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# Future Energy Scenarios and Some Strategic Options for Nepal

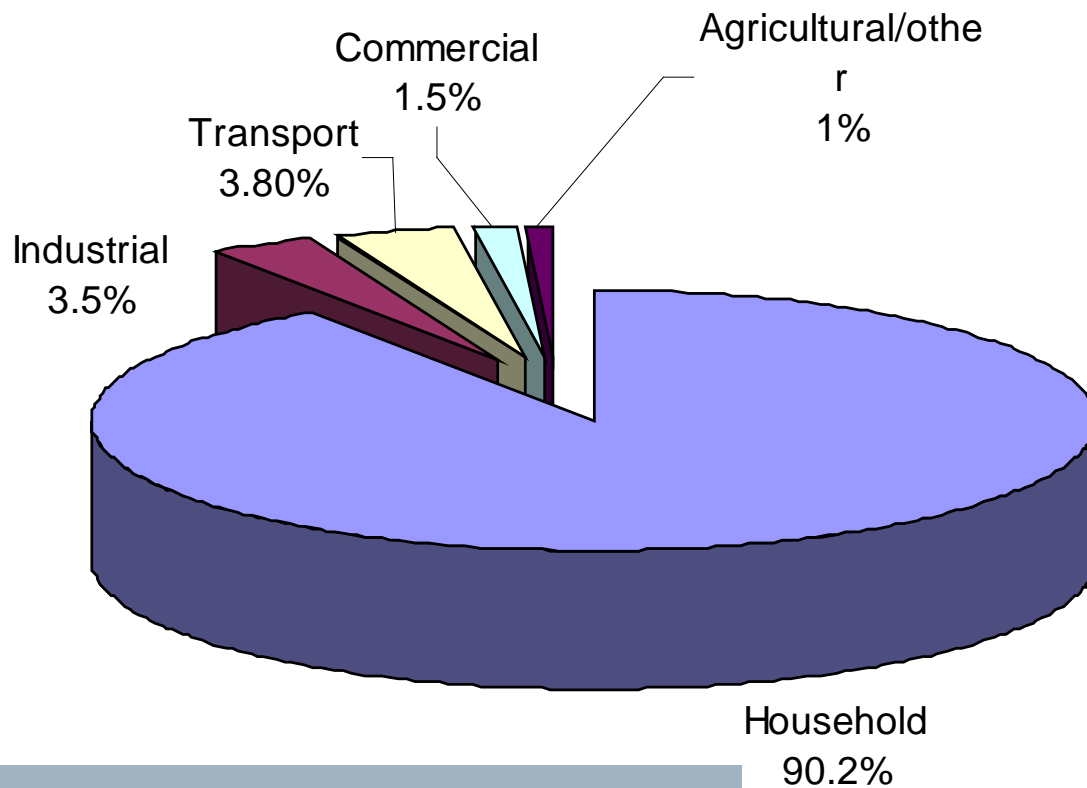
**UN-HABITAT Environmental Technology Expert Group Meeting  
II**

***“Technical Cooperation for Sustainable Environmental  
Development  
in the Asia-Pacific Region”***

30 September, Fukuoka, Japan  
Excel Tokyu Hotel, Fukuoka

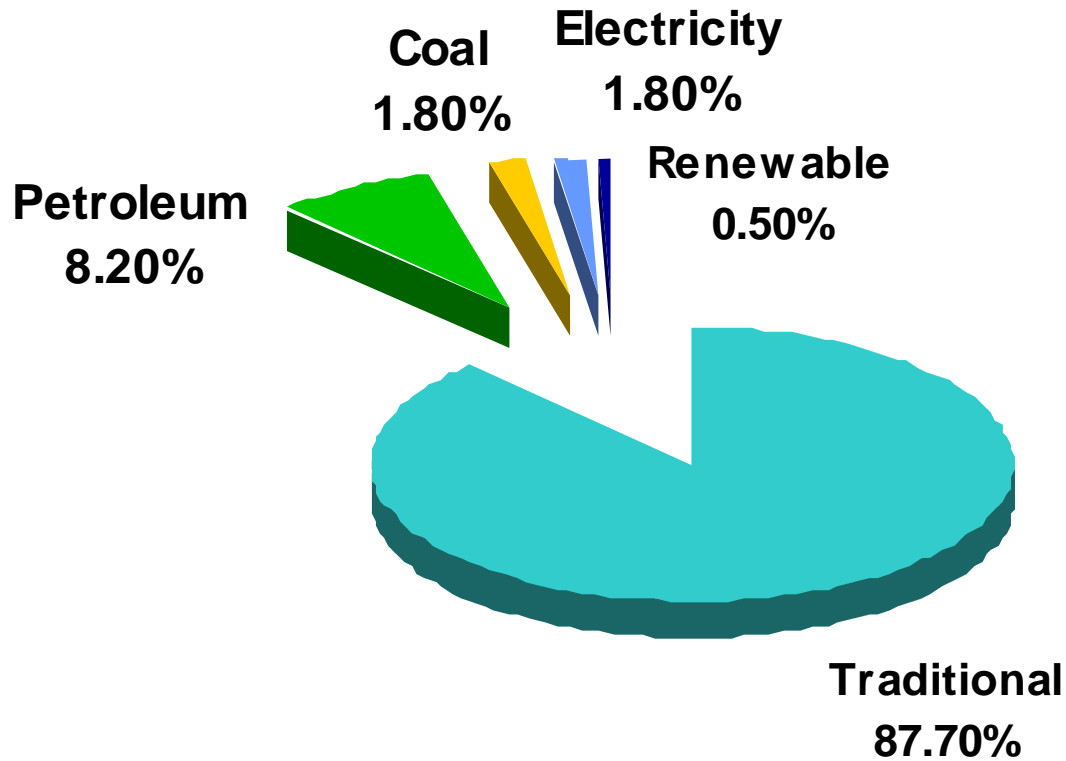
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30 September 2010

# End-use Consumption of Energy in Different Sectors in 2010



Total consumption: 390 million GJ

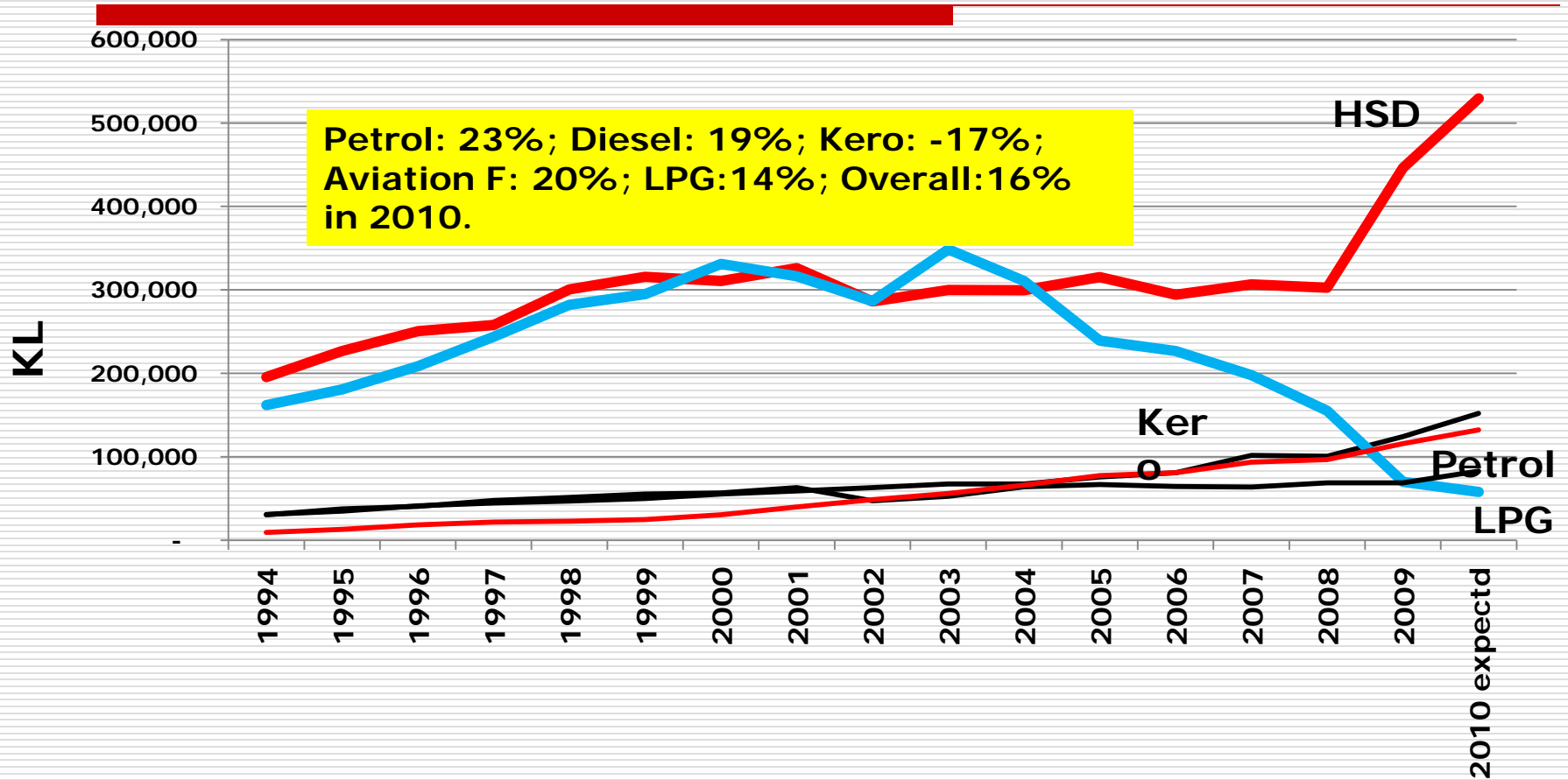
# Energy Consumption in 2010



Total Energy Consumption 390 million GJ

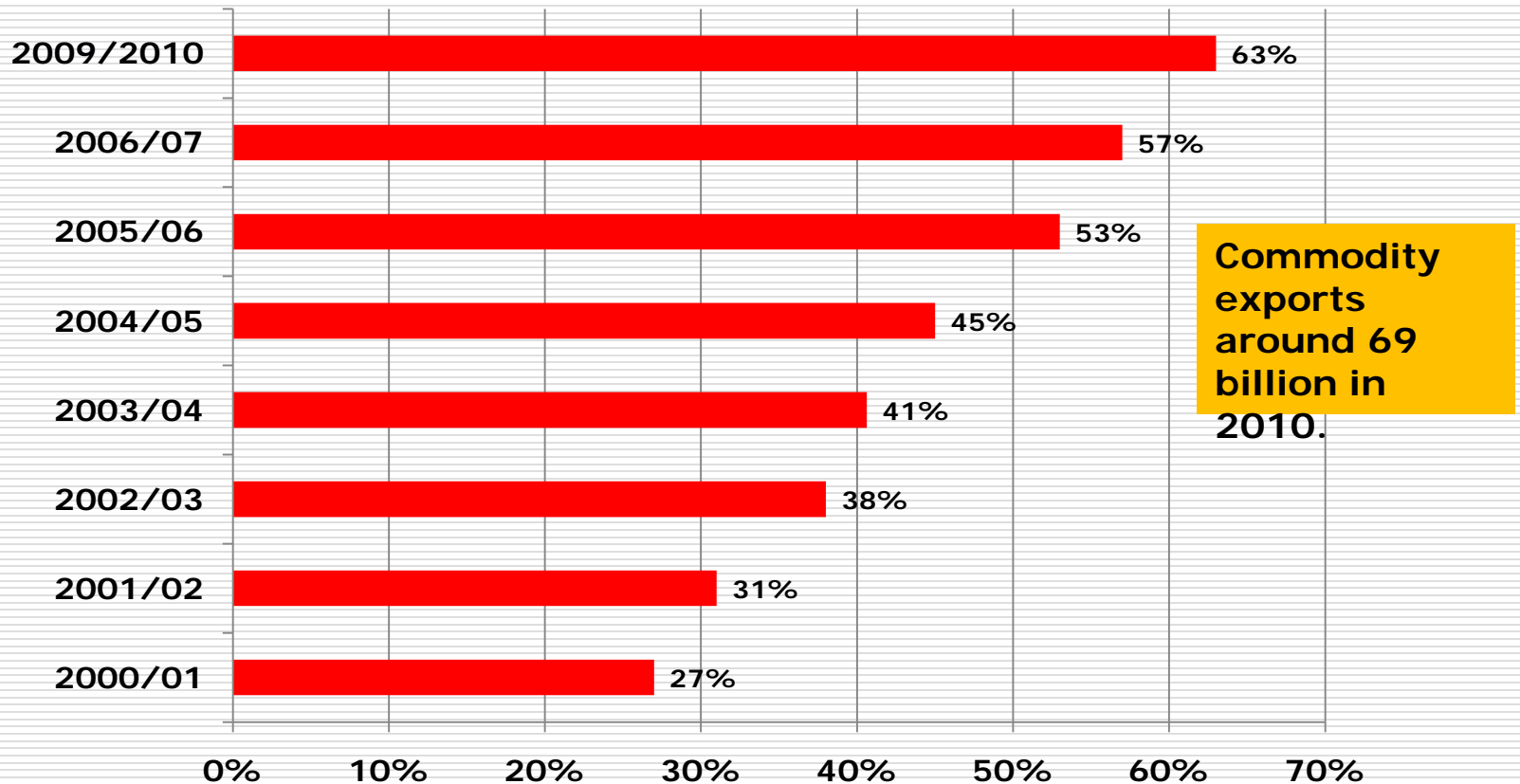
WECS, 2010

# Consumption of Petro-products



NOC, 2010

# Import of petro products against commodity exports



# Major Issues in energy sector

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- ❑ Consumption of traditional fuels - unsustainable
- ❑ Dependence on imported petroleum products – too much
- ❑ Harnessing of the indigenous hydropower resources – very poor
- ❑ Fuel substitution - strongly needed

# Energy Resources Potential

Renewable energy sources	Theoretical potential MW/MWa	Economical potential MW/MWa	Utilized MW/units	% of utilization
Hydropower	83,000	42,000	688	1.6
Microhydro	50		10.2	20
Solar PV power plant	9,750			0
Solar PV home system	122		3.2	3
Wind Power	1,215			0
Biogas plant (MWa)	864		60	7
Solar water heating Urban (MWa)	82		23	28

**Based on NEA, 2009; WECS, 2006; AEPC, 2008 and author's calculations**

# Biogas Plants under UN Habitat Support

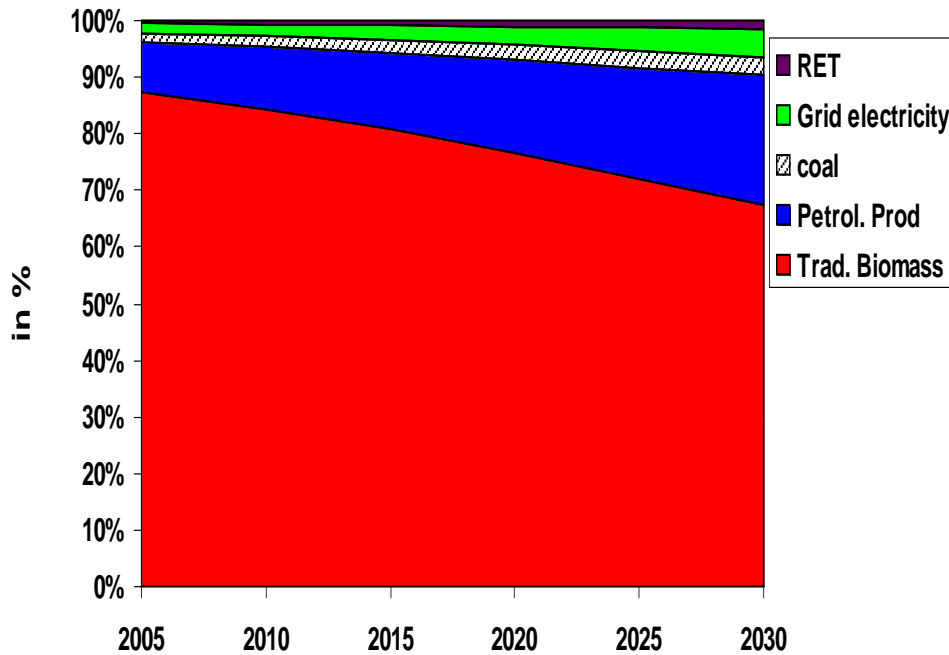
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- Since 2007, promotion of 8 institutional level biogas systems in Kathmandu Valley with support from UN-Habitat
- In addition, successful performance of 3 reed bed wastewater treatment systems with support from the UN-Habitat



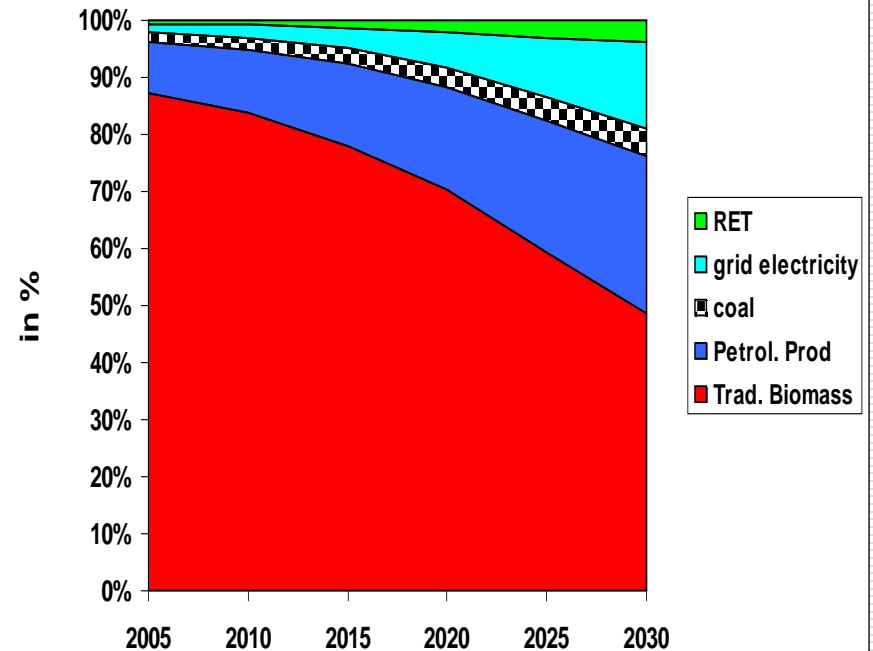
# Fuel Mix at Reference & combined policy scenarios

Energy mix in different periods



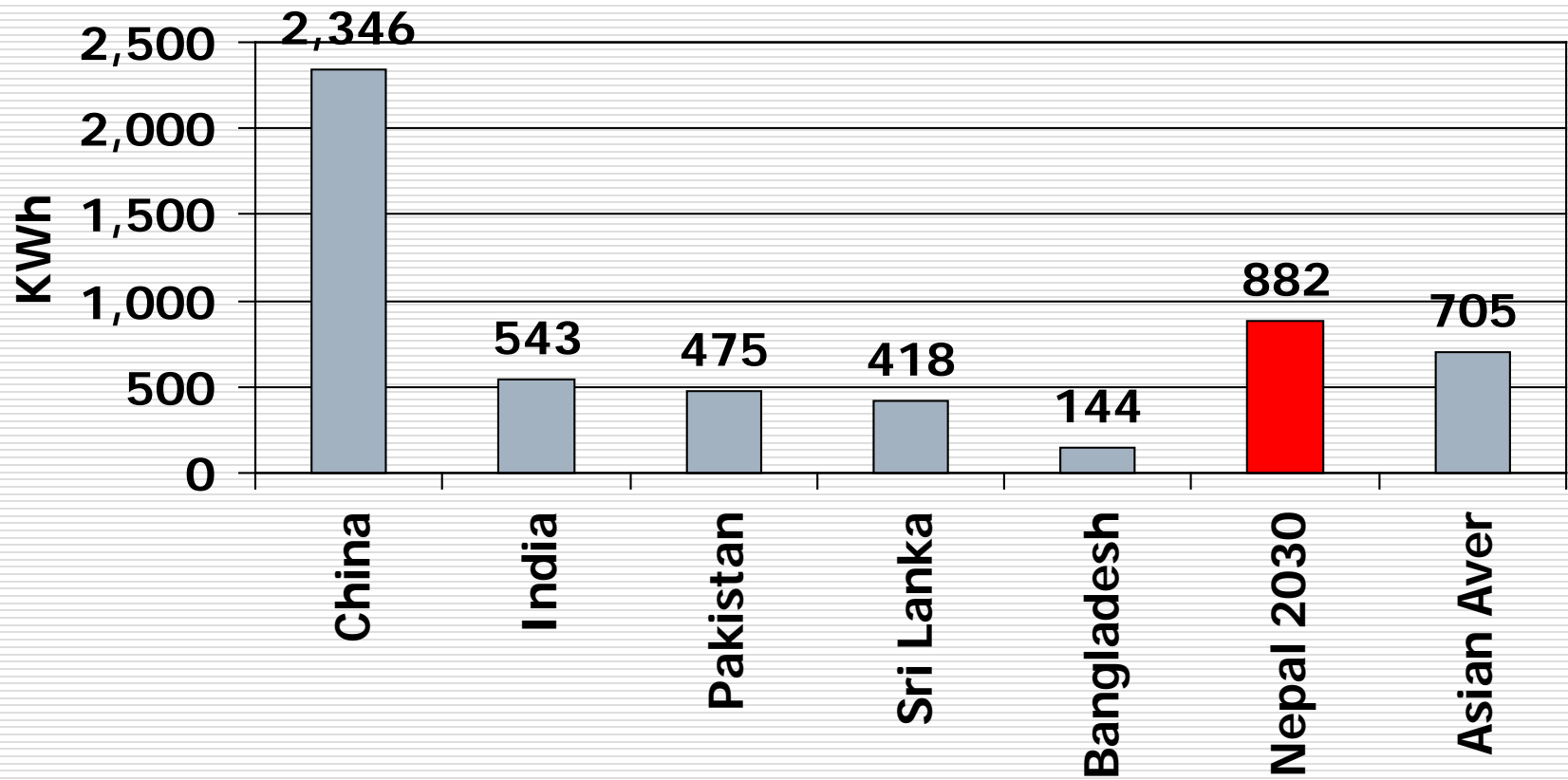
Reference case

Energy mix in combined policy case



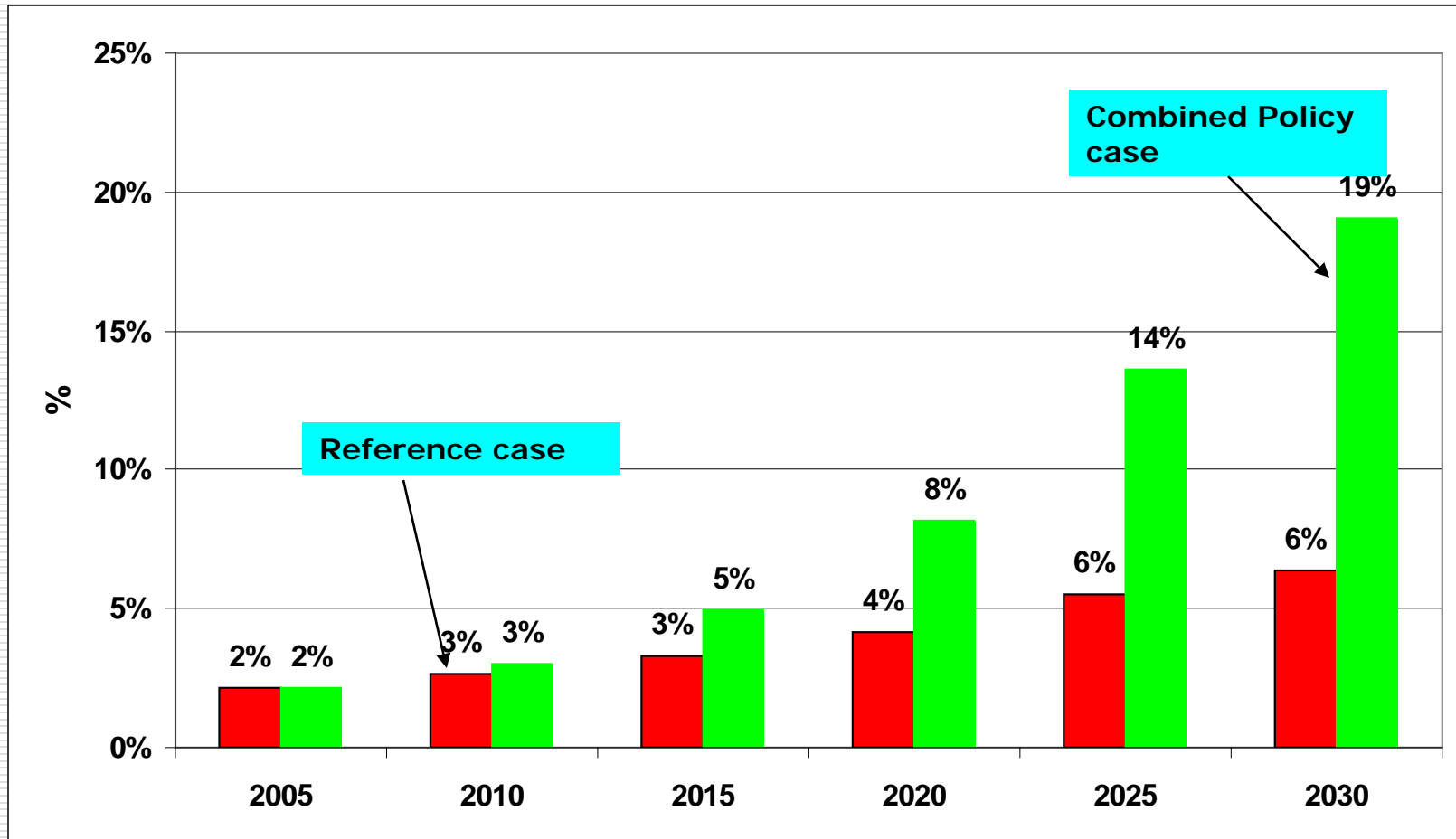
Combined case

# Per Capita Electricity Consumption in 2007

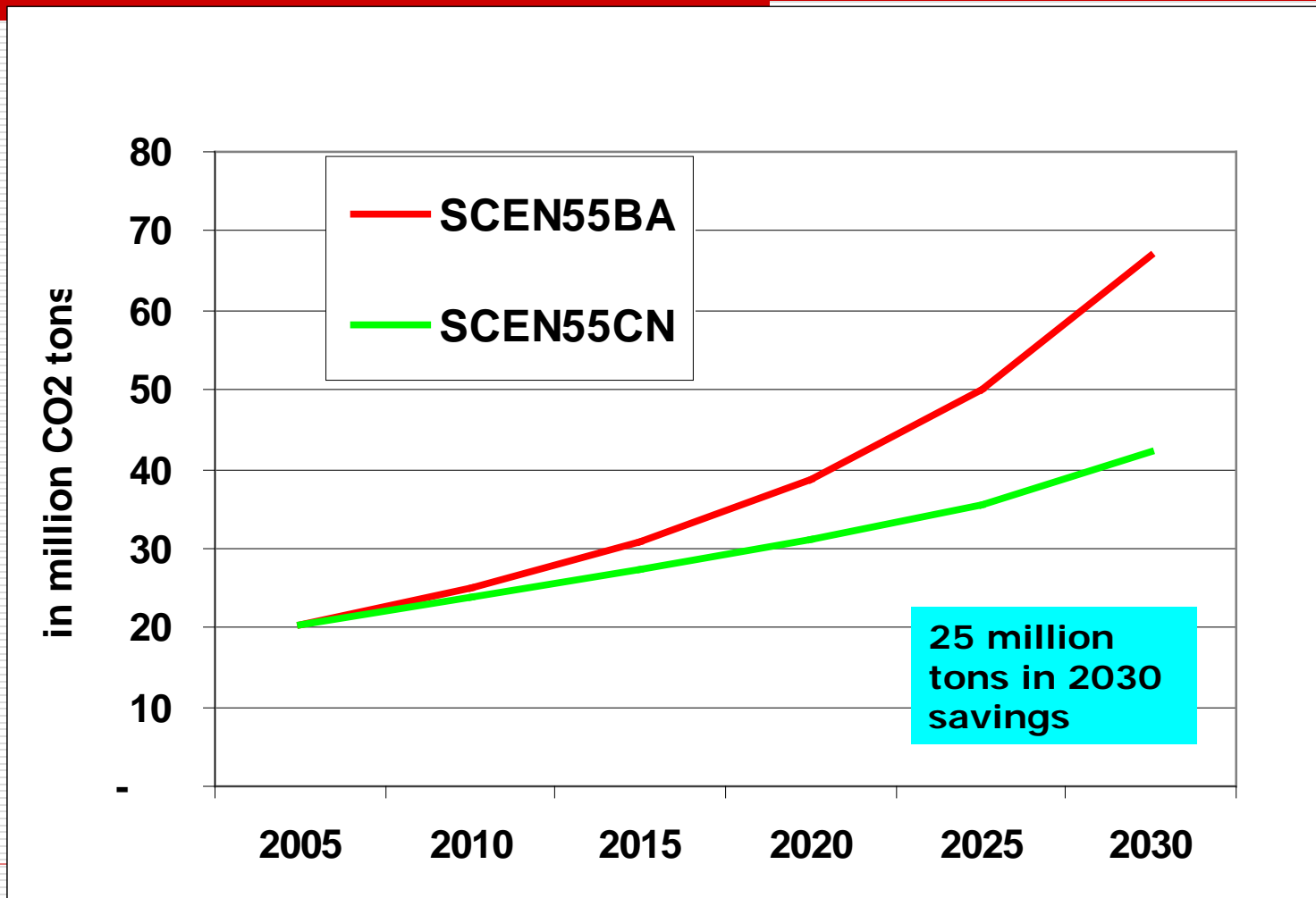


Key World Energy Statistics, IEA, 2009

# Share of Renewable Energy in Total Final Energy



# GHG Emissions in CO<sub>2</sub> equivalent



12 billion NR through carbon trading (164 million USD) in 2030.

# Some Major Strategic Options

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- ❑ Hydropower is our indigenous and clean resource. Hence, develop it as the lead energy resource.
- ❑ Apply DSM tools to reduce the demand.
- ❑ Introduce electric and hybrid vehicles for switching from fossil to renewable energy.
- ❑ Discourage use of fossil fuels by promoting alternative fuels in transport and machineries like electric and hybrid vehicles and mixing of biodiesel and ethanol in diesel and petrol respectively.

# Major Strategic Options – Fossil Fuels

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- ❑ Promote alternative fuels in transport mixing of biodiesel and ethanol in diesel and gasoline respectively.
- ❑ Improve/replace traditional energy by renewable energy resources
- ❑ Establish a mechanism for ensuring sustained supply of biomass materials for energy
- ❑ Identify, Introduce and Promote new and efficient traditional energy combustion devices like ICS.

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Thank you !