

Environmental Fiscal Reform for Environmental, Land Infrastructure and Transport Problems in Japan

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Environment and Transport

- 2 essential factors in relation between environment and transport
 - It's environmental loads
 - It's social acceptability



→ Climate Change do not have to (or should not) be the only reason for demanding sustainable transport.

CHINA

RUSSIA

NIIGATA is still not famous.

NORTH KOREA

Japanese Sea

NIIGATA 新潟

SOUTH KOREA

← TOKYO

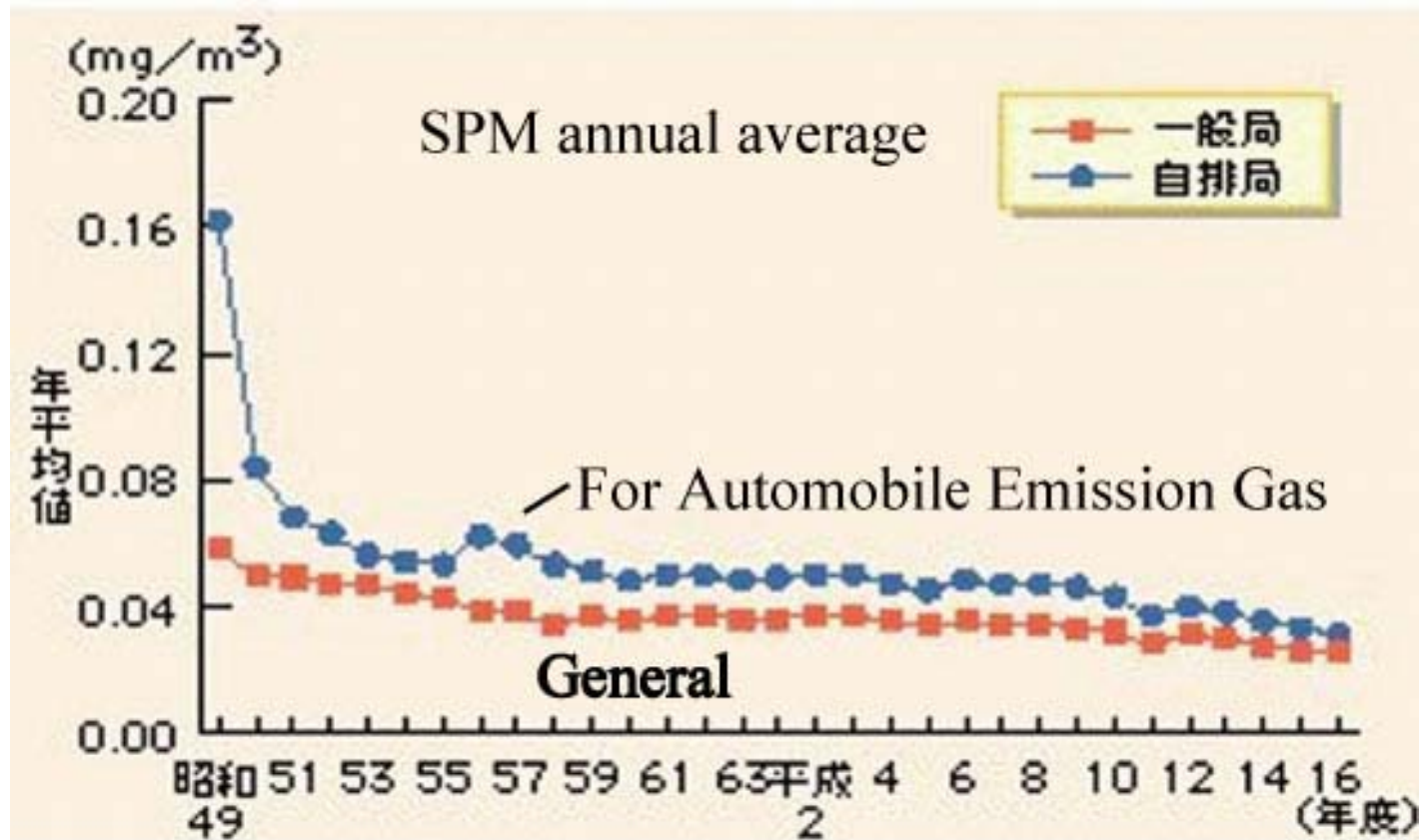
Pacific Ocean



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Climate Change is not the only reason for the need to reform environmental policies



1969

Source: MoE

2004

Eco-Efficiency and Total Environmental Resource Inputs

- “ (Inverse) Eco-Efficiency” and “Total Environmental Resource Inputs” :
 - Their time-series features (refer to Toudou 2006 and 2008)
(Phenomenon, already stated in : **Stanley Jevons’ “Coal Question” 1865**)
- Improvements in Efficiency do not mean reduced resource inputs, inter-related but can be adversely related.

Inverse Eco-Efficiency: ρ_t

$$\rho_t = \frac{E_t}{Y_t}$$

← Total Inputs
of Environmental
Resources

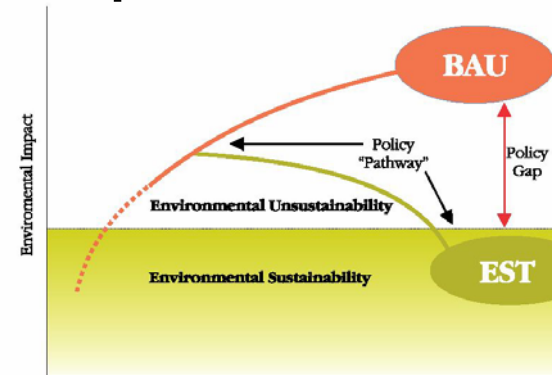
← Level of Activity

$$\frac{dE_t}{dt} = \frac{d\rho_t}{dt} \cdot Y_t + \rho_t \cdot \frac{dY_t}{dt}$$

In Toudou(2006)

Environmentally Sustainable Transport Policies

- E S T :Environmentally Sustainable Transport (OECD)
- It's adaptation in wider (more general) context
- → Systematic Understanding
- → Systematic Measures against problems



Automobile related taxes and the Environmental Tax

- Automobiles are widely taxed→Table 2.2
- Fuel taxes have been existed on the same tax bases, that are planned in proposed Environmental Taxes in Japan.

» Refer to F.Toudou's 2006 paper. (forthcoming in CIET, 2008)



Table 2-2 Automobile-related Taxes

Stage	Name of Tax	National or Local (Its compositions)	SPTRI or not
Purchase	Automobile Acquisition Tax	30% : prefectures and designated cities 70% : municipalities	Yes
Holding	Automobile Weight Tax	National (1/3 Automobile Weight Transferred Tax : municipalities)	Mostly (85% of the revenue)
	Automobile Tax	Prefectures	No
	Light Automobile Tax	Municipalities	No
Running	Volatile Oil Tax	National	Yes
	Local Road Transferred Tax	58% prefectures and designated cities, 42% municipalities	Yes
	Diesel Fuel Delivery Tax	prefectures and designated cities	Yes
	Petroleum Gas Tax	National (50% Petroleum Gas Transferred Tax → prefectures and designated cities)	Yes
	Petroleum and coal tax (renamed 2003)*	National (*Not only taxed to automobile users)	No (Used for Special Account for Coal, Oil and Energy Demand Structure Advancement) including the promotion of Nuclear Power Plants.

Source: Road Economy Research Institute, Ministry of Finance, and Agency for Natural Resources and Energy.

Table 2-3 Automobile-related Taxes' Revenue

	Name	Revenue FY 2004 Billion yen
Purchase	Automobile Acquisition Tax	457.2
Holding	Automobile Weight Tax	1126.5
	Automobile Tax	1796.9
	Light Automobile Tax	144.4
	Subtotal	3067.8
Running	Volatile Oil Tax	2836.2
	Local Road Transferred Tax	303.5
	Diesel Fuel Delivery Tax	1075.0
	Petroleum Gas Tax	28.0
	Subtotal	4242.7
Total		7767.7

Improvements necessary to make existing automobile related taxes “Environmental”(1)

- Change in the ratio of Possession taxes to Fuel taxes.

→ Higher ratio in fuel taxation

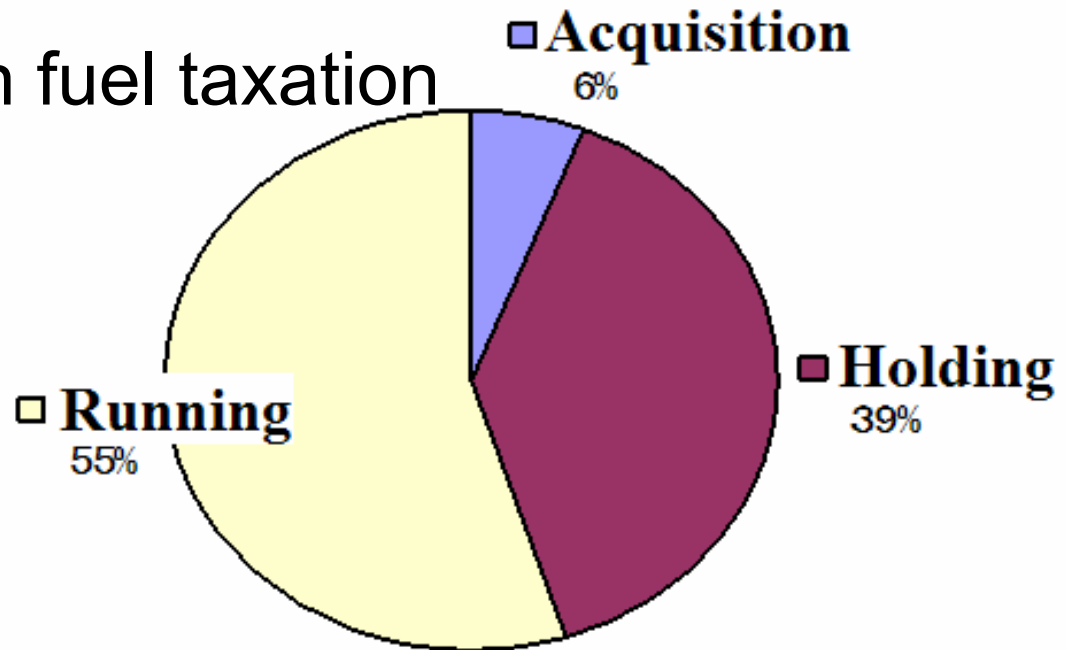
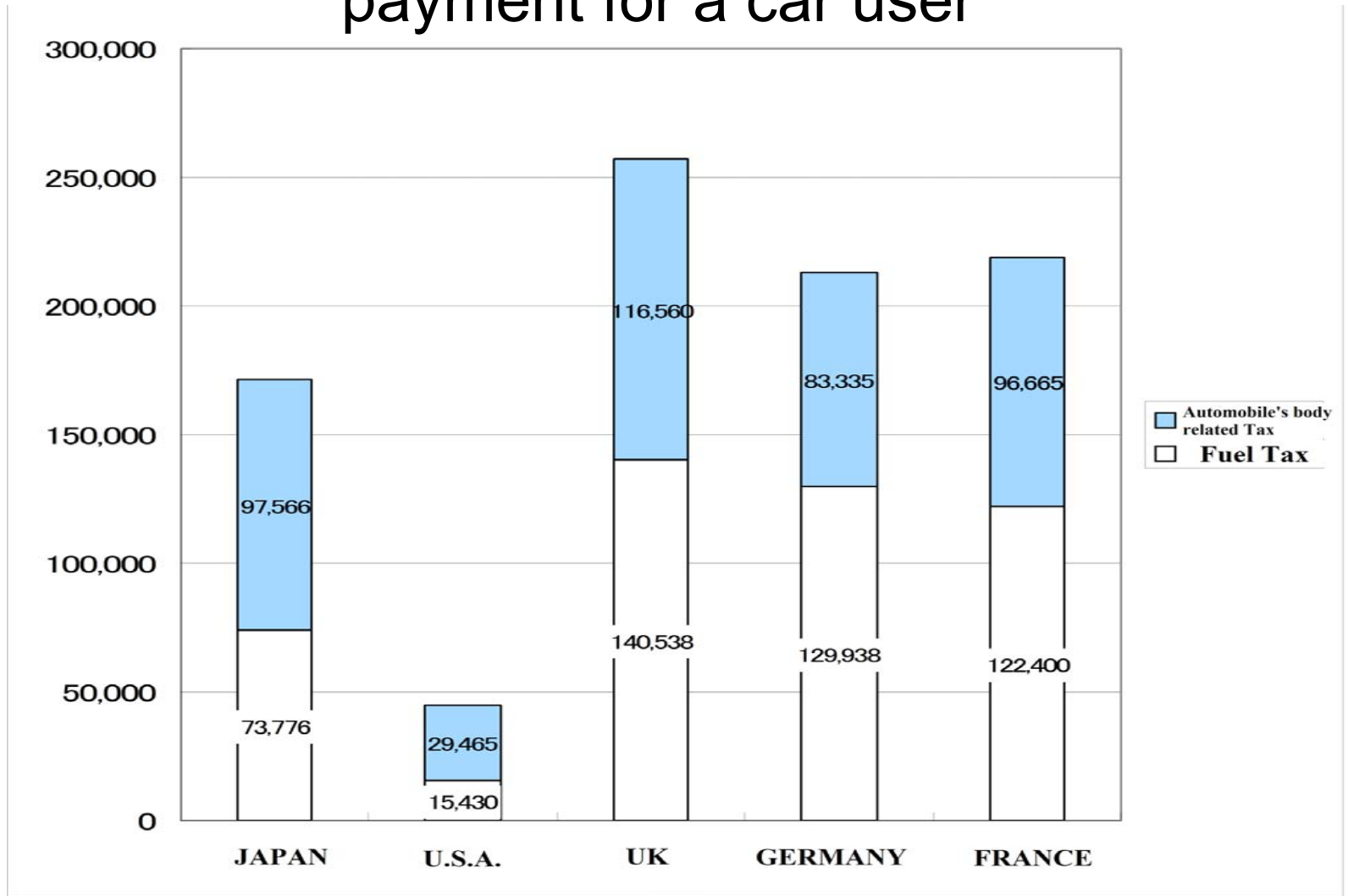


Fig 2-5 FY 2004 composition of automobile related taxes

Figure 2-6 International Comparison of annual payment for a car user



Source: Annual Statistics of Road, 2006. *Calculated in annual payment in yen, model case.

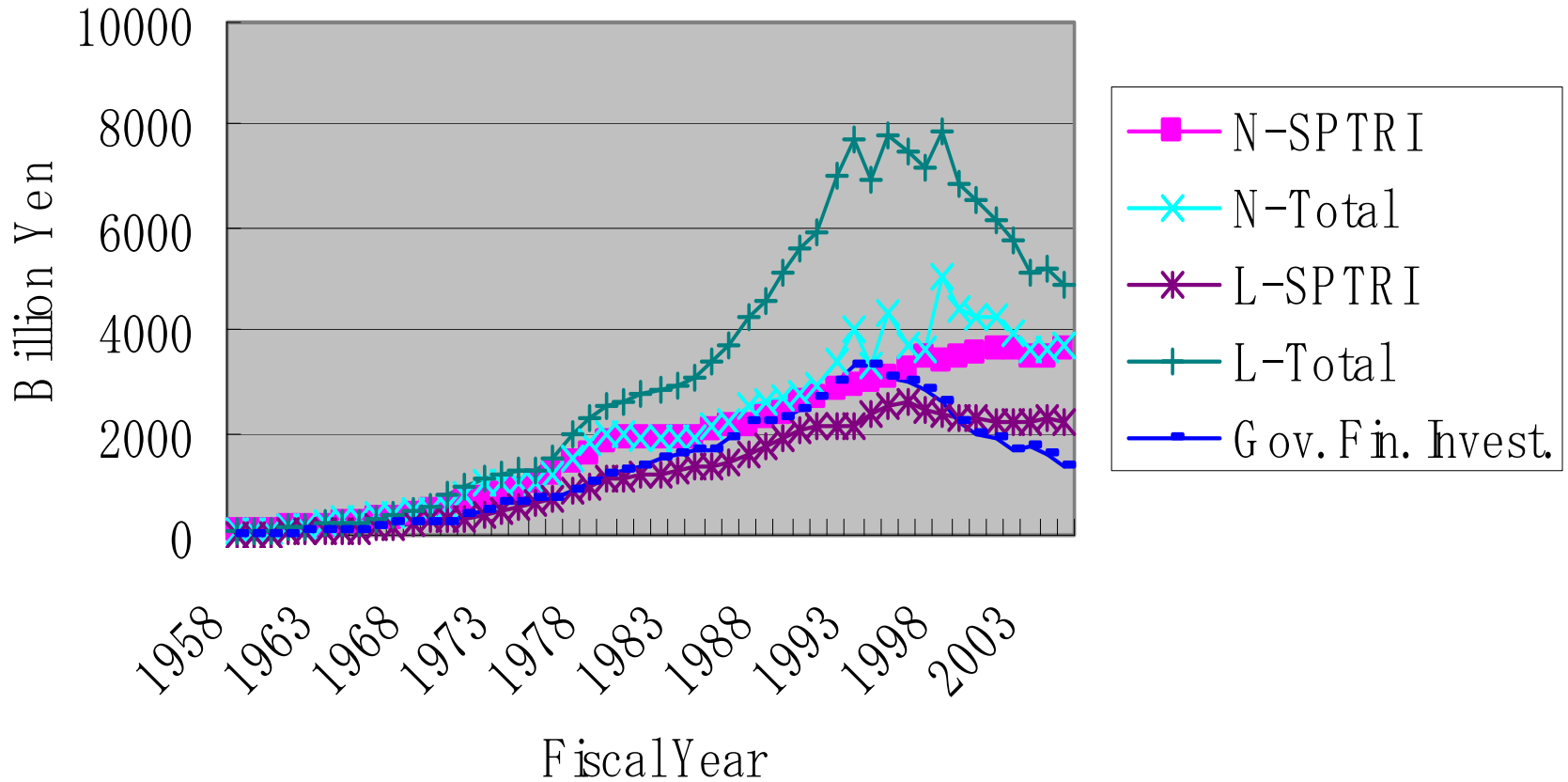
Improvements necessary to make existing automobile related taxes “Environmental” (2)

- Straightening of miss-leading incentive schemes of the past tax “reform for Greening” of the automobile tax (from 2002).
- → tax system that permits higher rank of tax exemption to larger and inefficient automobiles, based on the “relative efficiency improvements”.
 - ← Again, the problem of “Efficiency”.

Improvements necessary to make existing automobile related taxes “Environmental” (3)

- The SPTRI problem
 - Ear-Marking in the name of the “Special Purpose Taxes for Road Improvements” solely spent to the road construction and improvements.
- Should “Tax payer” be “the Beneficiaries”?
 - Text book idea of “External Diseconomy” have little power on political systems

National and Local Road Investment (in bil. yen)



Source: Road Economy Research Institute.



Table 2-4R. Road Investment and its Ratio of SPTRI

In billion yen

FY	National		Local		Gov. Fin. Invest.		Total	Ratio of SPTRI
	SPTRI	General	SPTRI	General	SPTRI	General		
1996	3233.3	490.8	2568.4	4937.4	2985.2	7505.8	14215.1	41%
1997	3430.2	197.2	2448.4	4712.9	2867.3	7161.3	13656	43%
1998	3415.3	1588.1	2349.6	5487.7	2565.8	7837.3	15406.5	37%
1999	3445.2	984.1	2307.8	4578.7	2184.3	6886.5	13500.1	43%
2000	3515.8	769.2	2264.7	4265.7	1952.9	6530.4	12768.3	45%
2001	3617.2	667.6	2237.1	3920.4	1851.9	6157.5	12294.2	48%
2002	3607.4	313.5	2178.5	3595.5	1651.2	5774	11346.1	51%
2003	3476.2	119.3	2217.6	2886.4	1770.1	5104	10469.6	54%
2004	3494.4	165.3	2265.7	2901.9	1567.7	5167.6	10395	55%
2005	3623.5	53.4	2219.7	2674.4	1350	4894.1	9921	59%
Total	85399.8	12195.4	58052.2	98841.8	64237.9	156894	318727.1	45%

Automobile Related Taxes and National Road Construction Expenditure

- The structure of National Road Construction Expenditure
- Used to subsidize the use of automobiles, in total.

The outcomes of Road Investment

	Average Travel Speed	Registered Numbers of Gasoline Automobiles	Consumption of Gasoline	Road Investment in total FY 1990~2005
FY1990	35.5 km/h	33,099,715	46,139,071 kl	204 Trillion Yen (203,715.4 Billion Yen)
FY2005	35.3 km/h	42,550,710	63,222,291 kl	
Change	- 0.56 %	+28.55 %	+37.03 %	

Source: from Takahashi(2007) , MLIT, Oil Federation

Funding Public Transport by Automobile Related Tax Revenues

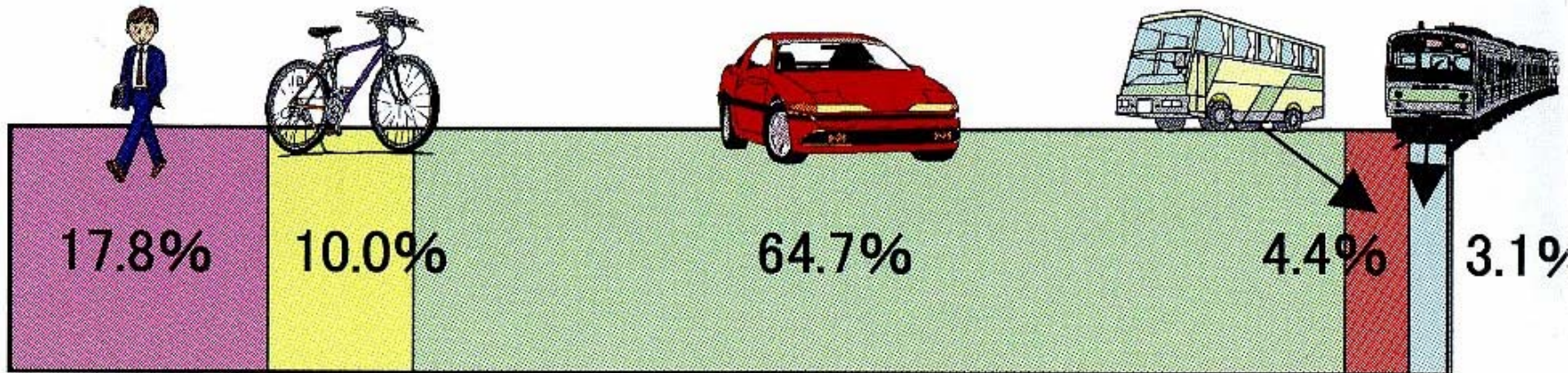
- Tendencies in Governmental Expenditure in the are of Land Infrastructure and Transport → Law on the invigoration and revitalization of local public transport (enforced October,2007)
- Changing regional structure of transport behavior
 - Necessities in public funding for regional public transports.

Photo: Bus Terminal at the main station of Niigata



Regional Initiative for Sustainable Transport: Example

- Niigata-city (from 2007, an ordinance-designated city)
 - Transport Structure: Reliance on Automobile usage, Atrophy of public transport, and increase in environmental load



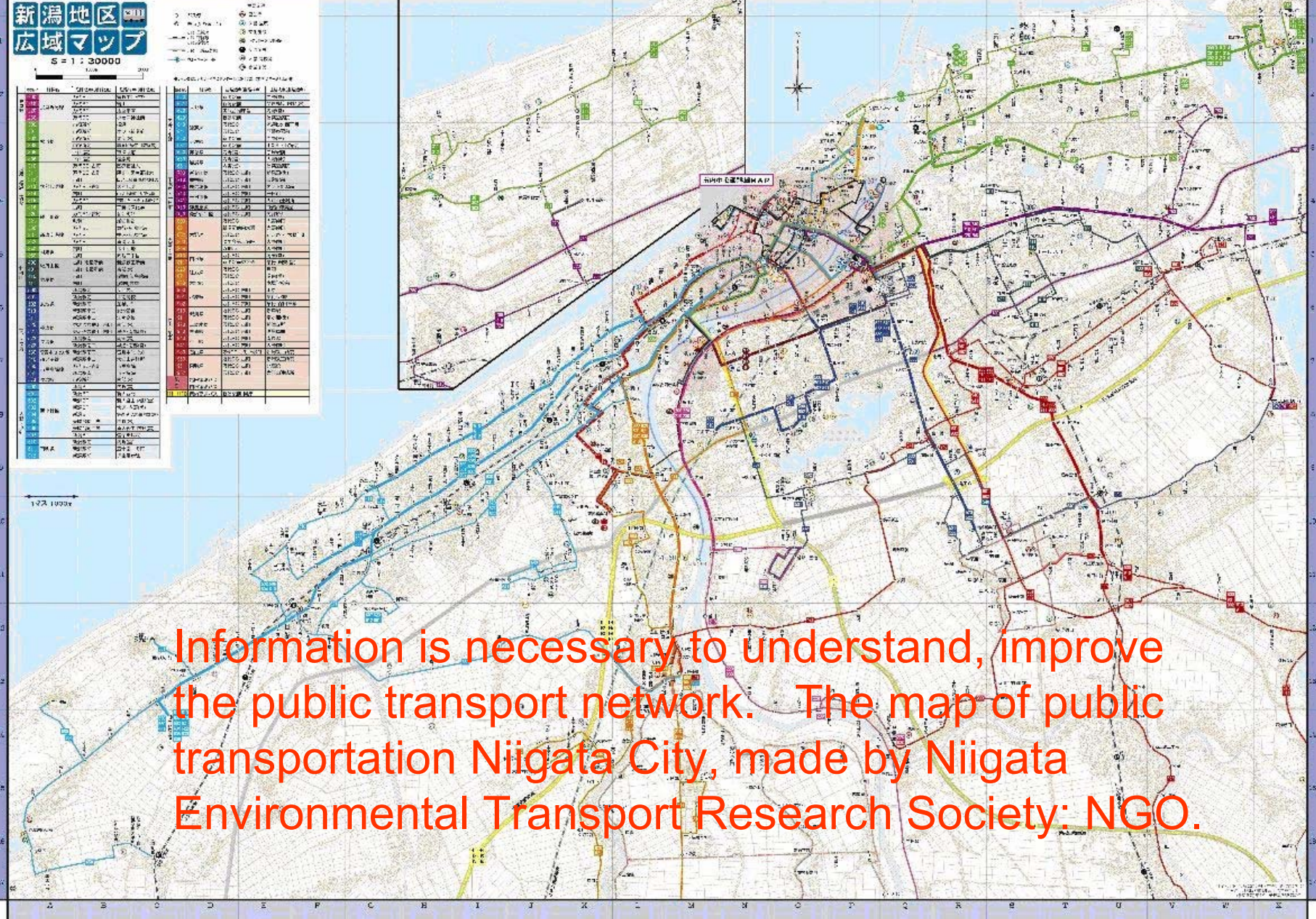
Regional public transport activation

The problem of social acceptability of the transport structure: Less means of transport to non-automobile user

Transport sector and land development are the major obstacles to reduce its environmental loads

- From negative feedbacks to positive feedbacks
- Covering up Japanese Environmental Policies' weak points.
 - Individual Efficiency and Overall Fallacy

路線種別	路線番号	路線名称	路線色
JR	1	東海線	赤
	2	越前線	青
	3	信越線	黄
	4	北越線	紫
	5	上越線	緑
	6	新幹線	黒
	7	有明線	赤
	8	有明線	青
	9	有明線	黄
	10	有明線	紫
市営	11	有明線	赤
	12	有明線	青
	13	有明線	黄
	14	有明線	紫
	15	有明線	緑
	16	有明線	赤
	17	有明線	青
	18	有明線	黄
	19	有明線	紫
	20	有明線	緑



Information is necessary to understand, improve the public transport network. The map of public transportation Niigata City, made by Niigata Environmental Transport Research Society: NGO.

Summary: to reach sustainable transport

- “Environmentally Related Taxes” already existed, but the usage is the problem.
- → Especially, need to reform the structure of Automobile related taxes
- To activate regional public transport:
 - Regional citizen’s participation to the process of design of public transport
 - and larger funding system using the tax revenue for public transport is necessary