

Pavement in Japan

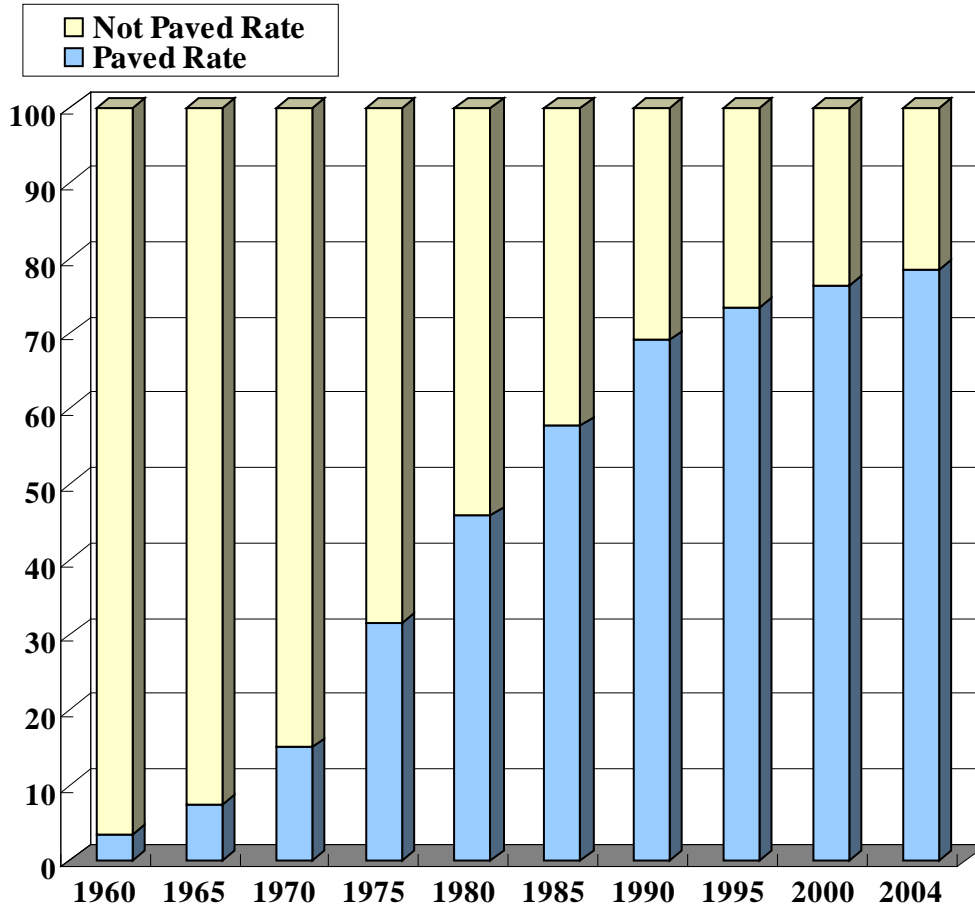


Kazuyuki Kubo

Leader, Pavement Team

Public Works Research Institute

Paved Rate



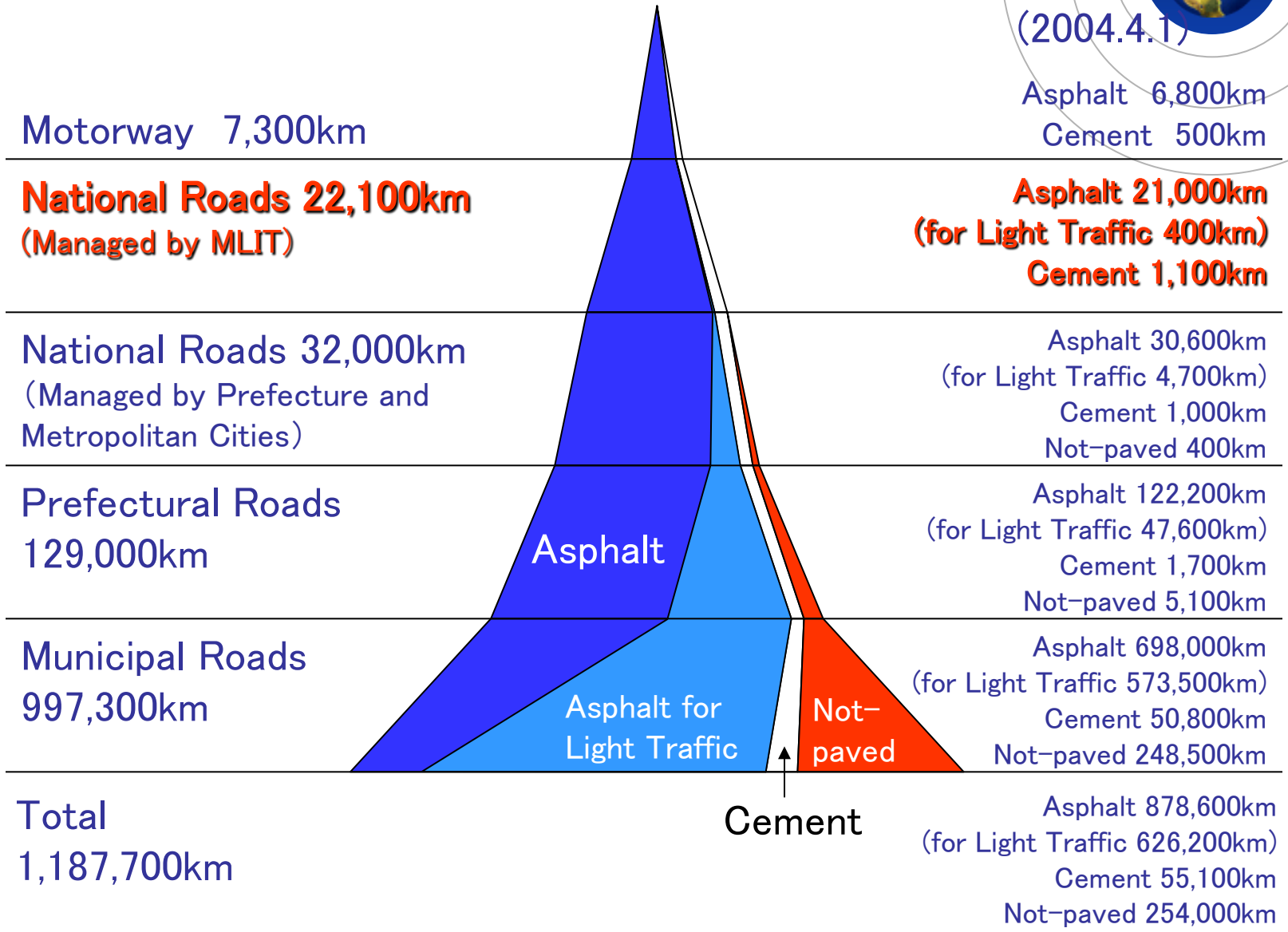
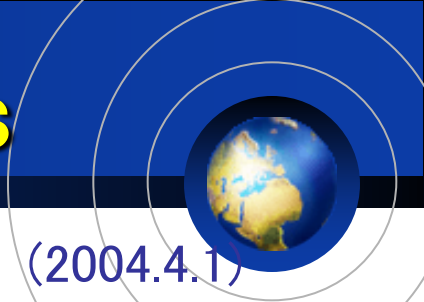
 **Paved Rate**



 **Not Paved Rate**



Road Networks and Paved Roads



(2004.4.1)

Asphalt 6,800km
Cement 500km

Asphalt 21,000km
(for Light Traffic 400km)
Cement 1,100km

Asphalt 30,600km
(for Light Traffic 4,700km)
Cement 1,000km
Not-paved 400km

Asphalt 122,200km
(for Light Traffic 47,600km)
Cement 1,700km
Not-paved 5,100km

Asphalt 698,000km
(for Light Traffic 573,500km)
Cement 50,800km
Not-paved 248,500km

Asphalt 878,600km
(for Light Traffic 626,200km)
Cement 55,100km
Not-paved 254,000km

Asphalt

Asphalt for
Light Traffic

Not-
paved

Cement

Technical Standards

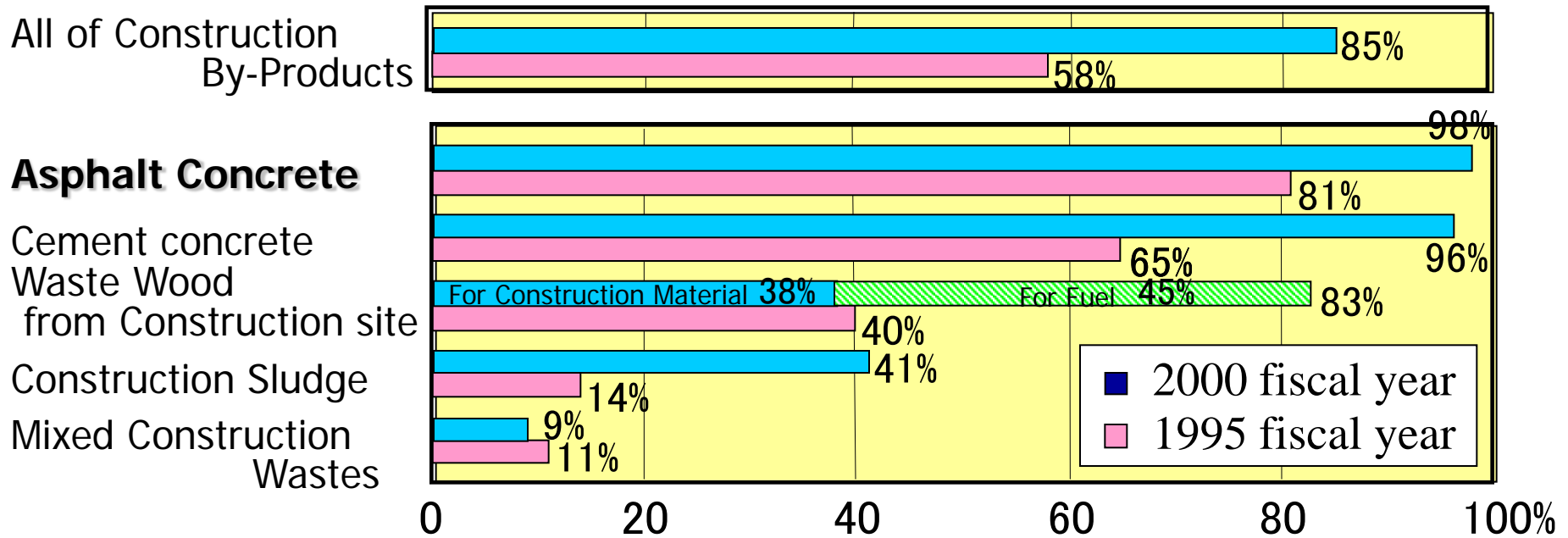


- **Manuals for pavement technologies had been published and revised by Pavement Committee in Japan Road Association**
 - Asphalt Pavement in 1950
 - Cement Concrete Pavement in 1955
 - Recycling in 1980
 - Drainage Asphalt Pavement in 1995
- **In 2001, the Ministry of Land, Infrastructure, Transport and Tourism established “Technical Standard for Pavement Structure”, which is based on performance-based specification.**

Recycling Ratio of Construction By-Products



■ Recycling Ratio of Asphalt Concrete is Over 98%



Plant Recycling



- **Recycle pavement by-products at a stationary mixing plant (recycling mixing plant)**
- **Reuse them as pavement materials**

Recycled aggregate



(Used pavement)

Rejuvenator



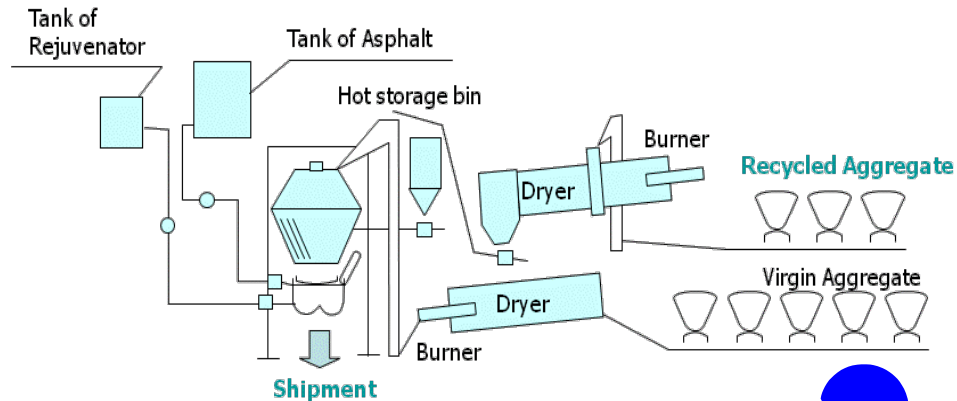
Virgin aggregate

Virgin Asphalt

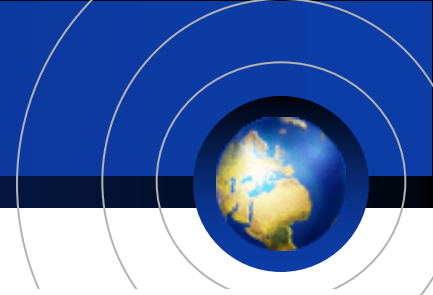
Asphalt Mixture Recycle Plant



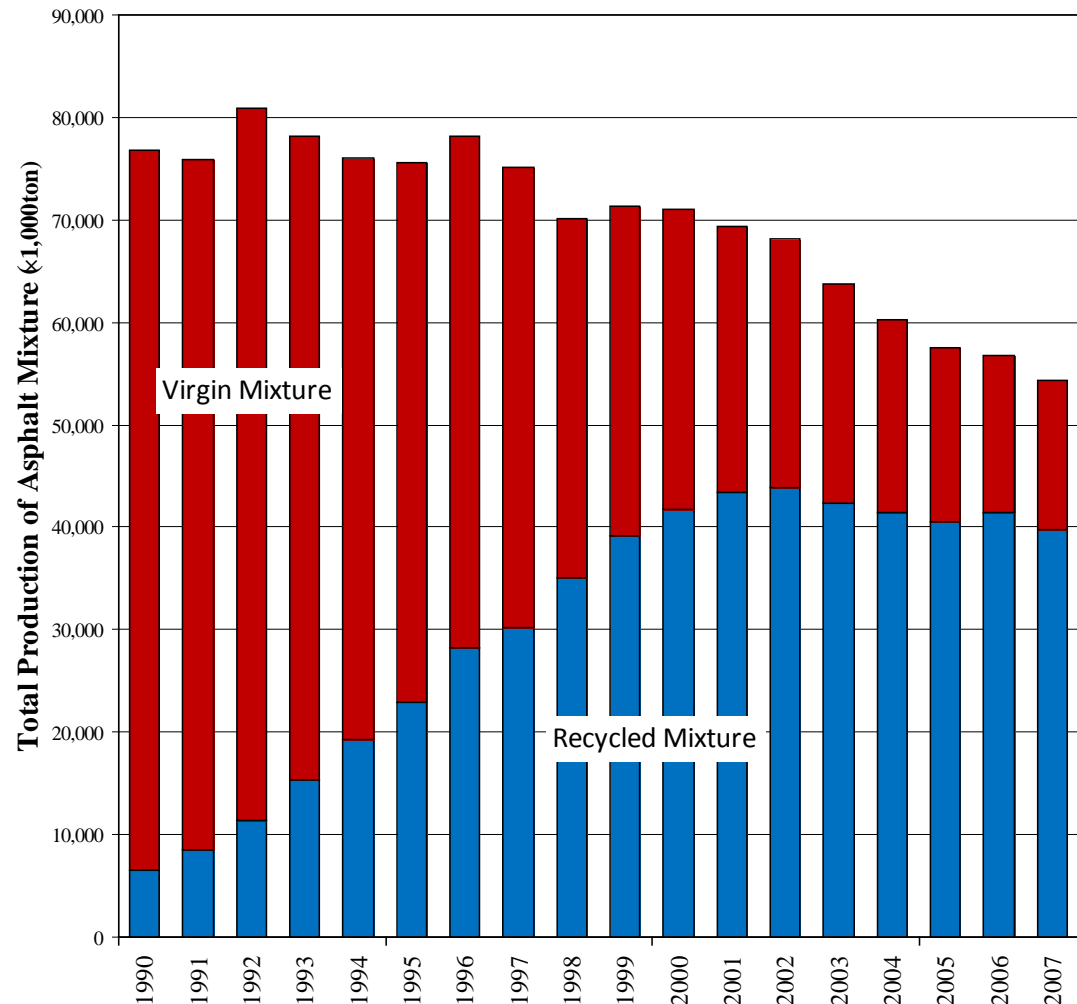
Recycled HMA



Plant Recycling



- Most popular in Japan
- Recently, the ratio of recycled asphalt mixture is close to 70%.
- Recycled asphalt mixture has already been promoted to use according to the following law
 - Law Concerning the Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities (*Law on Promoting Green Purchasing*), enacted in FY2000



Drainage Asphalt Pavement

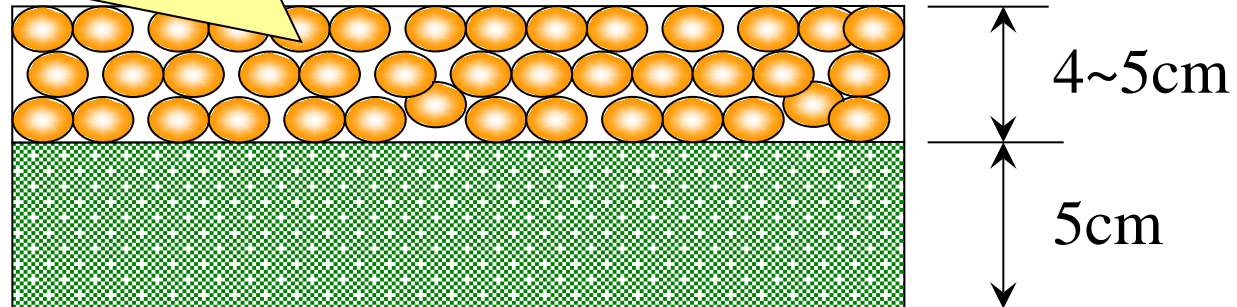


Surface course ; Porous Asphalt Mixture

Binder course ; Dense-graded Asphalt Mixture /
Coarse-graded Asphalt Mixture

Typical Properties of Porous Asphalt Mixture

- Maximum Particle Size: 5~13mm
- Air Voids: 17~23%
- High Viscosity Modified Asphalt



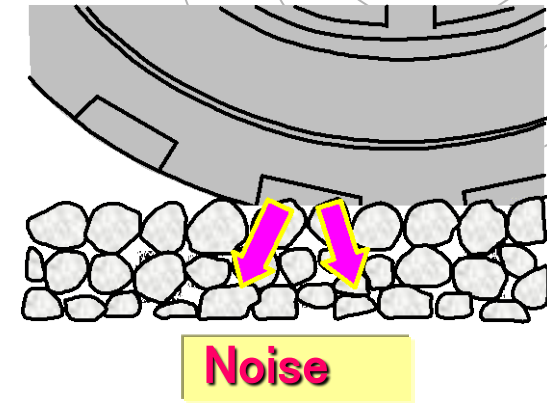
Advantage of Drainage Asphalt Pavement



- The place where requires some countermeasure for traffic noise

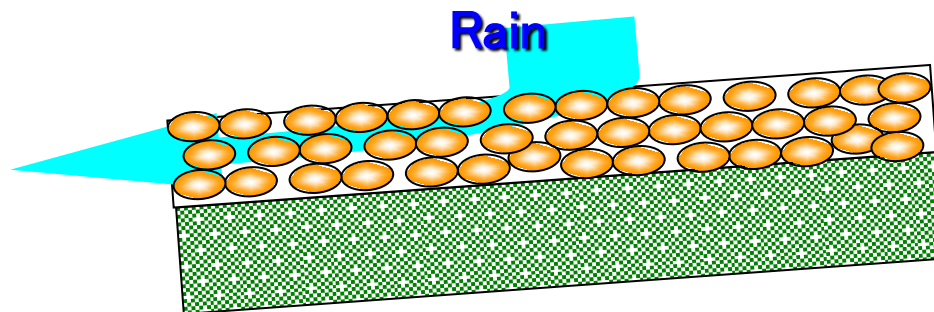
- *Attention to the performance of noise reduction*

- *Performance specification by the noise level*



- The place where the safe drive in rainy days is required

- *Attention to the performance of water drainage*



Improve Road Safety in Rainy Days



- **Less water on road surface**
 - Improve skid resistance
 - Improve driver's sight
- **More than 70% of Expressways are paved by Drainage Asphalt**

Conventional Pavement

Drainage Asphalt Pavement





Thank you for your attention