



Energy Efficiency Indicator for Korea

Focus on Transport Sector

From Data Collection to Statistics

2019. 11

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Center for Energy Information and Statistics (CEIS)

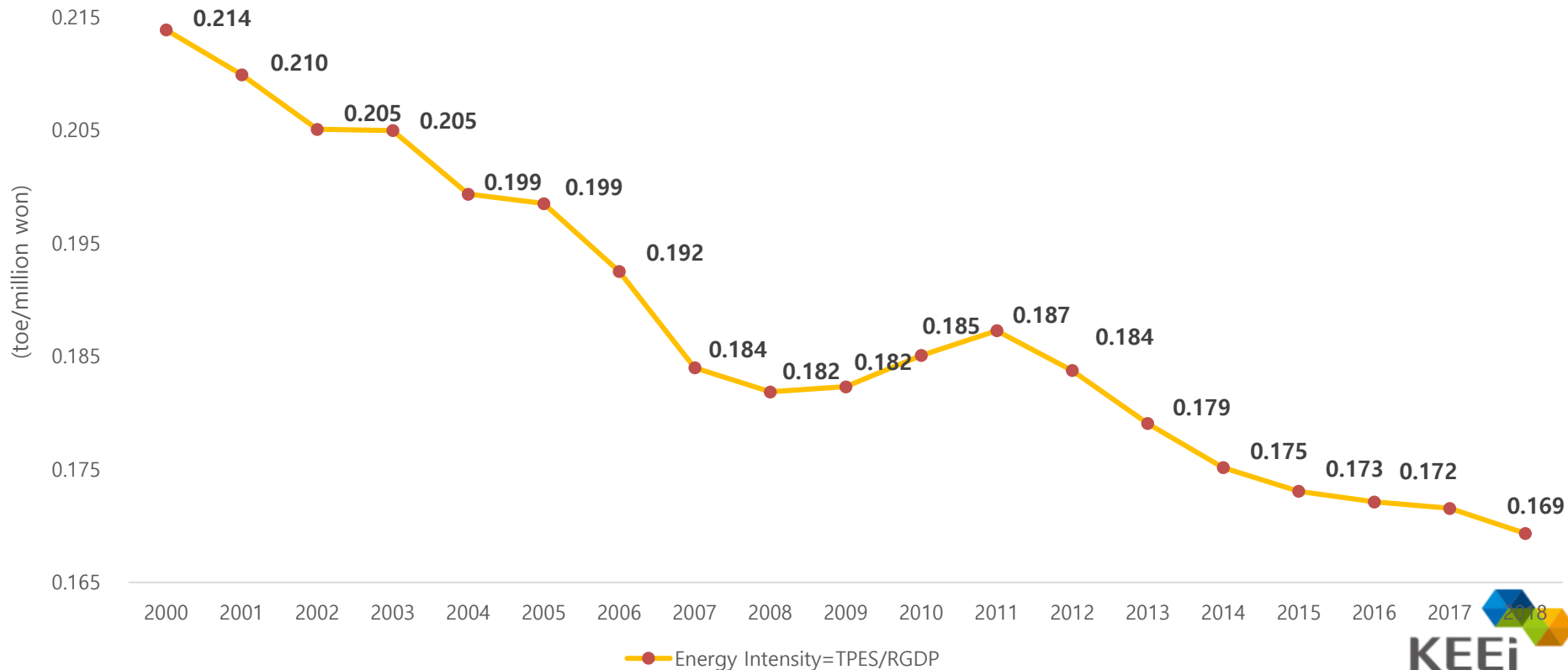
Korea Energy Economics Institute (KEEI)

G20 Energy End-Use Data and Energy Efficiency Metrics Initiative

Energy Efficiency Indicator for Korea?

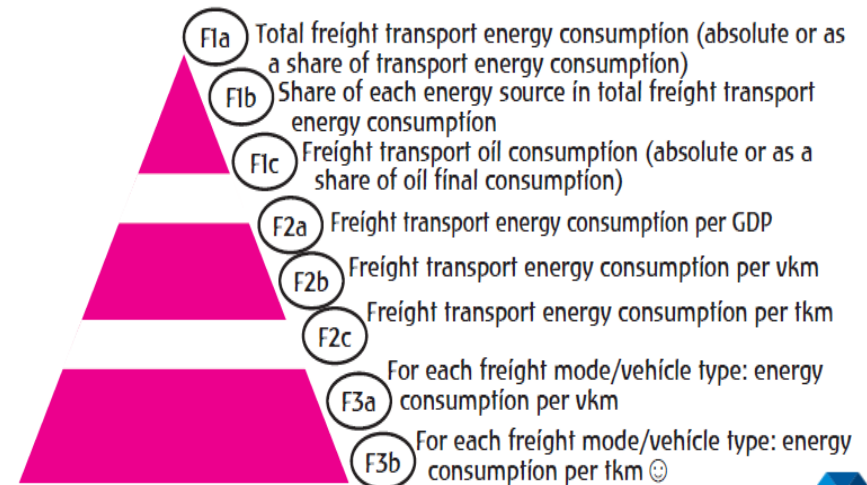
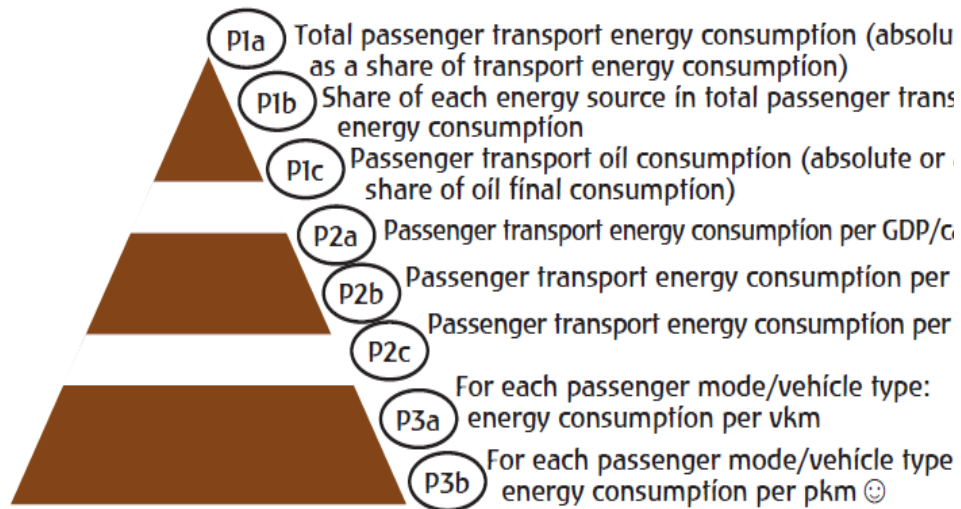
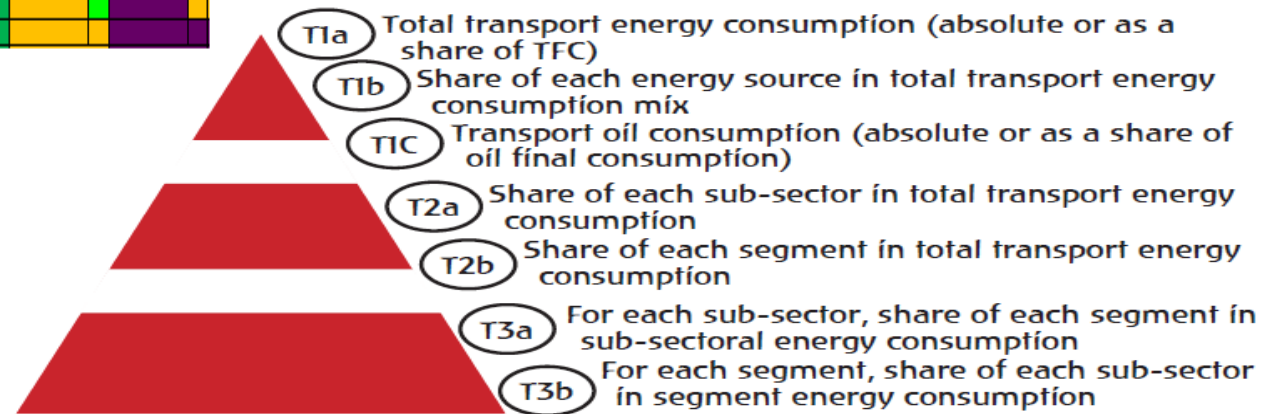
✓ "Higher energy efficiency" means *using less energy to provide the same service*.

✓ Energy Efficiency Indicator = $\frac{\text{Energy Consumption (energy units)}}{\text{Activity Data (physical units)}}$



Energy Efficiency Indicator for Transport

	Indicators			
	Industry	Services	Residential	Transport
3.1 Indicators stability				
3.2 Indicators plausibility				



Energy Efficiency Indicator Template for Transport

(1) Activity data : P-km, T-km, Tonnes, V-km, Stocks

(2) Energy Use by mode : Cars, SUV and light trucks, Motorcycle, Bus, Train, Airplane, Ship

(3) Energy Use by four transportation sectors : rail, road, air, ship

Passenger transport [passenger-kilometres]		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Cars, SUV and personal light trucks	10 ⁹ pass-km												245.77	245.76	248.23	255.95	266.27	267.953	
- gasoline (spark ignition) engine	10 ⁹ pass-km												177.74	172.54	175.19	177.33	186.32	174.79	
- diesel (compression ignition) engine	10 ⁹ pass-km												68.03	73.22	73.04	78.62	79.95	93.17	
Motorcycles (2 wheelers) & 3 wheelers	10 ⁹ pass-km																		
Buses	10 ⁹ pass-km	56.99	66.18	61.94	62.31	68.62	76.55	83.18	94.11	90.07	85.87	91.29	98.16	104.46	113.47	104.99	118.75	122.587	
Passenger Trains	10 ⁹ pass-km	48.80	59.15	51.93	50.98	52.75	54.64	55.53	55.73	56.77	55.49	58.38	63.04	70.08	66.35	67.86	68.37	77.37	
Domestic passenger airplanes	10 ⁹ pass-km	8.04	7.87	7.81	7.94	7.15	6.59	6.65	6.53	6.64	7.11	8.01	8.39	8.71	9.09	10.71	11.82	12.24	
Domestic passenger ships	10 ⁹ pass-km	0.67	0.56	0.57	0.62	0.66	0.67	0.71	0.77	0.87	0.87	0.88	0.98	0.92	1.01	0.90	0.76	0.84	
Total Passenger Transport	10 ⁹ pass-km																		
Freight transport [tonne-kilometres]		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Freight & Commercial road transport	10 ⁹ tonne-km	0	90.88	91.99	98.37	101.06	105.67	109.01	105.22	101.44	99.09	102.81	104.48	108.37	118.58	124.65	132.38	135.26	
- gasoline (spark ignition) engine	10 ⁹ tonne-km		5.44	5.01	4.74	5.36	4.84	5.83	5.91	6.05	5.44	7.65	7.63	5.44	6.27	6.38	8.85	6.10	
- diesel (compression ignition) engine	10 ⁹ tonne-km		85.43	86.98	93.64	95.70	100.83	103.18	99.31	95.39	93.65	95.16	96.84	102.92	112.32	118.27	123.53	129.16	
Freight trains	10 ⁹ tonne-km	10.80	10.49	10.78	11.06	10.64	10.11	10.55	10.93	11.57	9.27	9.45	10.00	10.27	10.46	9.56	9.48	8.41	8.23
Domestic freight airplanes	10 ⁹ tonne-km	0.17	0.17	0.17	0.17	0.16	0.15	0.14	0.13	0.10	0.11	0.11	0.11	0.11	0.10	0.11	0.11	0.11	0.11
Domestic freight ships	10 ⁹ tonne-km		36.44	38.17	33.88	25.84	26.59	26.48	28.00	29.59	25.25	23.28	27.22	25.80	30.48	29.90	31.95	31.95	
Total Freight Transport	10 ⁹ tonne-km																		
Freight transport [tonnes]		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	
Freight & Commercial road transport	10 ⁶ tonnes	0	1,343.03	1,395.82	1,467.56	1,505.14	1,588.17	1,617.56	1,631.72	1,531.30	1,498.03	1,582.36	1,659.77	1,684.89	1,673.66	1,739.84	1,761.29	1,799.56	
- gasoline (spark ignition) engine	10 ⁶ tonnes		80.40	76.07	70.68	79.85	72.77	86.53	91.64	91.29	82.27	117.75	121.26	84.62	88.44	89.00	117.76	81.15	
- diesel (compression ignition) engine	10 ⁶ tonnes		1,262.63	1,319.75	1,396.88	1,425.29	1,515.40	1,531.03	1,540.08	1,440.00	1,415.76	1,464.60	1,538.51	1,600.28	1,585.22	1,650.85	1,643.53	1,718.43	
Freight trains	10 ⁶ tonnes	45.24	45.12	45.73	47.11	44.51	41.67	43.34	44.53	46.81	38.90	39.22	40.01	40.31	39.82	37.38	37.09	32.56	31.67
Domestic freight airplanes	10 ⁶ tonnes	0.43	0.43	0.43	0.42	0.41	0.37	0.36	0.32	0.25	0.27	0.26	0.28	0.27	0.25	0.28	0.29	0.29	0.29
Domestic freight ships	10 ⁶ tonnes	136.94	143.36	140.96	145.33	115.64	119.41	117.80	120.08	126.96	120.04	124.22	122.87	117.01	120.43	117.92	134.09	143.23	
Vehicle kilometres																			
Cars, SUV and personal light trucks	10 ⁹ vkm	0	192.58	222.10	226.76	240.70	237.57	251.23	253.32	223.10	226.52	218.32	216.64	216.47	214.72	226.26	233.73	243.88	250.59
- gasoline (spark ignition) engine	10 ⁹ vkm	0	159.23	179.76	178.66	182.15	177.97	189.29	187.70	158.99	160.77	159.67	156.68	151.98	151.54	156.76	163.55	159.09	160.23
- diesel (compression ignition) engine	10 ⁹ vkm	0	33.35	42.34	48.11	58.55	59.61	61.95	65.62	64.12	65.74	58.65	59.97	64.49	63.18	69.50	70.18	84.80	90.36
Motorcycles (2 wheelers) & 3 wheelers	10 ⁹ vkm																		
Buses	10 ⁹ vkm	6.22	6.33	6.40	6.57	7.09	7.00	7.31	7.83	7.88	7.09	6.30	7.97	7.54	7.51	7.77	7.91	8.10	8,234.73
Passenger Trains	10 ⁹ vkm	0.90	0.89	0.89	0.90	1.06	1.19	1.20	1.20	1.22	1.25	1.27	1.34	1.36	1.40	1.39	1.35		
Domestic passenger airplanes	10 ⁹ vkm	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07
Domestic passenger ships	10 ⁹ vkm																		
Freight & Commercial road transport	10 ⁹ vkm	0	64.49	70.99	73.62	81.14	73.85	70.22	68.76	61.81	60.95	66.56	61.51	63.17	62.70	63.75	65.80	67.36	69.28
- gasoline (spark ignition) engine	10 ⁹ vkm	0	3.77	3.79	3.43	4.15	3.29	3.64	3.69	3.55	3.19	4.80	4.32	3.00	3.16	3.11	4.23	2.89	2.81
- diesel (compression ignition) engine	10 ⁹ vkm	0	60.72	67.20	70.19	76.99	70.56	66.58	65.07	58.26	57.76	61.76	57.20	60.17	59.54	60.65	61.57	64.47	66.47

Energy Efficiency Indicator for Transport

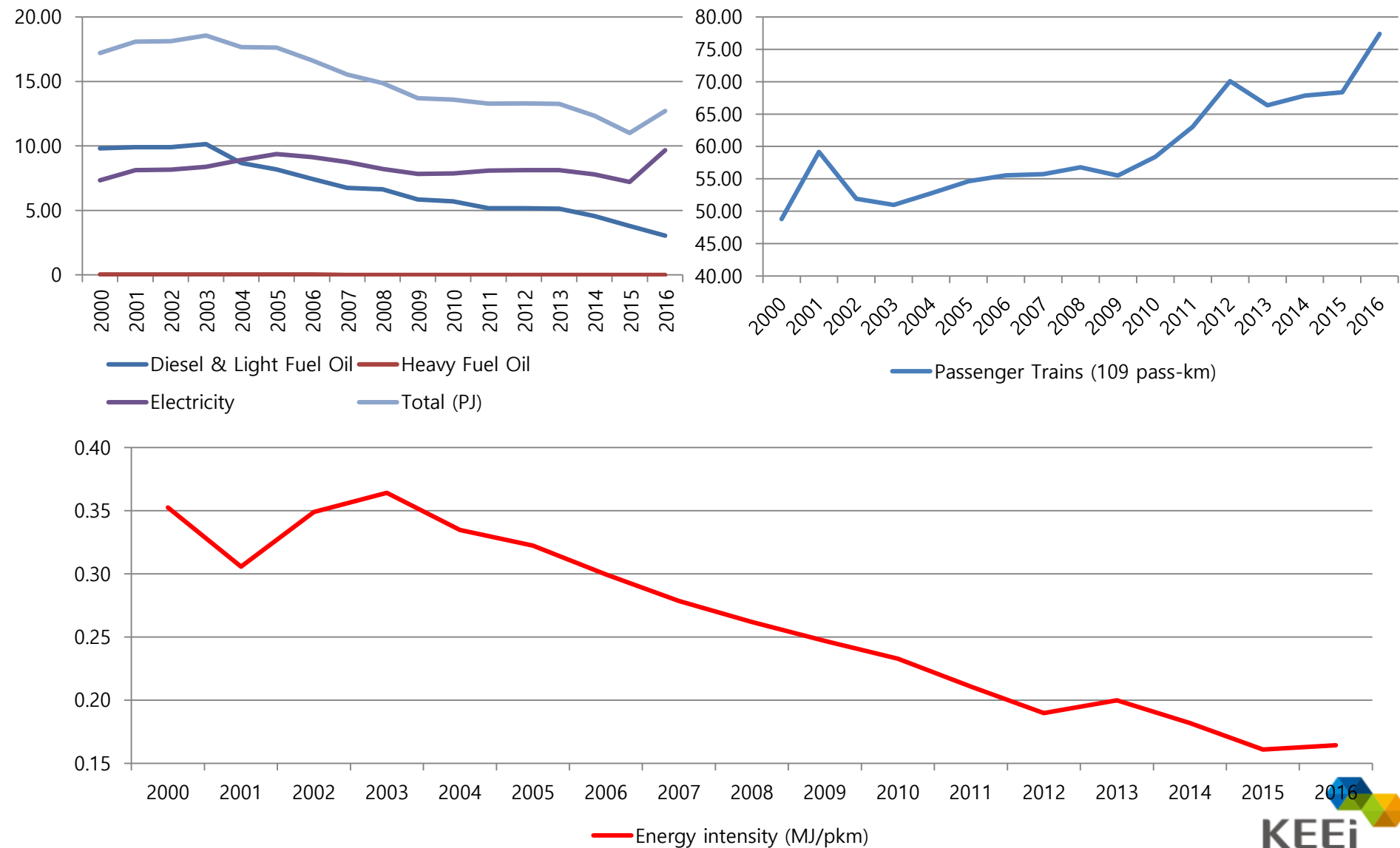
- Passenger-kilometers per capita (pkm/cap)
- Vehicle-kilometers per capita (vkm/cap)
- Passenger load factor (pkm/vkm)
- Vehicle use (10^3 vkm/vehicle)
- Per capita energy intensity (GJ/cap)
- Fuel intensity (liters/100 vkm)
- Passenger-kilometers energy intensity (MJ/pkm)
- Vehicle-kilometers energy intensity (MJ/vkm)

First Challenge in Collecting Data for Transport: **Credibility**

- Among reporting, survey, supply and demand statistics, reporting statistics is the least credible, and the transport's activity data mainly consist of reporting statistics.
- Transport's sectors are road, rail, air, sea, and usages are passenger and freight.
- Credibility order: rail > road > air > sea; passenger > freight
- Due to the fact that there are intricate webs of interests, making private companies overreport or underreport, and the difference in their reporting time.
- Air activity data is credible, but difficult to obtain it by the security reason, road mileage statistics has been produced by the simulation exercise.

[illegible]

Energy Efficiency for Passenger Trains



Data Collection for Passenger Trains

	Diesel	B-A	B-B	B-C	JA-1	JP-4	AVI-G	LPG	Non-Energy use	Naphtha	Solvent	Asphalt	Lubricants	Para.-wax	Pet.-coke	Others	LNG (1,000 ton)	City Gas (mil.m)	Hydro GWh	Nuclear GWh	Electricity GWh
Mining and quarrying	39.4	4.4	0.9	3.3	0.0	0.0	0.0	5.2	5.2	0.0	0.4	0.0	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	127.1
Manufacturing	467.8	25.7	14.6	996.3	0.2	0.0	0.0	5,380.5	4,219.5	1,160.9	58,572.9	55,300.9	171.9	0.0	771.0	15.8	2,264.9	902.2	8,997.7	0.0	22,798.6
Food and tobacco	28.4	0.5	0.6	28.6	0.0	0.0	0.0	25.6	23.9	1.7	8.3	0.0	0.0	0.0	0.0	0.0	8.3	0.0	793.6	0.0	1,027.7
Textile and leather	3.8	0.7	1.1	38.5	0.0	0.0	0.0	12.6	12.3	0.2	4.1	0.0	0.9	0.0	0.0	0.0	3.2	0.0	246.5	0.0	931.8
Wild and wood products	1.0	0.0	0.3	2.1	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	52.8	0.0	161.3
Paper, pulp and print	3.0	0.0	0.8	25.3	0.0	0.0	0.0	5.3	5.3	0.0	9.5	0.0	6.7	0.0	0.0	0.0	2.8	0.0	259.4	0.0	828.8
Chemical and petrochemical	28.2	0.7	2.5	343.5	0.0	0.0	0.0	4,475.5	3,461.5	1,014.0	57,411.2	55,300.9	117.7	0.0	0.0	9.6	1,983.0	482.5	3,170.6	0.0	5,359.2
Non-metallic minerals	137.9	2.1	5.8	325.7	0.0	0.0	0.0	16.0	16.0	0.0	44.7	0.0	0.1	0.0	0.0	44.0	0.7	0.0	547.0	0.0	1,044.6
Iron and steel	1.5	0.0	0.0	10.0	0.0	0.0	0.0	56.3	21.4	34.9	0.5	0.0	0.1	0.0	0.0	0.0	0.3	419.7	1,235.6	0.0	2,997.3
Non-ferrous metals	3.2	0.1	0.2	21.1	0.0	0.0	0.0	12.4	12.3	0.2	0.8	0.0	0.2	0.0	0.0	0.0	0.6	0.0	396.0	0.0	861.6
Fabricated metal	118.2	19.8	1.4	69.9	0.0	0.0	0.0	46.8	44.4	2.4	4.2	0.0	1.3	0.0	0.0	0.0	2.9	0.0	1,966.8	0.0	9,173.3
Other manufacturing	137.9	1.6	1.7	114.3	0.2	0.0	0.0	658.8	559.5	99.3	246.1	0.0	23.7	0.0	61.2	1.3	160.0	0.0	329.5	0.0	413.1
Other energy	4.7	0.1	0.3	17.3	0.0	0.0	0.0	70.9	62.7	8.2	843.6	0.0	21.4	0.0	709.8	4.9	103.0	0.0	0.0	0.0	0.0
Construction	696.0	9.6	10.7	6.8	0.0	0.0	0.0	21.9	21.9	0.0	1,705.1	0.0	0.0	1,702.9	0.0	0.0	2.1	0.0	0.1	0.0	0.0
Transport	19,544.5	142.0	31.9	2,632.6	5,012.8	0.0	0.8	3,663.8	1.6	3,662.1	3.9	0.0	0.0	0.0	0.0	0.0	3.9	0.0	1,238.9	0.0	255.3
Rail	100.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	255.3
Road	19,444.1	1.1	0.4	4.1	0.0	0.0	0.0	3,662.5	0.4	3,662.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	1,238.9	0.0	0.0
Domestic navigation	379.9	140.9	31.4	2,628.5	0.0	0.0	0.0	0.9	0.9	0.0	3.6	0.0	0.0	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0
Domestic aviation	1.0	0.0	0.0	0.0	5,012.8	0.0	0.8	0.3	0.3	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Residential	697.8	5.1	4.0	40.7	0.0	0.0	0.0	696.7	676.2	20.4	11.6	0.0	8.0	0.0	0.0	0.0	3.6	0.0	10,900.2	0.0	6,079.1
Commercial	313.4	18.0	8.6	60.8	5.8	0.0	0.0	1,149.2	1,007.7	141.5	76.6	0.0	20.5	0.0	0.0	0.0	56.1	0.0	3,721.7	0.0	11,731.8
Public services	689.3	2.6	0.5	5.3	504.6	0.0	1.1	22.7	22.5	0.2	16.9	0.0	0.2	0.0	0.0	0.0	16.7	0.0	100.2	0.0	2,784.1

등록번호 2019-9721-정0012

NOC 한국석유공사 PEDSIS 국내석유정보시스템

국내소비현황

기간년월 2018 01 ~ 2019 09

기간단위 전월

조전지역 전체 전체 수요처 --값 선택--

조전제품 전체-제품(중) 전체 산업 전체 전체 전체 조화

월	대리점소재지	일반판매소	정유사직매점	주유소	총계
201801	1,885	3,518	55,889	22,835	84,127
201802	1,571	2,859	50,372	20,310	75,112
201803	1,775	2,596	51,474	22,083	77,928
201804	1,959	2,223	51,487	21,322	76,990
201805	1,905	2,189	53,119	21,523	78,736
201806	1,750	1,867	50,216	22,222	76,055
201807	1,541	1,698	52,796	22,085	78,120
201808	1,283	1,789	52,152	22,595	77,819
201809	1,516	1,913	52,100	21,353	76,882
201810	1,798	2,315	50,585	18,827	73,526
201811	1,773	2,534	48,300	23,494	76,100
201812	2,077	3,295	53,481	24,552	83,406

다운로드(PDF/엑셀)

전 력 통 계 속 보

The Monthly Report on Major Electric Power Statistics

9

2019

제 491호

KORAIL

INTRODUCTION
OF KORAILDOMESTIC
BUSINESSOVERSEAS
BUSINESSINTERNATIONAL
COOPERATION

MANAGEMENT

TRAIN
INFORMATIONINVESTOR
RELATIONS

TRAIN INFO

⑥ Train Information > Information on Metropolitan Railroad > Current Status of Metro Trains

Current Status of Metro Trains



Current Status of Metro Trains

(As of January 1, 2013)

Department in charge	Line	Number of train cars	Start of operation	Remarks
Seoul HQ	Munsan Rolling Stock Office	Gyeongui Line	118	July 2009
Western Metropolitan HQ	Guro Rolling Stock Office	Metro Line 1	827	August 1974
	Byeongjeom Rolling Stock Office	Gyeongbu Line	220	April 2003
	Seungnam Rolling Stock Office	Gwacheon/Ansan Line	348	January 2001
East Metropolitan Office	Bundang Rolling Stock Office	Bundang Line	240	May 1995
	Yongmun Rolling Stock Office	Jungang Line	162	April 2010
	Imun Rolling Stock Office	Line 1	202	July 2005
	Pyeongnae Rolling Stock Office	Gyeongchun Line	168	November 2010
Seoul Metro (Jichuk Rolling Stock Depot)	Isan Line	160	January 1996	Inspection on a commissioned basis
Total		2,445		

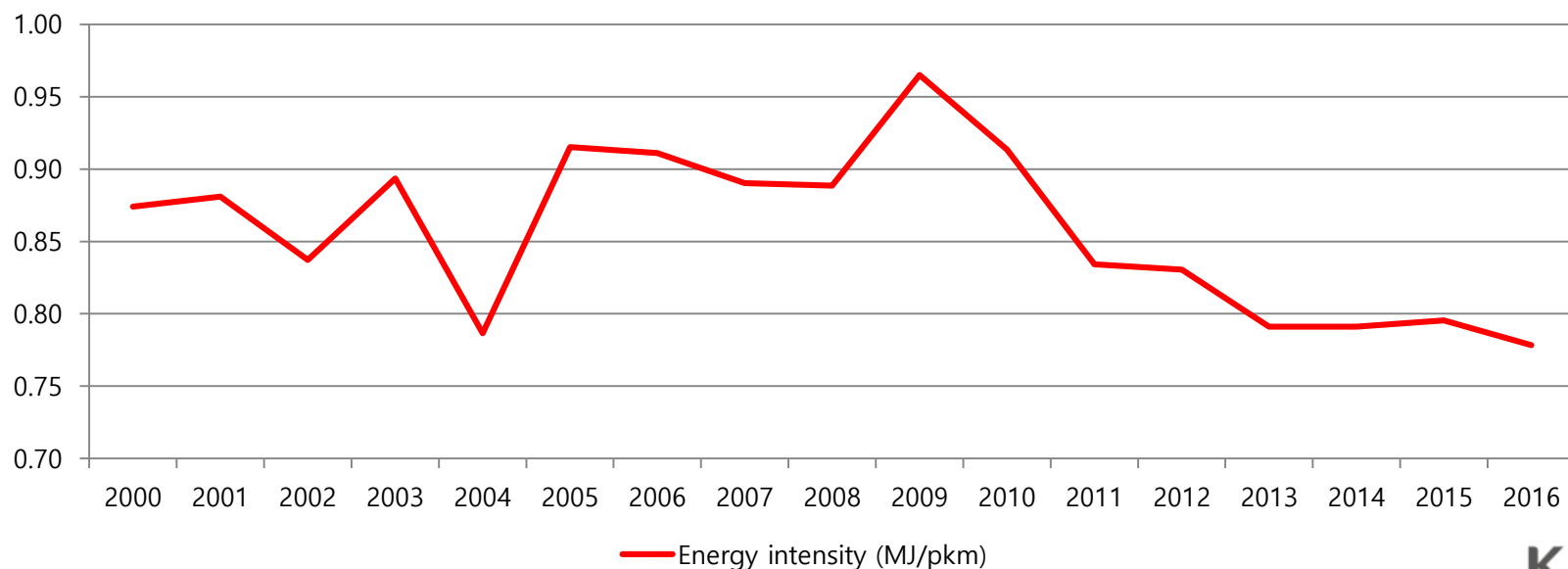
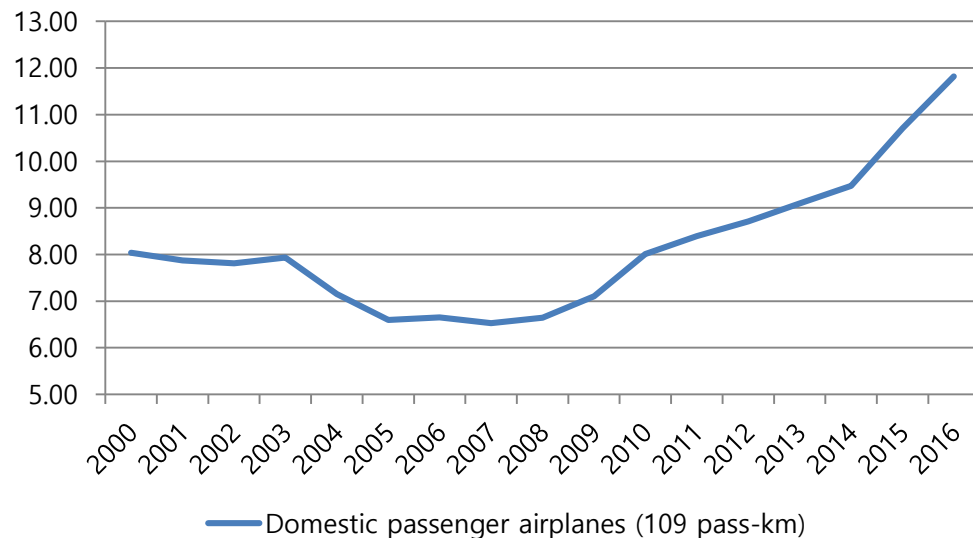
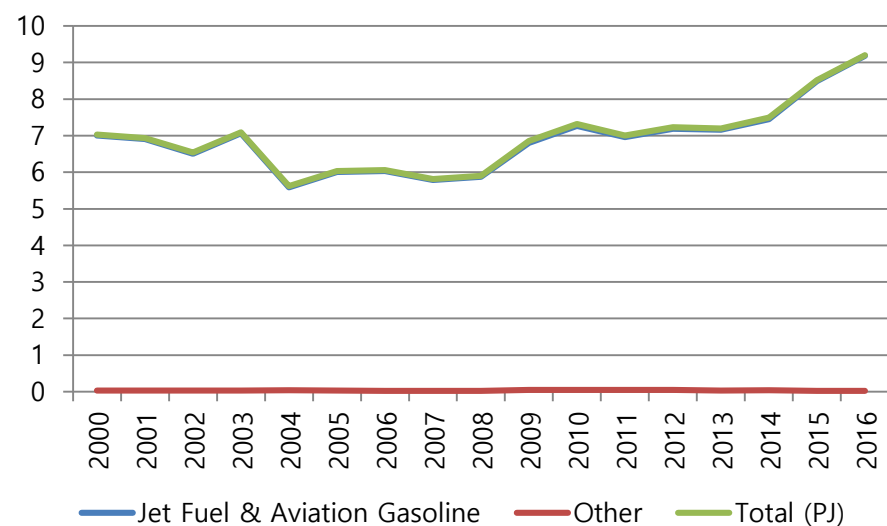
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RESERVATIONFast & Convenient
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Train Information

Information on Metropolitan
RailroadCurrent Status of Metro
TrainsMetro Lines & Trains in
OperationInformation on KORAIL's
Conventional Trains

Rail Lines

Energy Efficiency for Domestic Passenger Airplanes



Data Collection for Domestic Passenger Airplanes

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Introduction Korea Oil Price Korea Supply & Demand

Creating Value Beyond Energy

Explore Tomorrow

LOGIN

Today's Oil Price World Domestic

Oil Product LPG Product

2019. 09. (Unit : 1,000 Bbl, 1,000 \$)

Products Volume Price

Gasoline	7,755	71.51
Kerosene	93.50	77.78
Diesel	16,525	78.13
Bunker C	1,588	71.02
Naphtha	3,596	54.73
White Spirit	107	92.99
Jet oil	10,012	76.87
LPG	640	33.59
Asphalt	1,701	63.54
Base Oil	1,021	88.14
Others	1,394	63.89
Fuel Oil by Product	26.52	61.92

Weekly(OPINET)

Gasoline 1,534.40 0.74

Kerosene 972.09 0.30

Cars Diesel 1,380.29 1.21

1550
1500
1450
1400
1350

6.6 7.3 7.5 8.3 8.5 9.2 9.4 10.3 10.5

[Gasoline & Kerosene]

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종사자 Employee	세계통계 World Statistics	실시간 통계 Real Time	동향분석 Market Analysis	



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