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Energy consumption and GHG emissions in the transportation sector of Iran

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Caspian Region Environmental and Energy Studies

CREES

Berlin Centre for Caspian
Region Studies

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1. Introduction: Iran

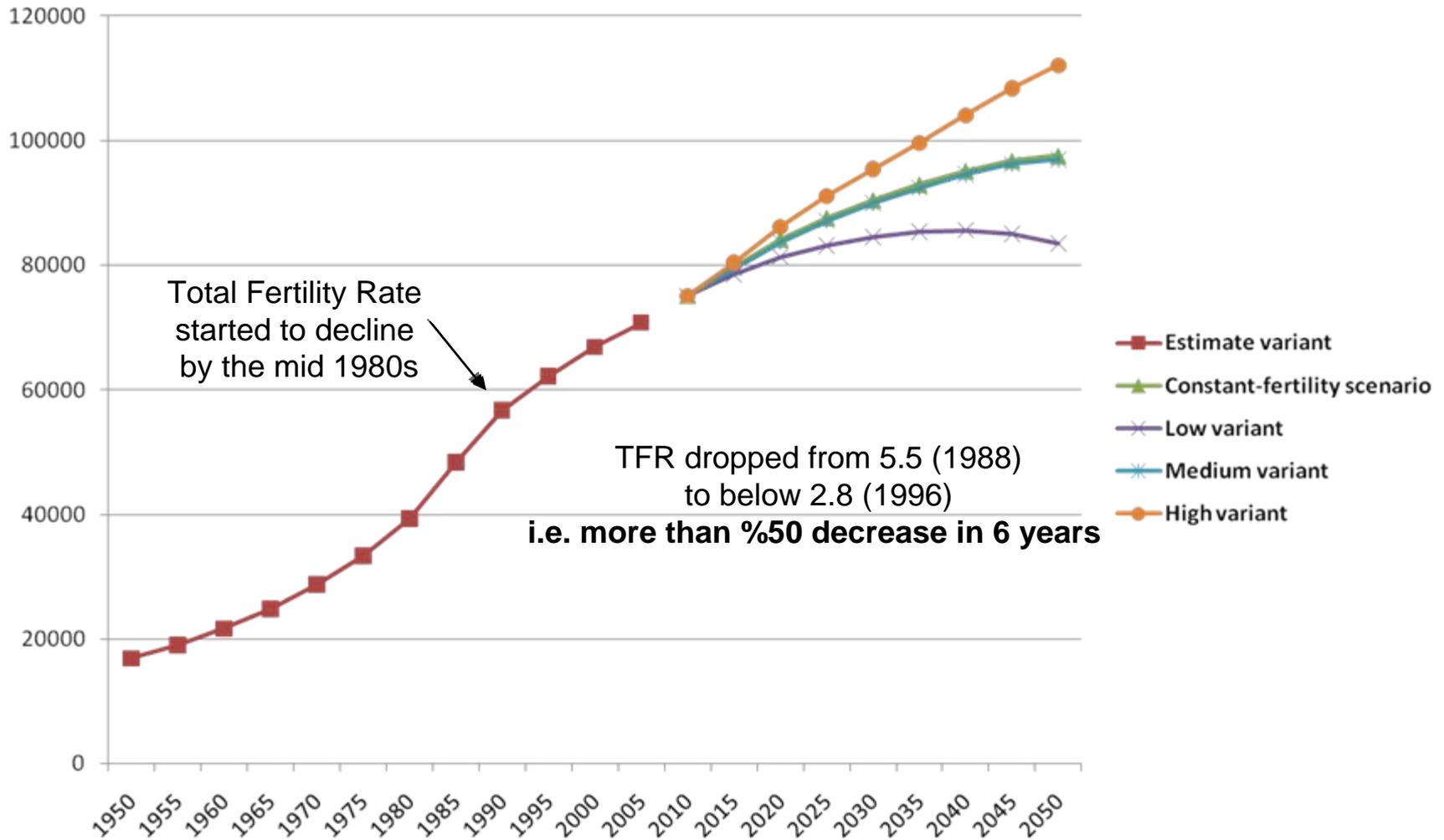
1.1. Demographics

1.2. Economy

1.3. Industry

1.4. Vehicle industry

1.5. Energy



Iran population growth from 1950-2010 and population forecasting due to three scenarios (Source: United Nations Population Division, 2011)

Five Years Economic, Social and Cultural Development Plans

First ESCD plan (1990-1994)

Second ESCD plan (1995-1999)

Third ESCD plan (2000-2004)

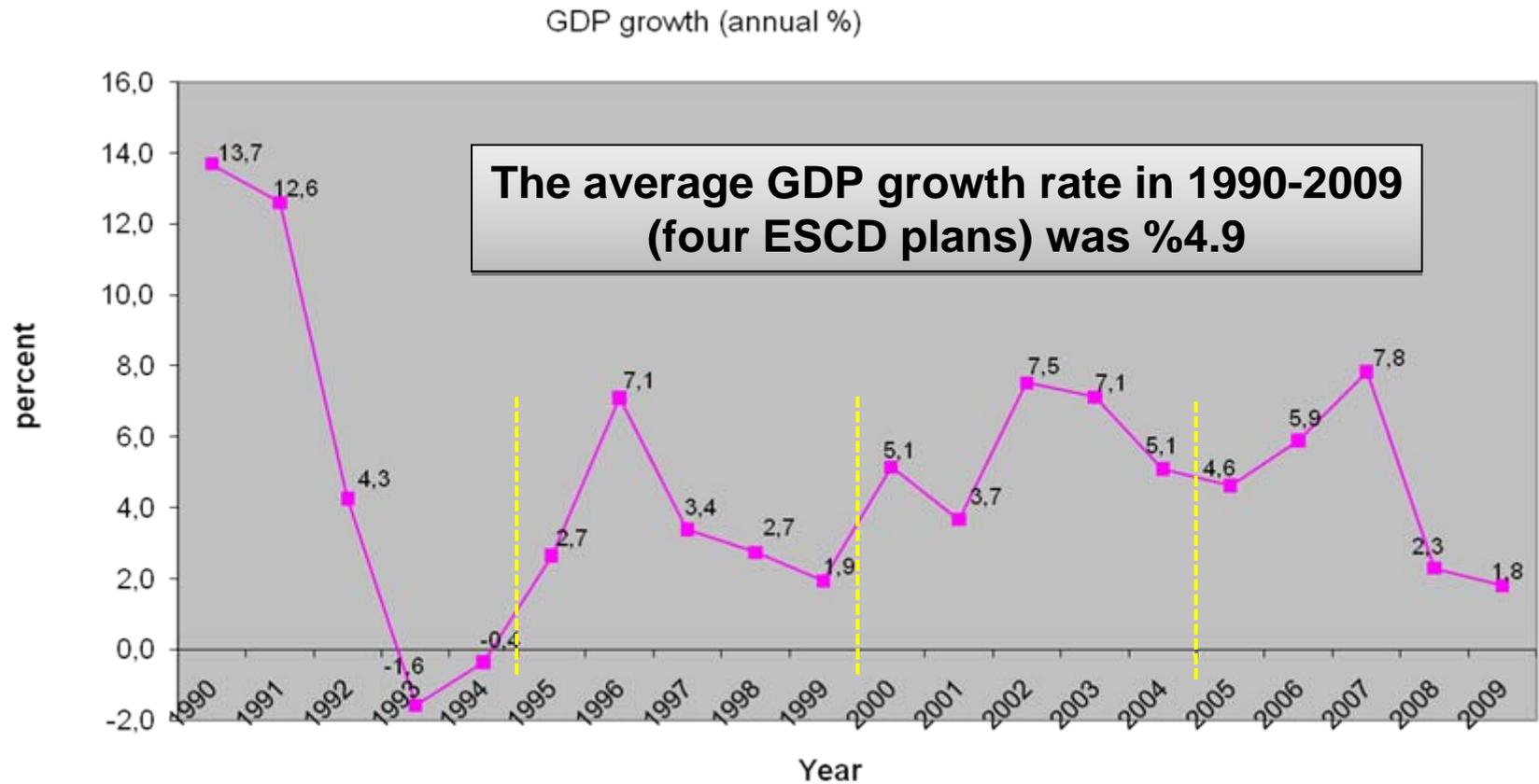
Fourth ESCD plan (2005-2009)

Fifth ESCD plan (2011-2015)

- Modifying the exchange rate (6 to 1)
- Reconstructing infrastructures after the war with Iraq

Enhancing economic infrastructural capabilities:

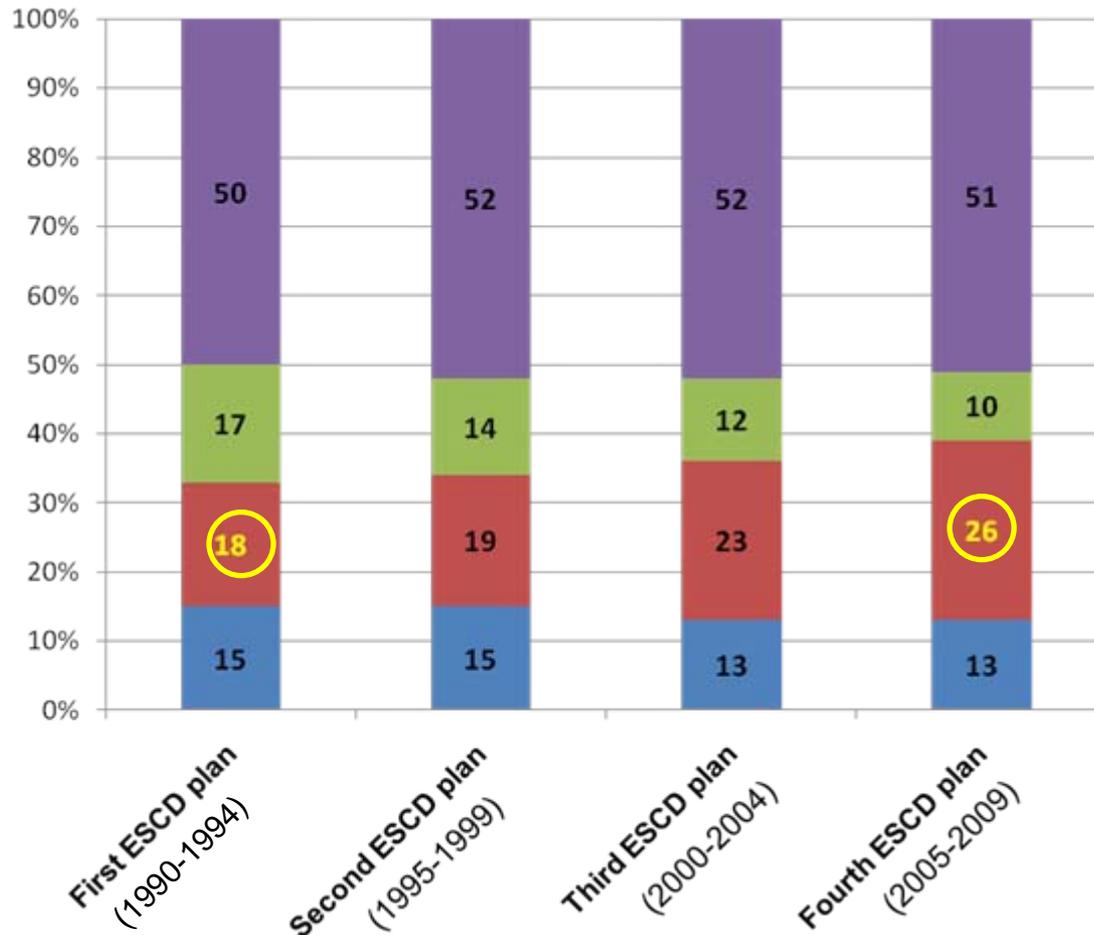
Constructing national roads network, , refineries, power plants, communications, water resource management and so forth



Iran GDP growth (1990-2009)
(Source: World Bank 2011)



Iran Inflation (1990-2009)
(Source: World Bank 2011)



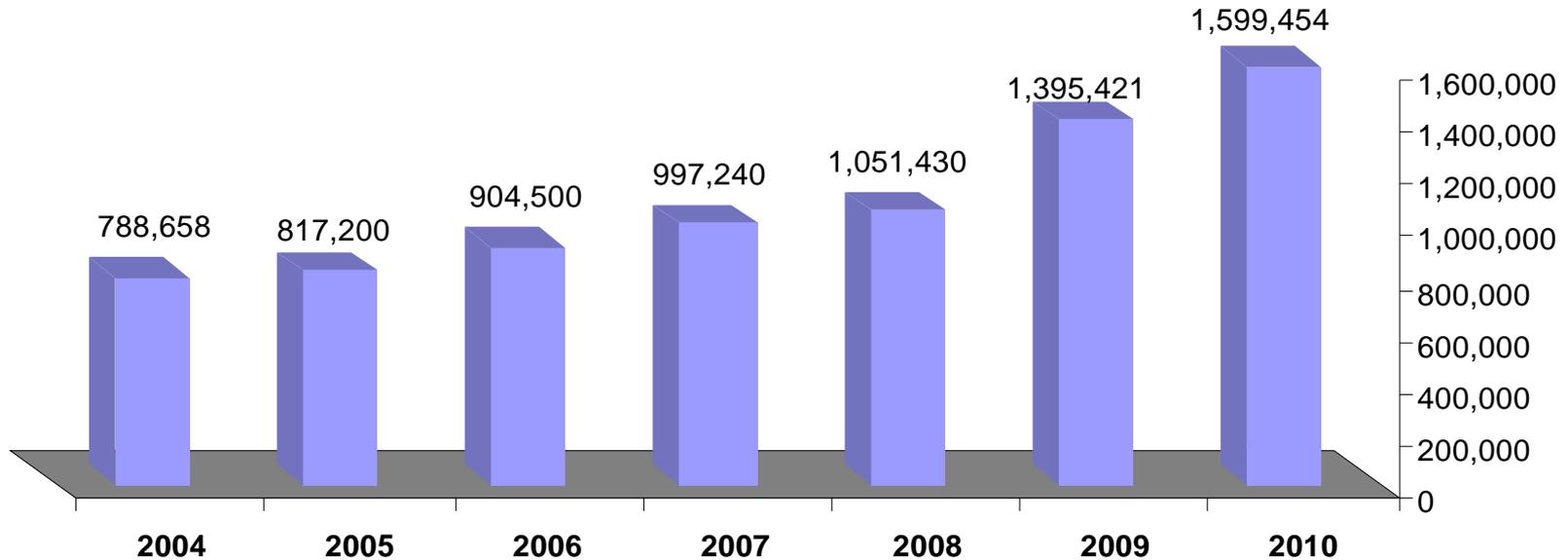
Iran industry and mine sector could raise its share in the GDP from %18 to %26 (especially in the 3rd and 4th ESCD plans)

- services sector's value added share
- oil & gas extraction and refinery sector's value added share
- industry and mine sector's value added share
- agriculture sector's value added share

Industry and mine sector has taken the share of oil & gas sector more than the other sectors

Shares of sectors in value added in Iran GDP
(Source: Iran Central Bank, National Accounts, 2011)

Iran Vehicle Industry – Production Trends

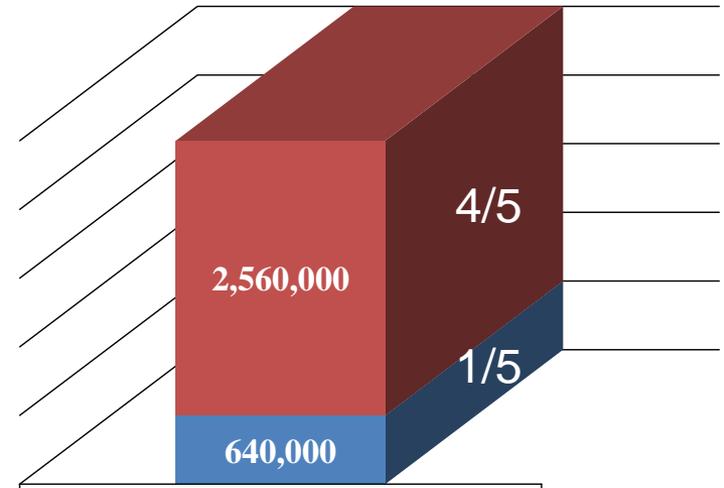


Note: All the produced/imported passenger vehicles in Iran can consume gasoline or dual fuel gasoline/CNG (no gas oil option for the consumers)

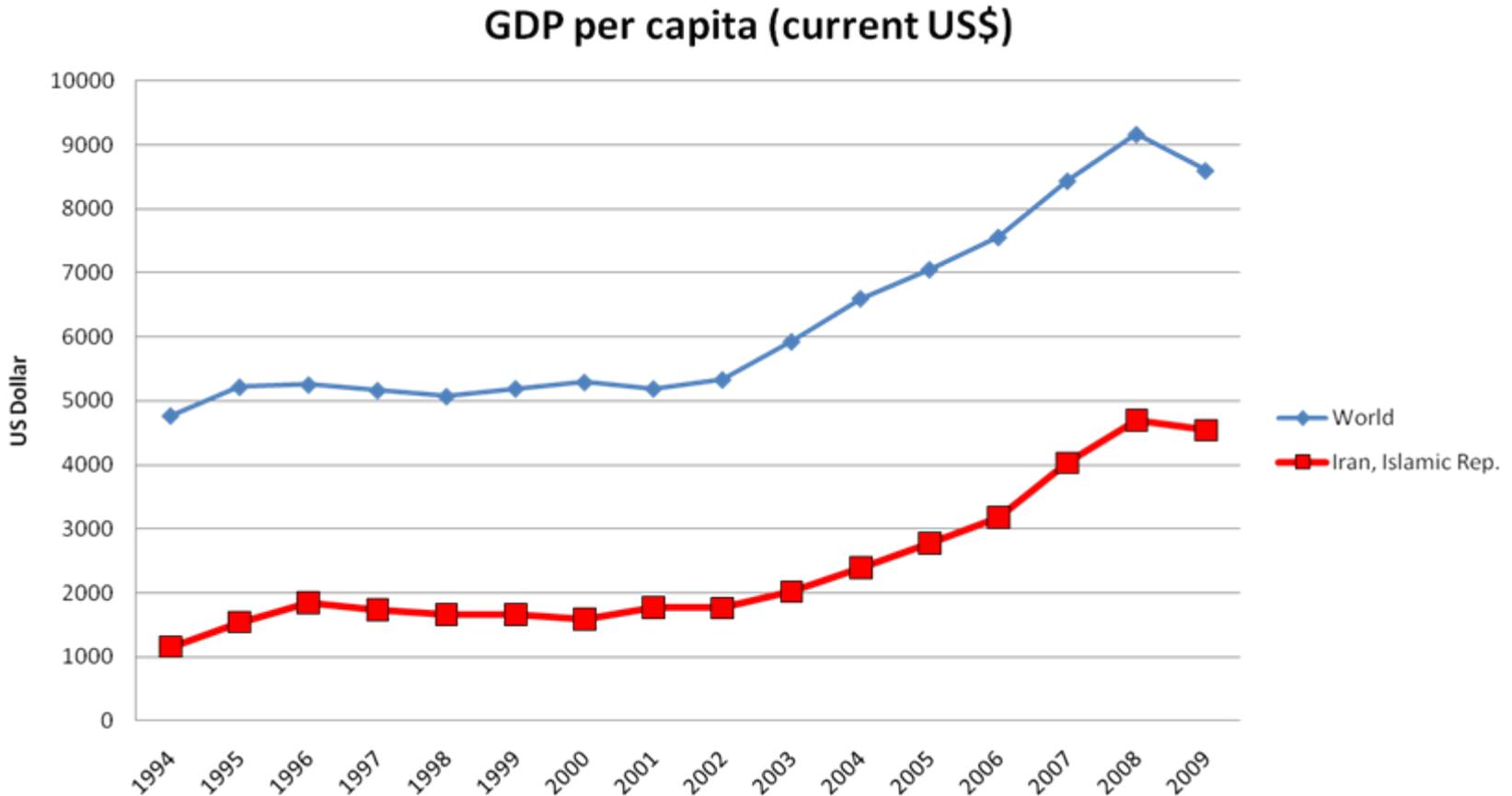


Production : 1,600,000 Unit (2010)

No. of Employments: 3,200,000



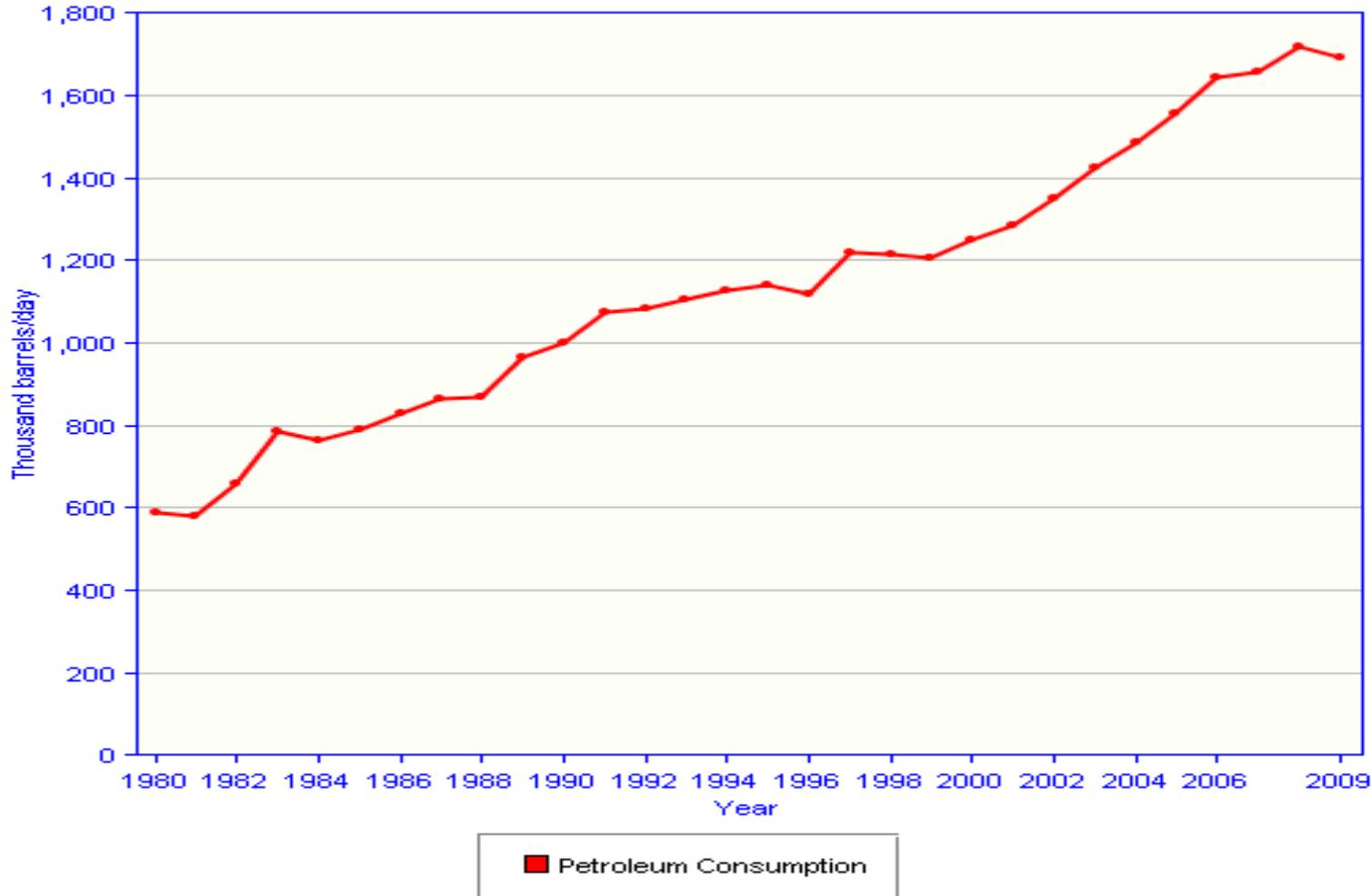
■ Direct ■ Indirect



GDP per capita trend in Iran(1994-2009)

(Source: World Bank 2011)

Iran Petroleum Consumption Trend



Iran Petroleum Consumption(1980-2008)

(Source: US Energy Information Administration, 2011)

Country	2008	2009	World Rank
Iran	1,718	1,691	14

%2 of the world petroleum consumption was belong to Iran in 2009

Iran Petroleum Consumption (thousand barrel / day)
(Source: US Energy Information Administration, 2011)

Country	2008	2009	World Rank
Iran	10,904	11,310	35

Iran has had weak status in energy intensity world ranking in 2009

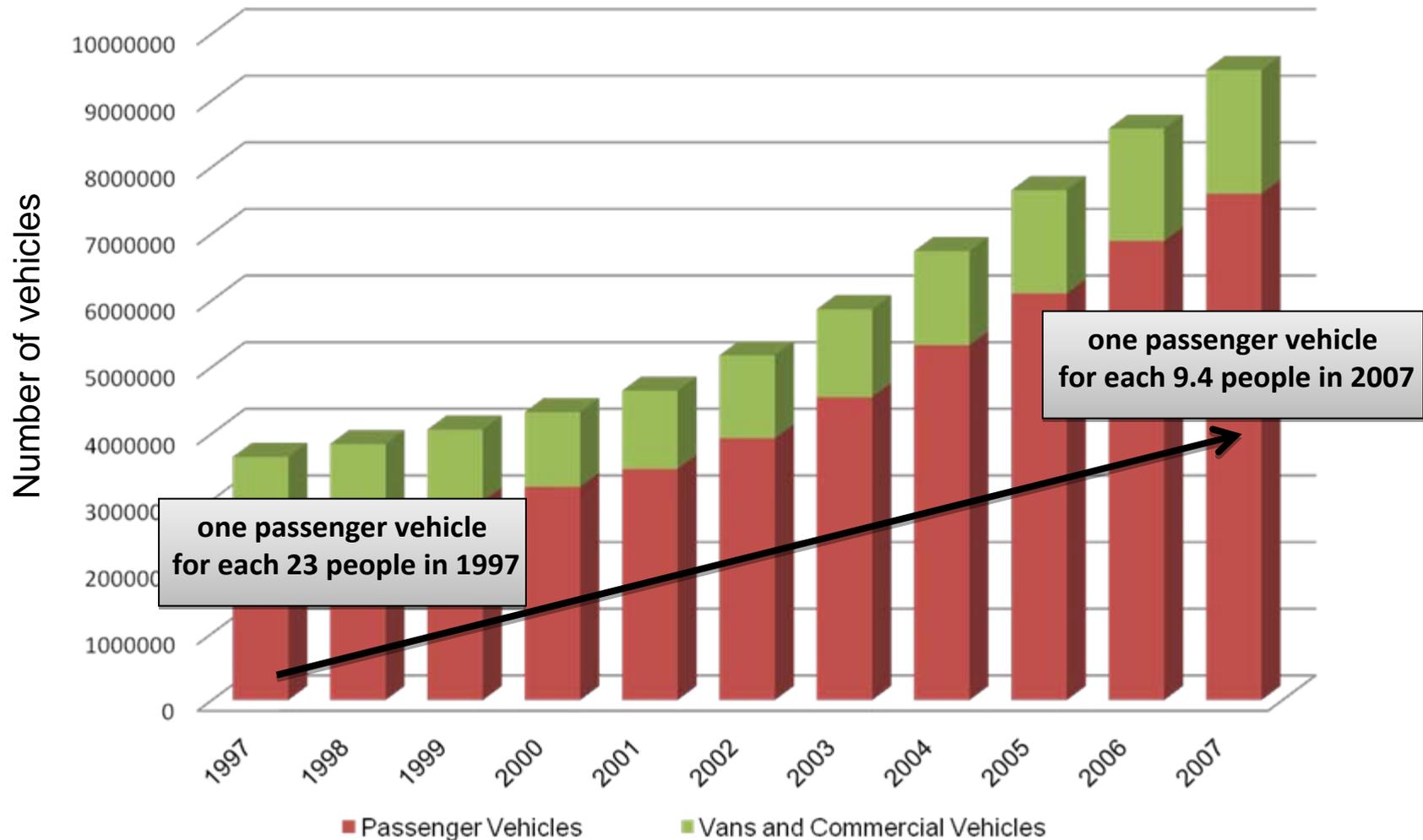
2. Iran Transportation Sector

2.1. Iran total vehicles

2.2. Final energy consumption by sector

2.3. Final energy consumption in transportation sector

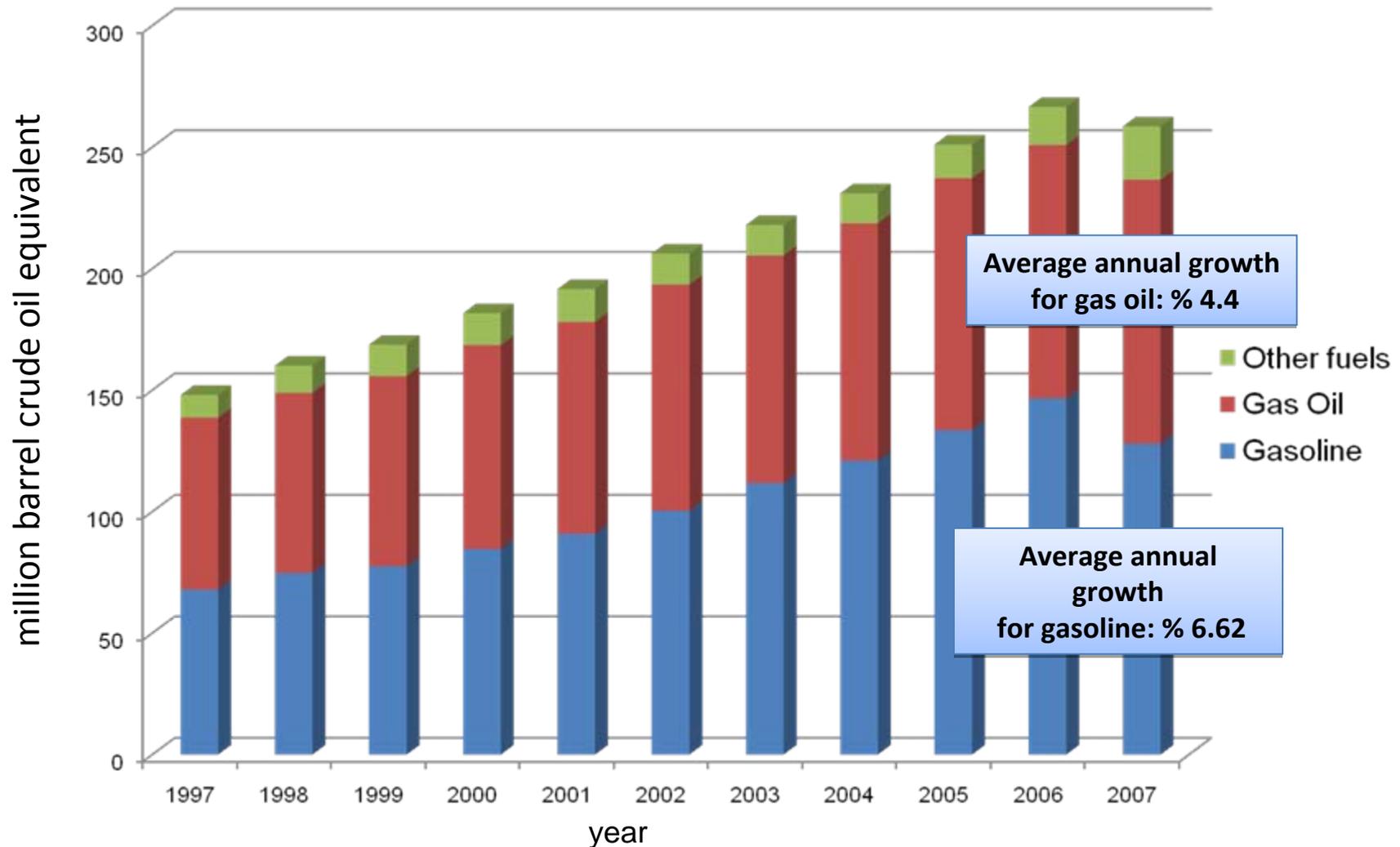
2.4. Paid subsidies for fuels in transportation sector



Iran Total Vehicles (1997-2007)

(Source: Iran Transportation Data Book 2007, 2010)

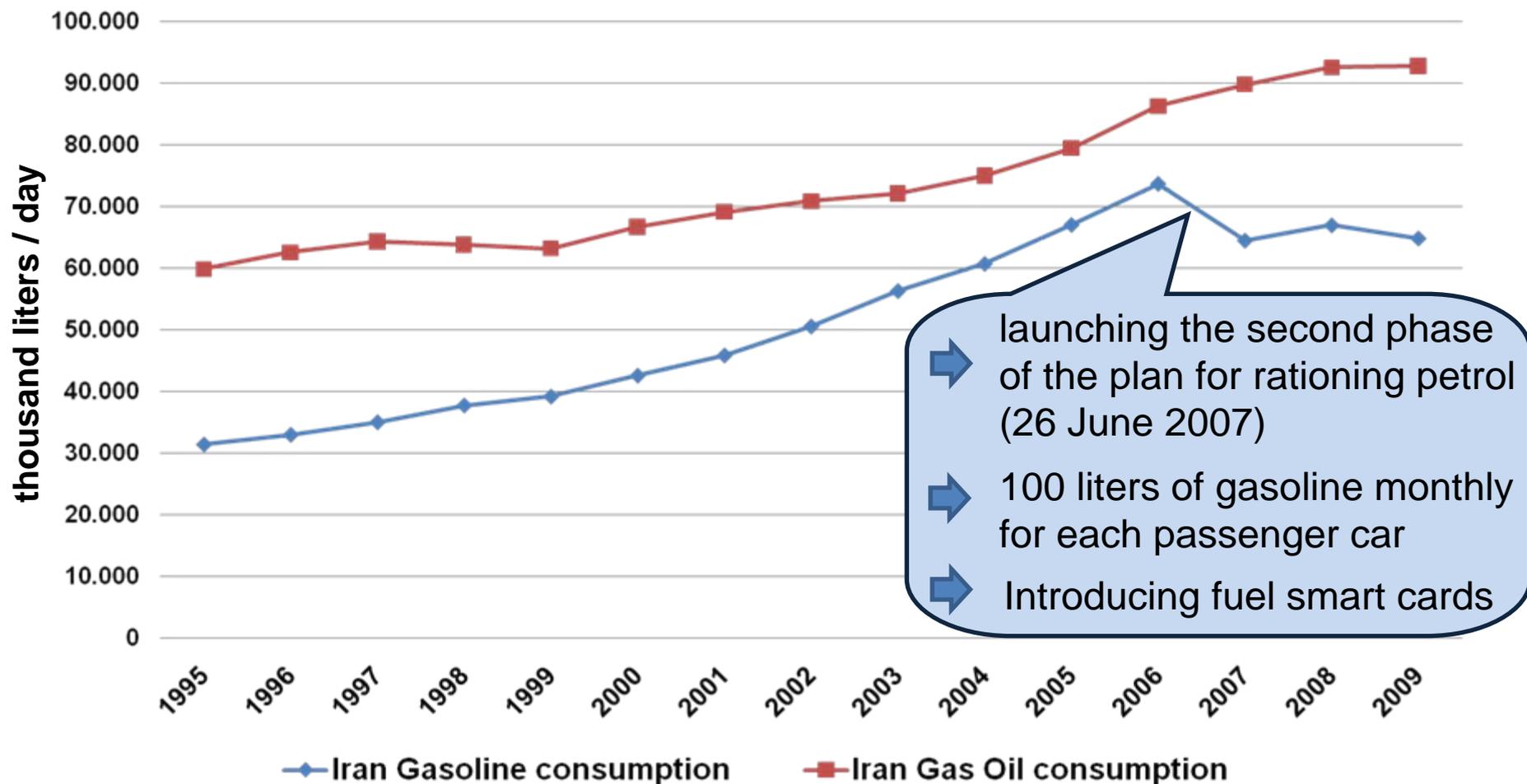
Final Energy Consumption in Iran Transportation Sector (1997-2007)



Final Energy Consumption in Iran Transportation Sector (1997-2007)

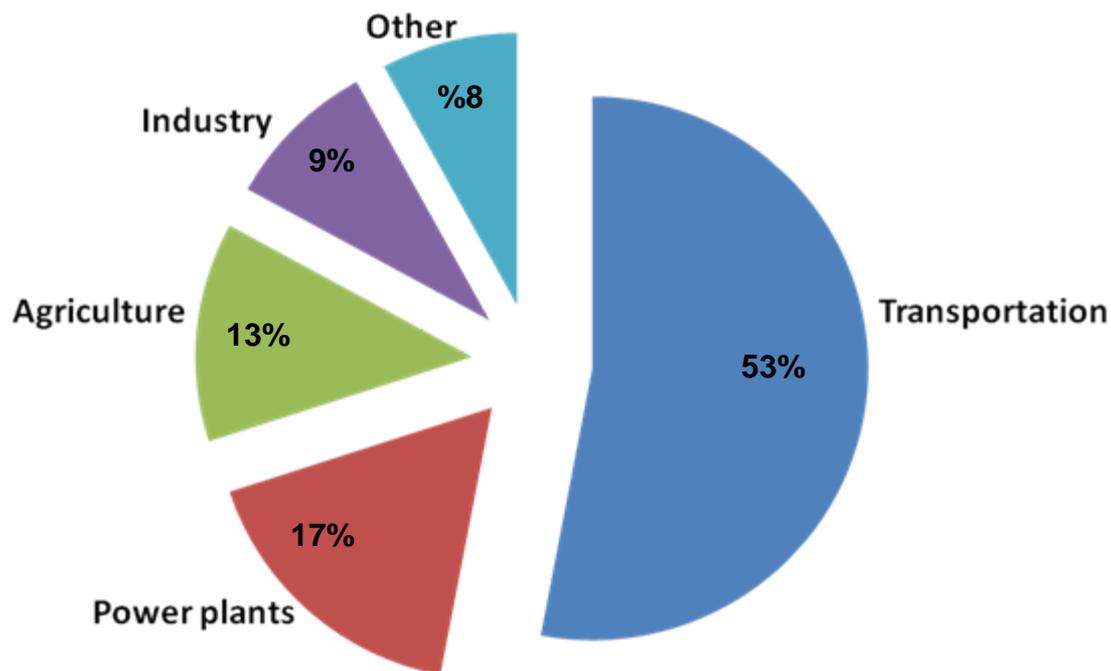
(Source: Iran Transportation Data Book 2007, 2010)

Main Fuels Consumption in Iran (1995-2009)



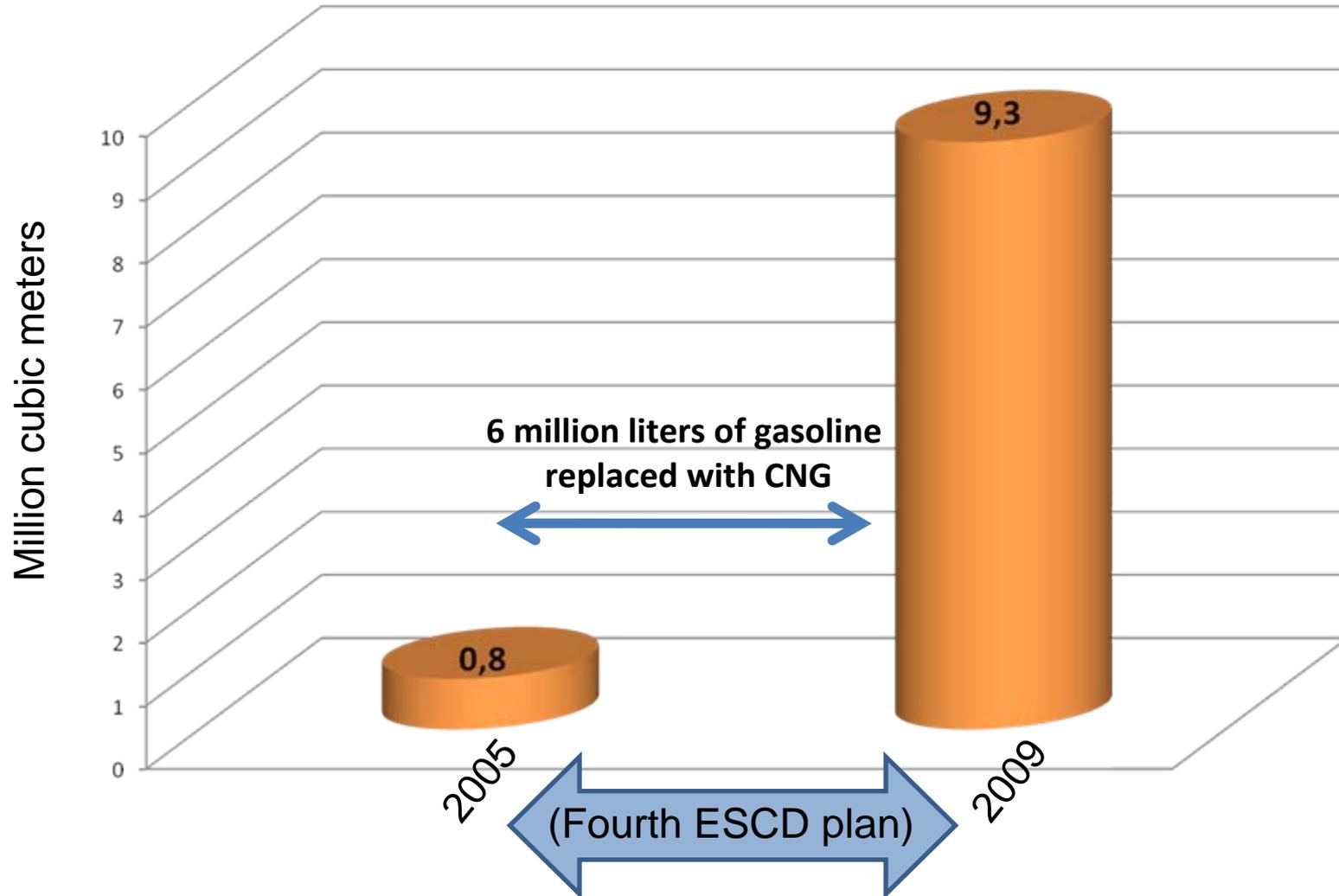
Main Fuels Consumption in Iran Transportation Sector(1995-2009)

(Source: National Iranian Oil Products Distribution Company Data Book 2009, 2010)

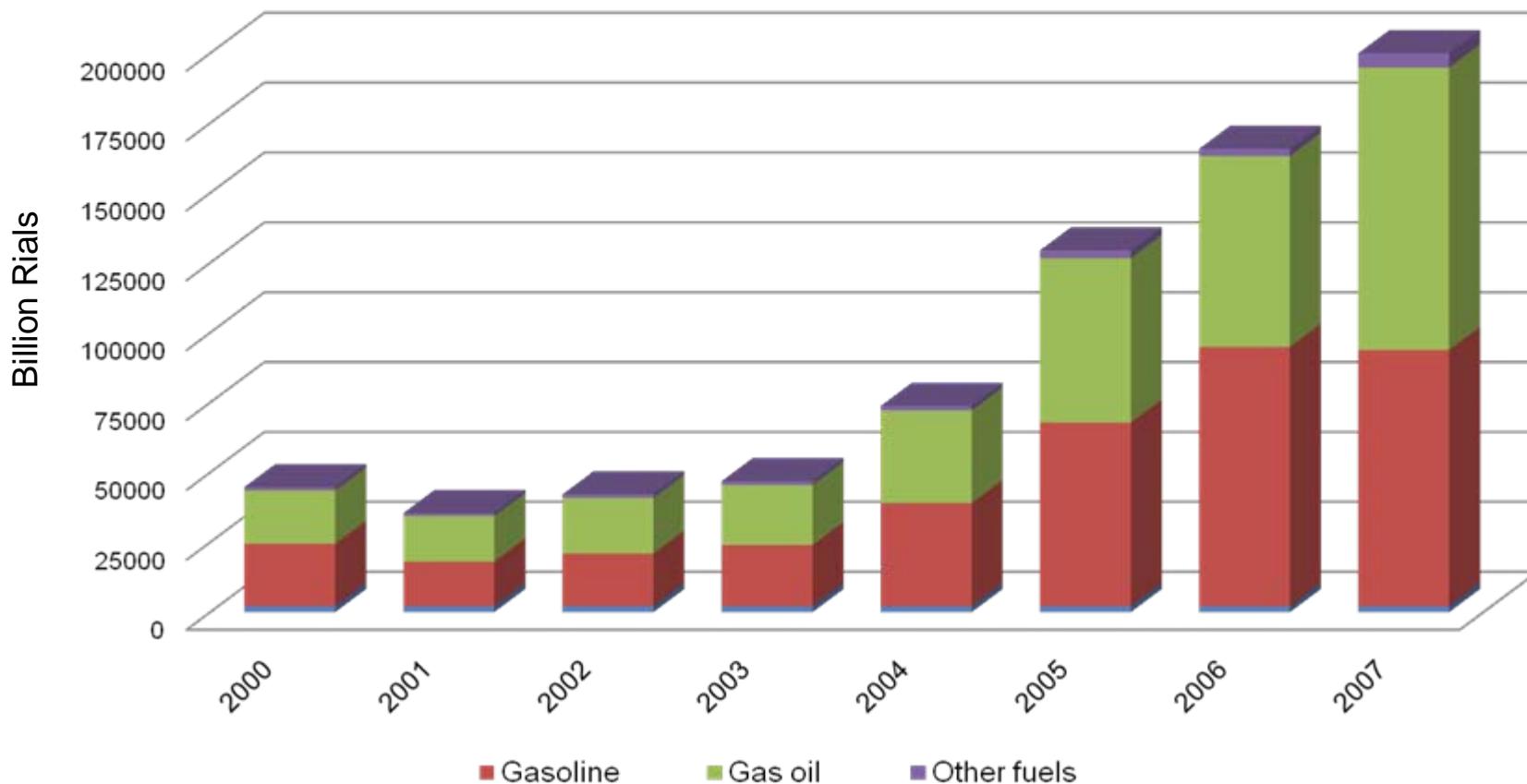


Note: The variety of gas oil final consumers in Iran are more than other fuels.

Total CNG consumption in T.S. of Iran



(Source: National Iranian Oil Products Distribution Company Data Book 2009, 2010)



Paid Subsidies for Fuels in Iran Transportation Sector (2000-2007)

(Source: Iran Transportation Data Book 2007, 2010)

Time Series of retail fuel prices in Iran

In US cent per liter (last survey 15-17 November 2008)

	(US cents/liter)				
(year)	2000	2002	2004	2006	2008
Diesel	2	2	2	3	3
Super Gasoline	5	7	9	9	10

Iran fuel prices after Subsidy Reform Plan (19 December 2010)

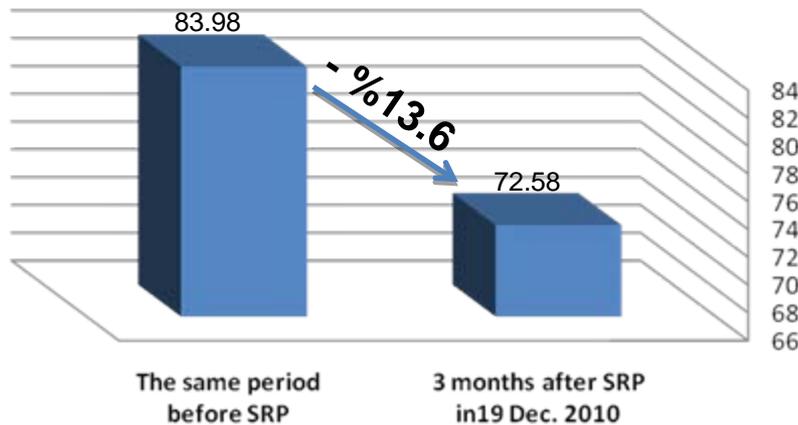
	The first monthly quota (60 liters)	The second monthly quota (after 60 liters)
Super Gasoline (US cents/liter)	47	75
Diesel (US cents/liter)	14	33

Note: Public vehicles receive a higher monthly quota

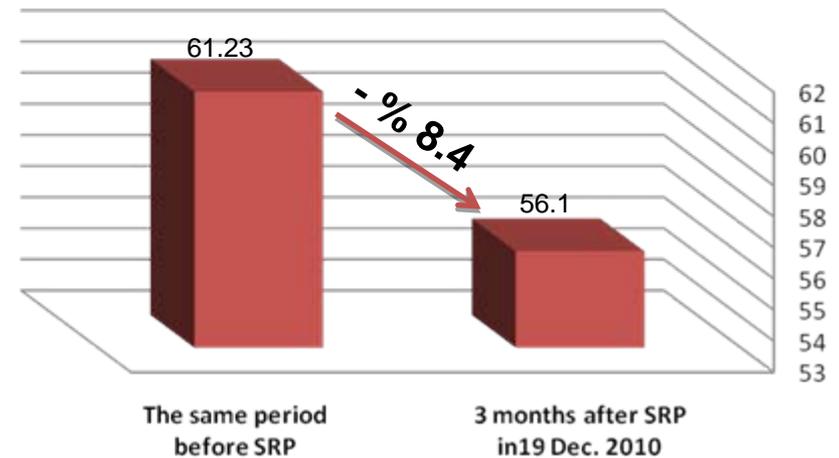
Under the plan , all subsidies are to be gradually removed during a five-year period.

Iran average fuel consumption in a 3 month period
(22 Dec. 2010 – 19 Mar. 2011 and Dec. 2009 – 19 Mar. 2010)
(the same period before and after Subsidy Reform Plan in 19 December 2010)

Average amount of gas oil consumption in Iran
(million liters/day)



Average amount of gasoline consumption in Iran
(million liters/day)



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1. Encouraging consumers to choose more fuel economic vehicles (the demand side)
 2. Forcing Automakers to produce more fuel efficient vehicles (the supply side)

3. Iran Transportation and Climate Change

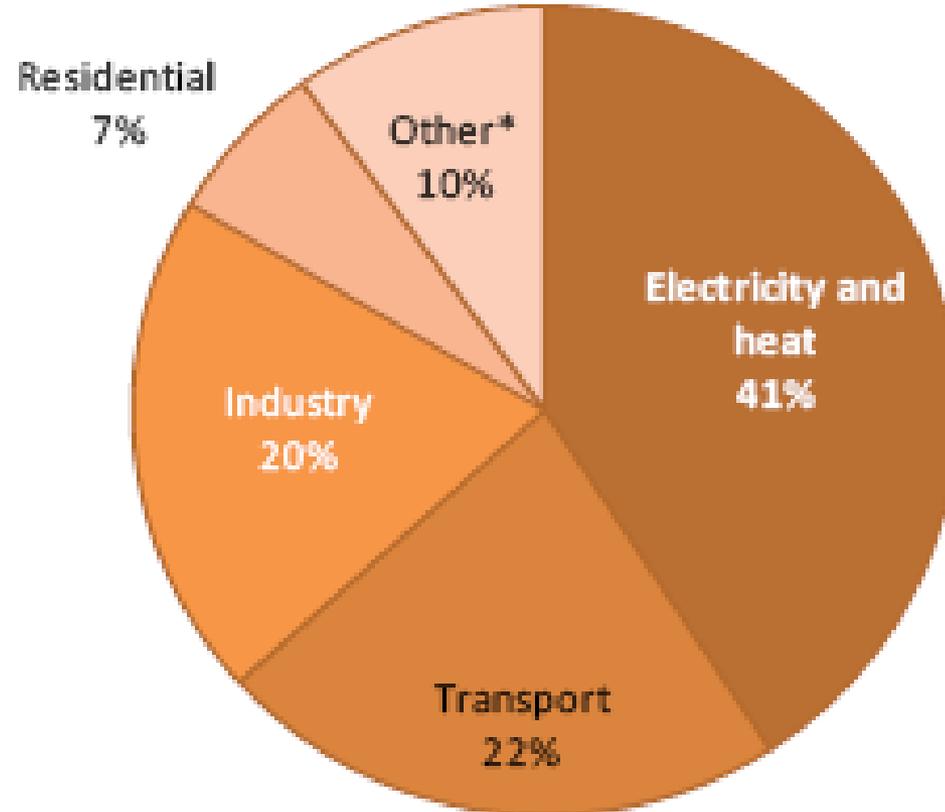
3.1. World CO2 emission by sector

3.2. Top 10 CO2 emitting countries in 2008

3.3. Iran CO2 emission in Caspian Region

3.4. Iran CO2 emission trend

3.5. Iran road transportation CO2 emission



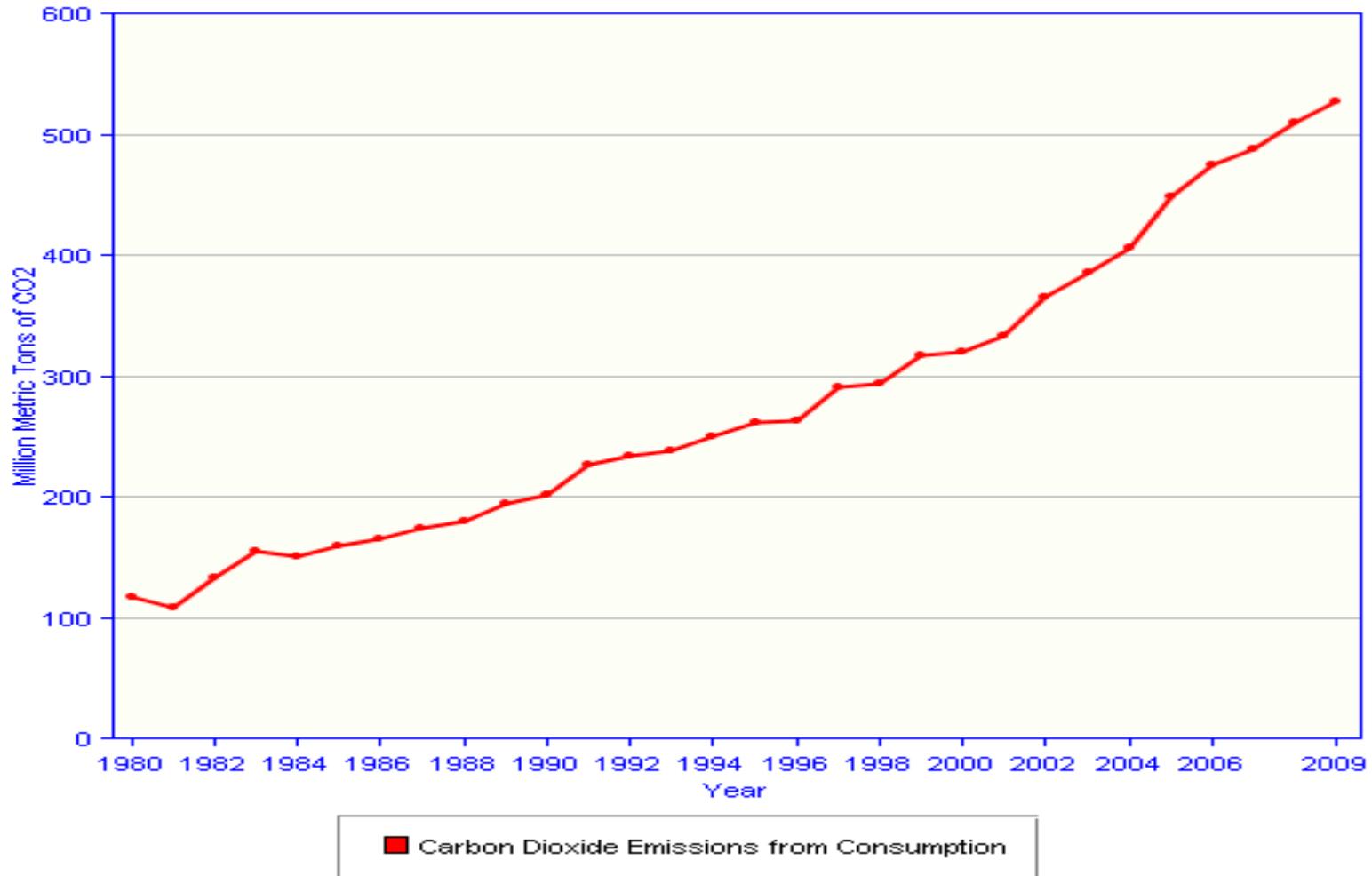
World CO2 emissions by sector (2008)

(Source: CO2 emissions from fuel combustion, International Energy Agency, 2010)

Country	2008	2009	Rank
Iran	512.06	528.6	10

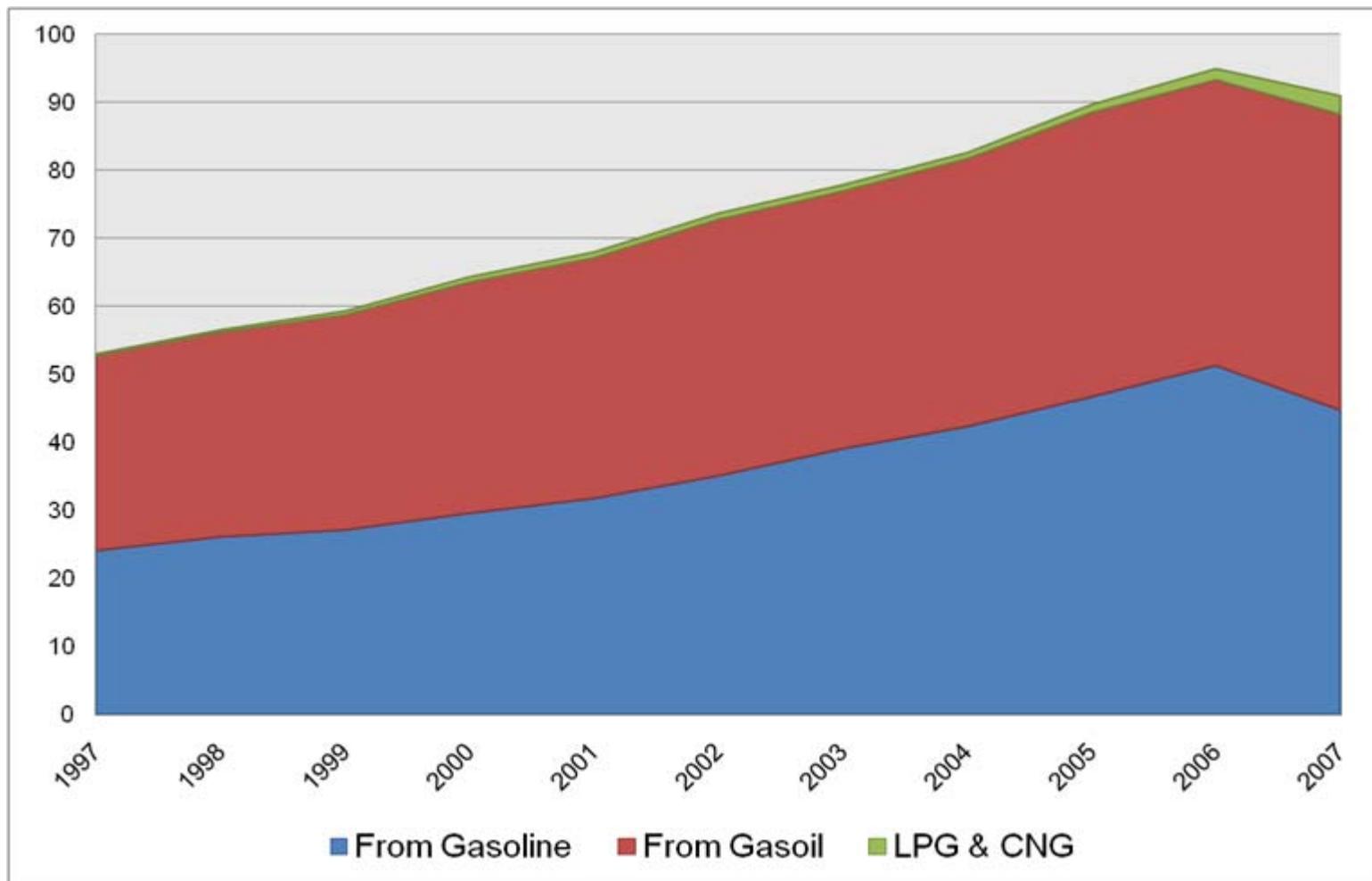
More than %1.7 of total world CO2 emission in 2009 was belong to Iran

Iran Carbon Dioxide Emission Trend (1980-2008)



(Source: US Energy Information Administration, 2011)

Iran road transportation CO2 emission (1997-2007)



Iran road transportation CO2 emission (million metric tons)

(Source: Iran Transportation Data Book 2007, 2010)

Iran has a high potential in energy intensity improvement, especially in the transportation sector

Raising fuel prices through Subsidy Reform Plan (SRP) has had a direct effect on reducing fuel consumption in Iran transportation sector

Focusing on reducing fuel consumption in Iran transportation sector would have a direct effect on GHG emission reduction of the country

The potential of technology enhancement and technology transfer for producing more fuel efficient vehicles in Iran is considerable

Producing diesel passenger vehicles can be encouraged for the Iran vehicle industry, but it needs some improvements in the gas oil quality that produced in the country.

After launching fuel smart cards and rationing petrol and Subsidy Reform Plan, the fuels smuggling between Iran and neighboring countries has decreased dramatically

Establishing new CNG gas stations relatively and in parallel with producing dual-fuel (gasoline/CNG) vehicles should be considered

Using market base tools is an appropriate and applicable approach for controlling fuel consumption, however, controlling inflation rate in this procedure should be considered

Enhancing public transportation system (especially in big cities) is highly recommended and using some international base mechanisms (e.g CDM and GEF) can be helpful

- Auto Facts, 2011
- BP Statistical Review of World Energy, June 2010
- CO2 emissions from fuel combustion, International Energy Agency, 2010
- Iran Central Bank, National Accounts, 2011
- Iran Transportation Data Book 2007, 2010
- GTZ Transport Policy Advisory Service, 2009
- Mehrnews, 2010
- National Iranian Oil Products Distribution Company Data Book 2009, 2010
- SHANA, 2011
- United Nations Population Division, 2011
- US Energy Information Administration, 2011
- World Bank 2011

Thank you for your attention!

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