of food loss and wasteful transportation/delivery for products such as tofu, etc. where demand is affected by the weather topped with short expiration period.
- Sharing information between related entities by improving demand forecast through Japan Weather Association.
- Strive to achieve food loss reduction and reduce 5% of unnecessary CO₂ occurrence

New initiatives to reduce wasteful transportation volume

~Demand forecast improvement / information sharing thorough weather data~

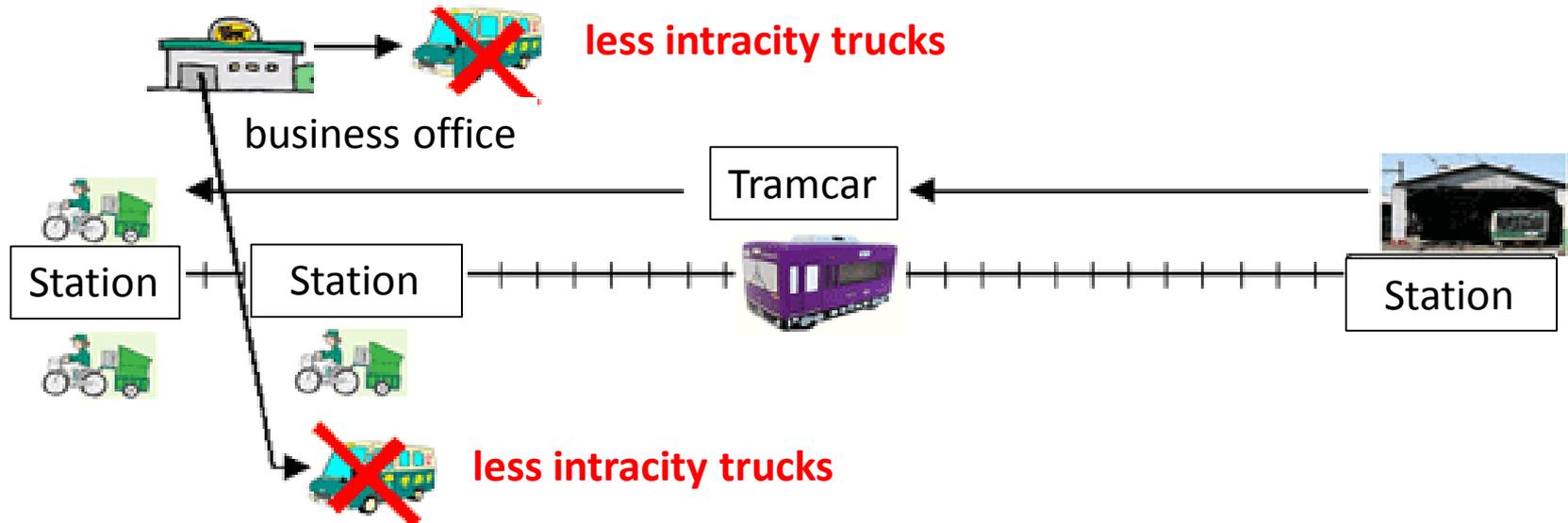
Daily food (Tofu)
: One time/daily delivery of information
Seasonal products (Noodle soup • pot soup)
: one time/weekly delivery of information



New initiatives in improving transportation efficiency

~ Low carbonization type collection/delivery system that uses tramcars ~

- Constructing the collection/delivery system that uses tramcar for transportation between distribution terminal and business office.
- Carts equipped with collection/delivery containers are being loaded onto a train at departing station, such carts are unloaded at each respective stations, and the sales driver loads it up (without making any changes) onto an electric bicycle attached with two-wheeled cart and goes on making collection/delivery.



New initiatives in improving transportation efficiency

~ Low carbonization type collection/delivery system that uses tramcars ~



Transportation by chartered train



Sight of unloading cart from train at station



Making delivery by using bicycle attached with two-wheeled cart

New initiatives in improving CO₂ emission source unit

~Driving support that uses operation data of trucks~

- Promotion of digital tachometer for the obtainment of trucks operation data
- Starting of initiative where obtained operation data are being gathered by cloud and being utilized
- Implementation of service, etc. where driving level is being rated with actual numbers instead of just Intuition by analyzing data gathered by cloud center and making comparison between actual speed during the drive and ideal speed
- Thanks to this driving support service, in addition to seeing the effect of incorporating digital tachometer, fuel costs have improved roughly 15% along with reduction of accidents since it leads to safe driving.

New initiatives in improving CO₂ emission source unit

~Driving support that uses operation data of trucks~

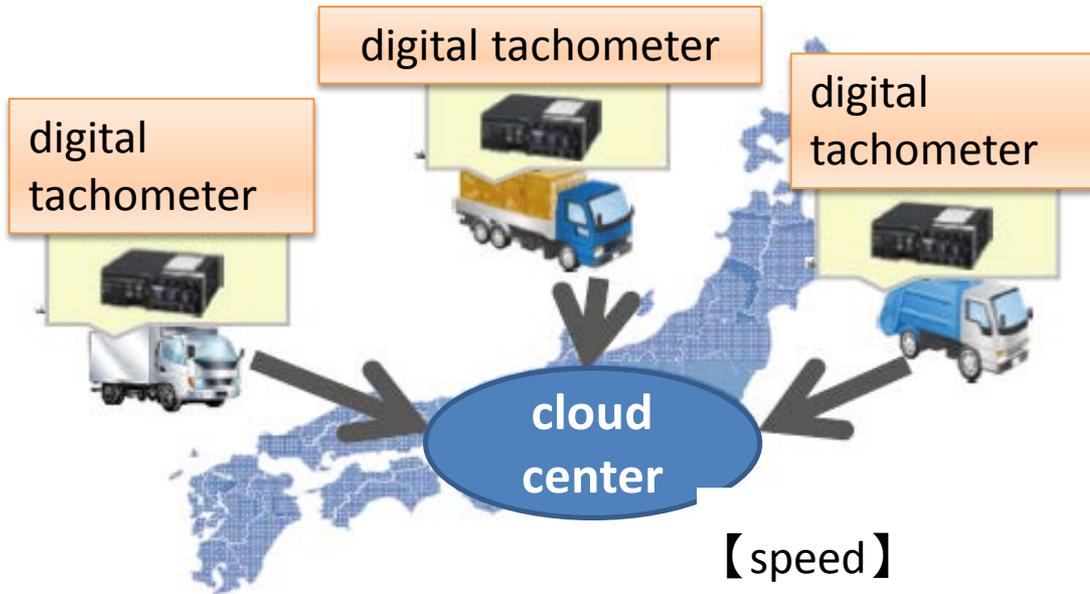
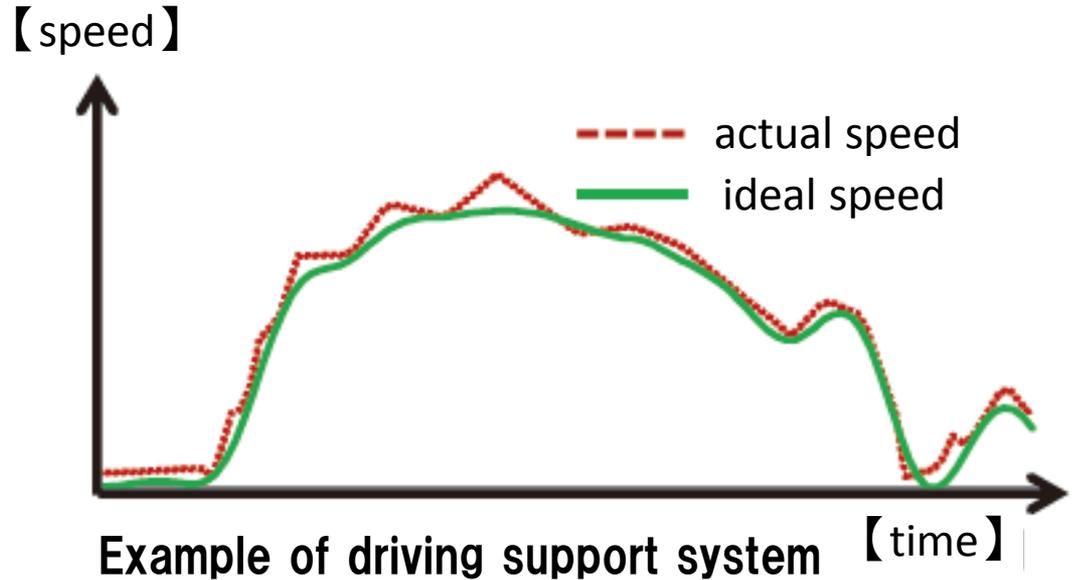


Image of driving data collecti



Thank you

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