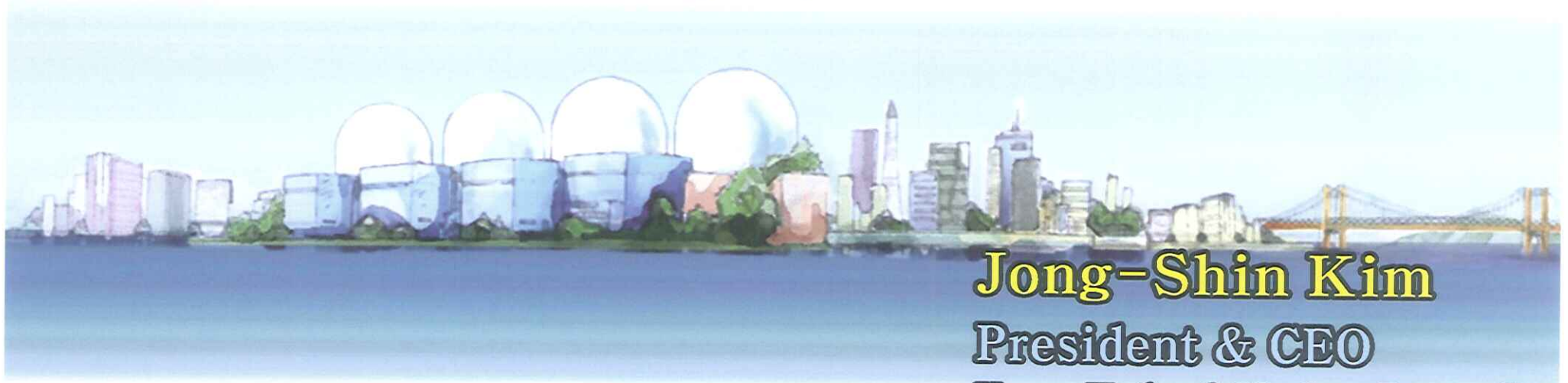


# Nuclear power for green future

May 21, 2009



**Jong-Shin Kim**  
President & CEO  
Korea Hydro & Nuclear Power Co.

# *Contents*

- I** Green Growth & Nuclear Power
- II** Current Status of Nuclear Energy in Korea
- III** 2030 Energy Strategy & Nuclear Expansion
- IV** Vision and Challenges of Nuclear Industry



The background of the slide is a composite image. The top half shows a sun-dappled forest path with lush green trees. The bottom half shows a calm lake reflecting the surrounding greenery, with a wooden fence and a path leading to the water's edge. Two people are visible walking on the path in the distance.

Chap.

I

# Green Growth & Nuclear power

# Environment



# 3Es Crisis and Green Growth



## Status of Korea

- 97% of Energy imported from overseas
- The 9<sup>th</sup> CO<sub>2</sub> Emitter in the world
- The 1<sup>st</sup> GHG Increasing rate(2.8%)
- The limited growth of present Industry

**Now is the right time to invest**



# Green Growth in Korea

Low-carbon, green growth is Mapped out  
as Korea's new national vision for a post-oil era



**Improving Energy Efficiency & Reducing its Consumption**

**Increasing Clean Energy & Reducing Fossil Fuels**

**Boosting Green Energy Industry**

**Ensuring Citizens' Access to an affordable Energy**



**Energy Security, Economic Efficiency &  
Environmental Protection (3Es)**



# World paradigm changes of nuclear energy

## Stagnation

**TMI Accident(1979), Chernovyl accident(1986)**

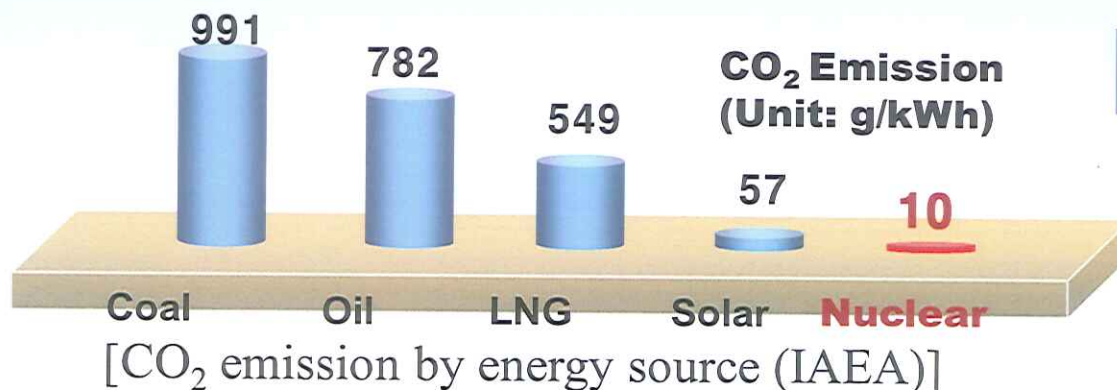
- Stopped construction of new NPPs

## Paradigm changes

- Fossil fuel depletion
- Concerns over climate change

## Nuclear Renaissance

- Many countries restart construction NPPs



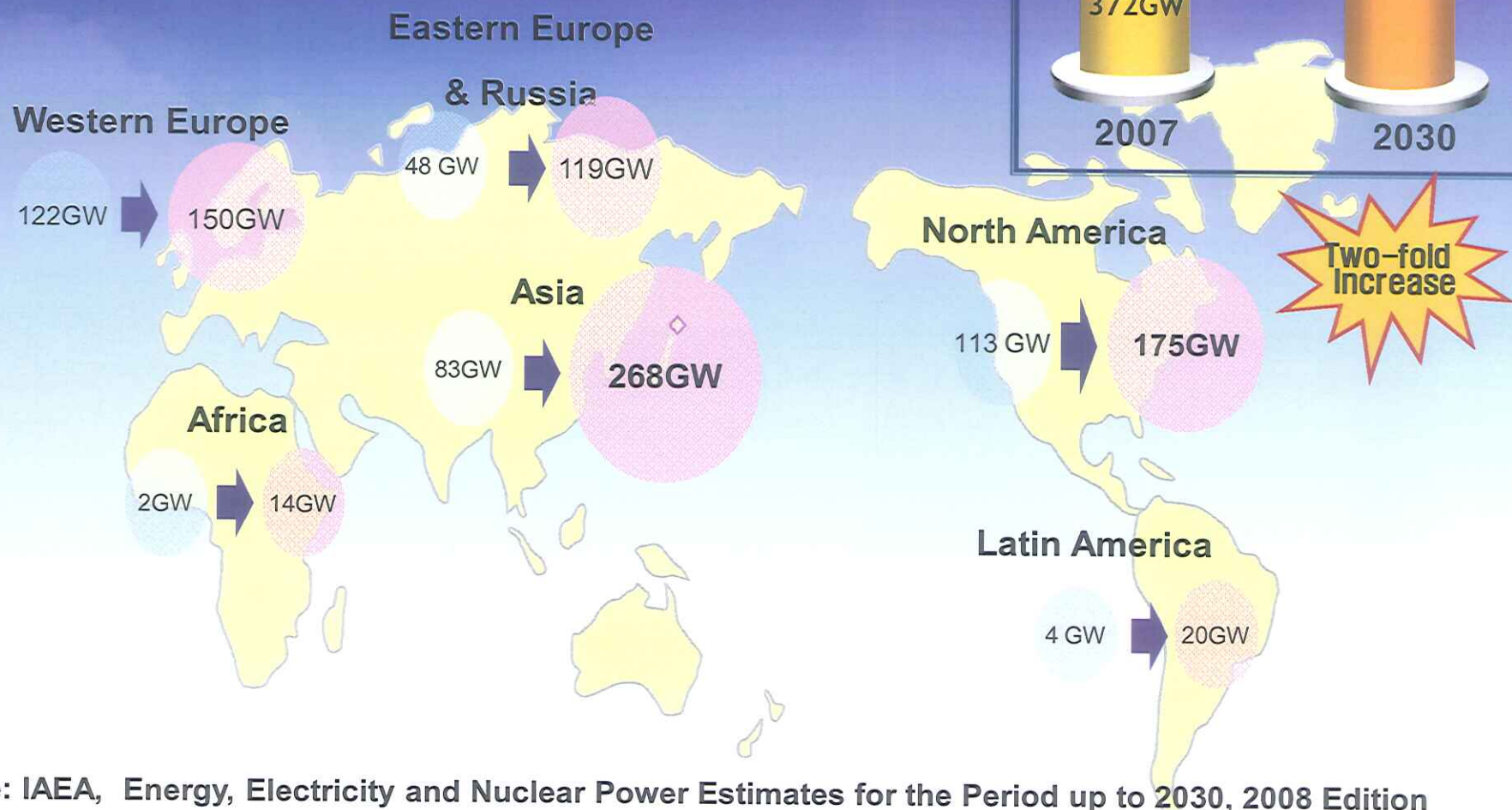
**If there is no nuclear power ?**



**The world's total CO<sub>2</sub> Emission would increase by 10%.**

# World nuclear power outlook

**Nuclear power will increase two times more by 2030**



[Source: IAEA, Energy, Electricity and Nuclear Power Estimates for the Period up to 2030, 2008 Edition  
(High estimate) ]



Chap.

II

# Current Status of Nuclear Energy in Korea





# Nuclear sites in Korea

The 6<sup>th</sup> nuclear power capacities in the world  
Provides 36% of power supply in Korea

In Operation

20 units  
(17,716MW)

Under Construction

8 units  
(6,800MW)

Radioactive Waste  
Disposal Facility  
(Under construction)



Younggwang  
1, 2, 3, 4, 5 & 6



Ulchin 1, 2, 3, 4, 5 & 6  
Shin-Ulchin 1&2  
(Under construction)



Wolsong 1, 2, 3 & 4  
Shin-Wolsong 1 & 2  
(Under Construction)



Kori 1, 2, 3 & 4  
Shin-Kori 1- 4  
(UnderConstruction)



# Nuclear Sites under Construction or Planned



**Shin-Kori 1&2**



**Shin-Wolsong 1&2**



**Shin-Kori 3&4**



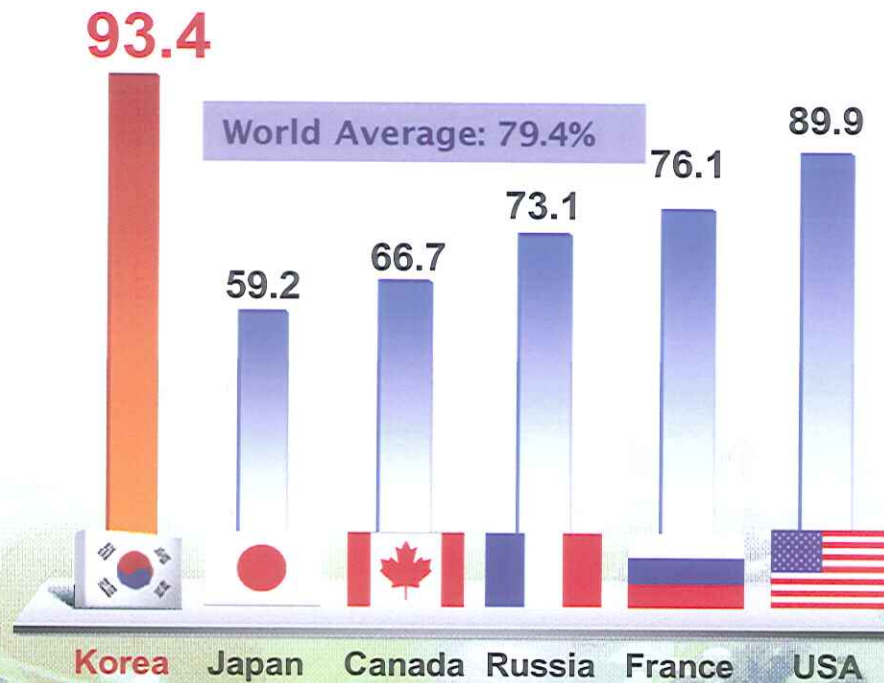
**Shin-Ulchin 1&2**



# Operation Performance

## Capacity Factor

(Year 2008, %)



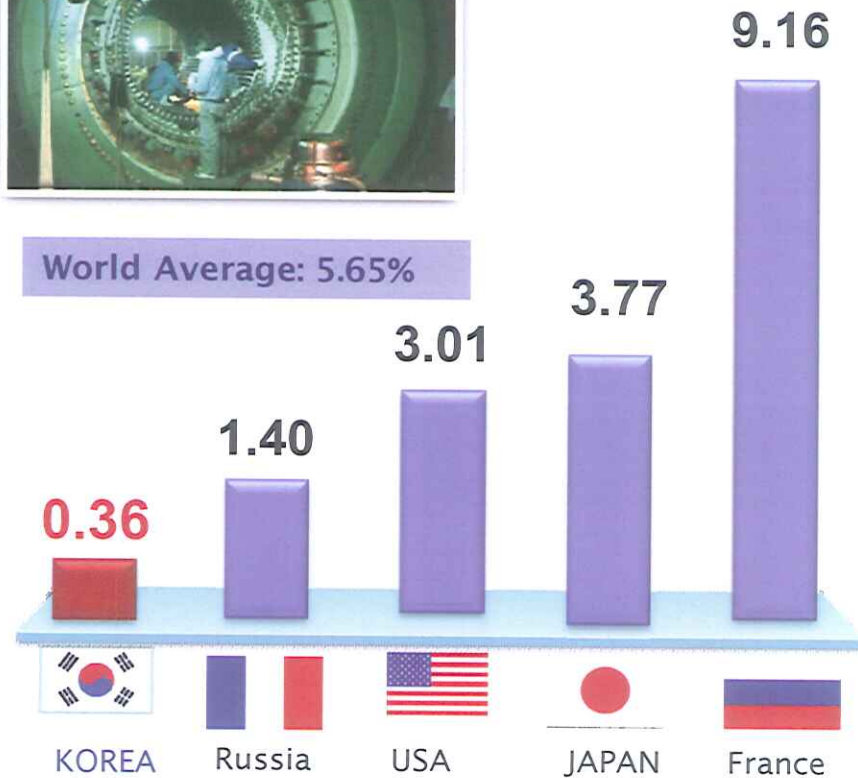
※ Source: *Nucleonics Week* (2009. 3)

## Unplanned Capability Loss

(Year 2008, %)

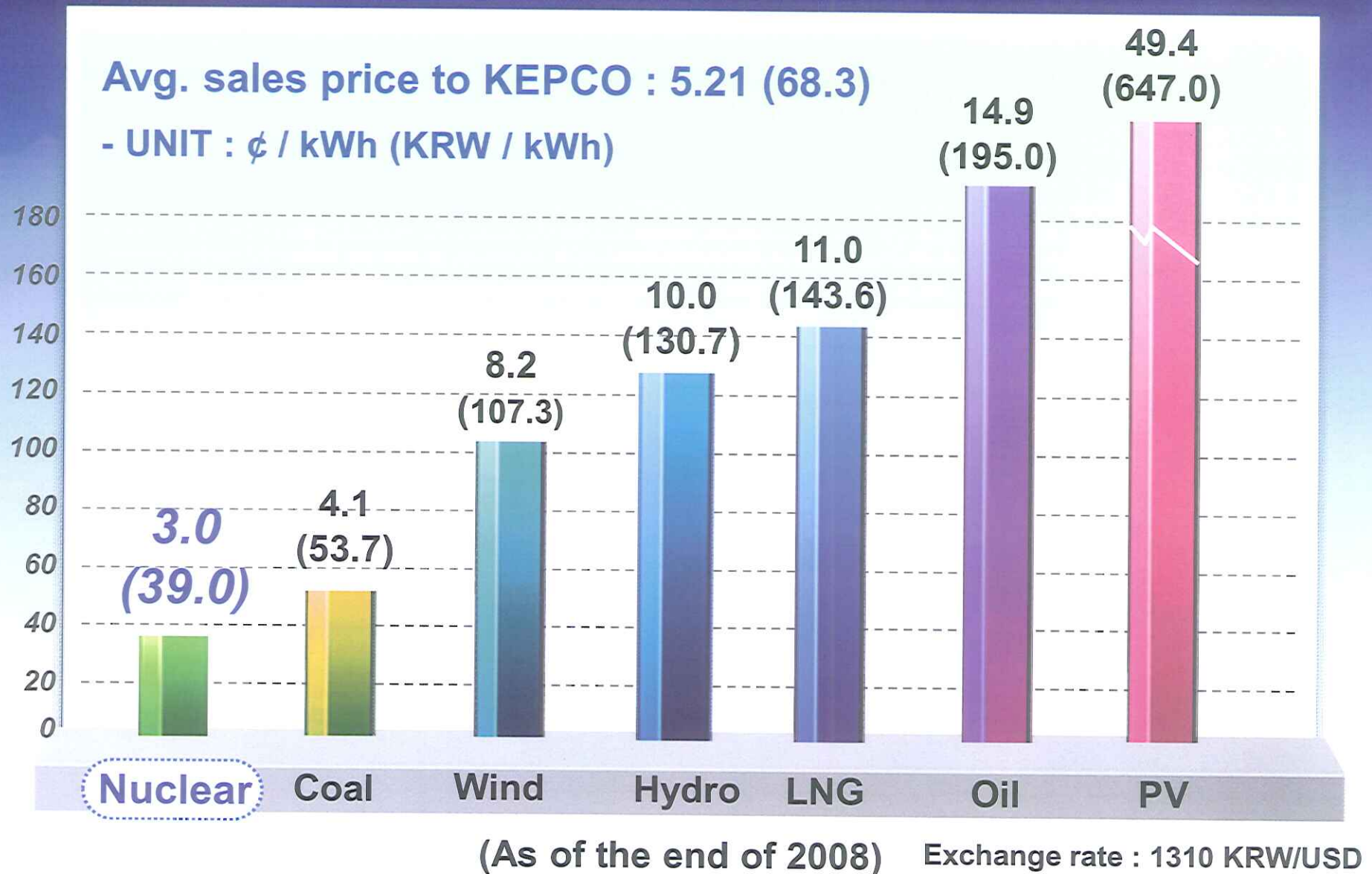


World Average: 5.65%



※ Source : IAEA

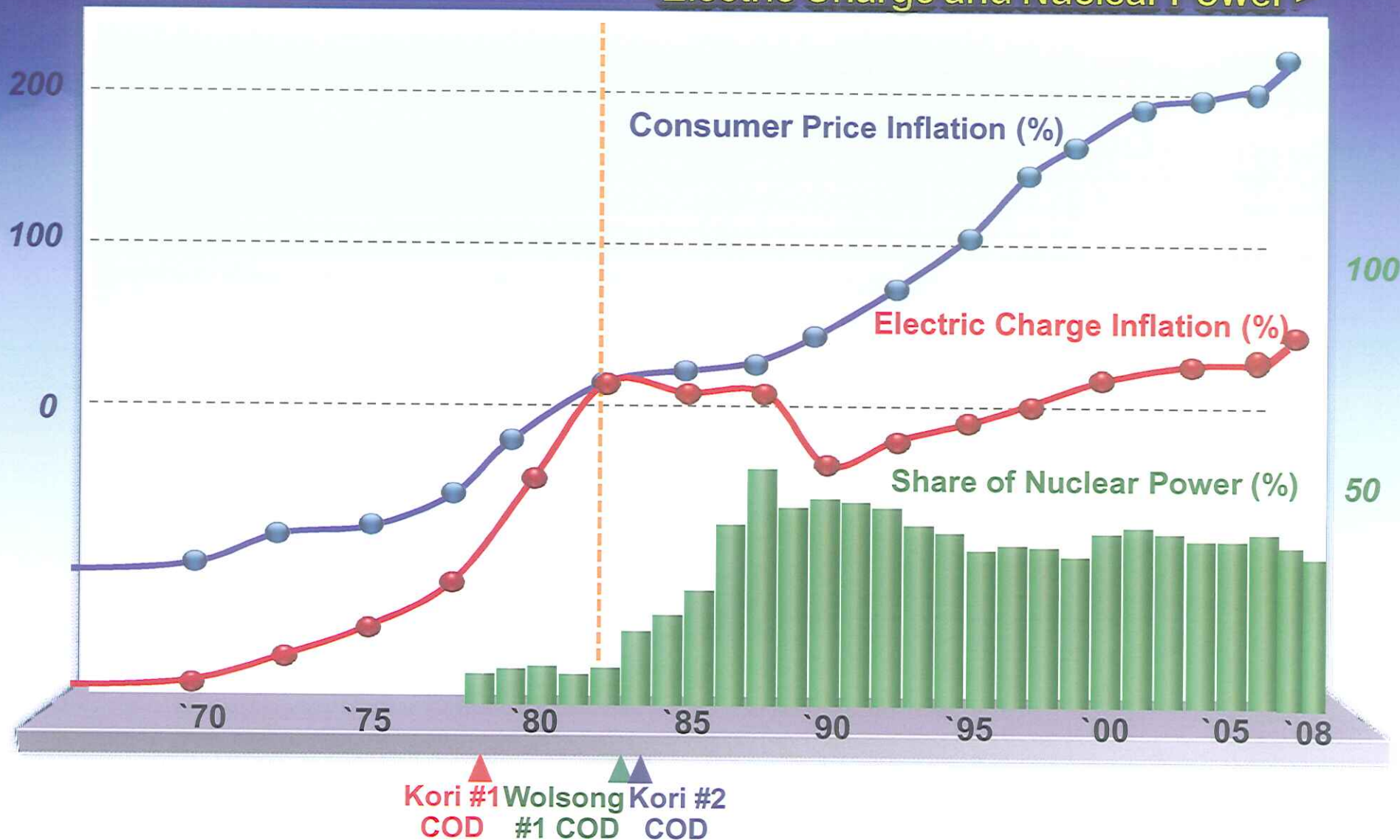
# Cost-competitive energy in Korea





# Effects of Nuclear Power Introduction

<Electric Charge and Nuclear Power>



Chap.

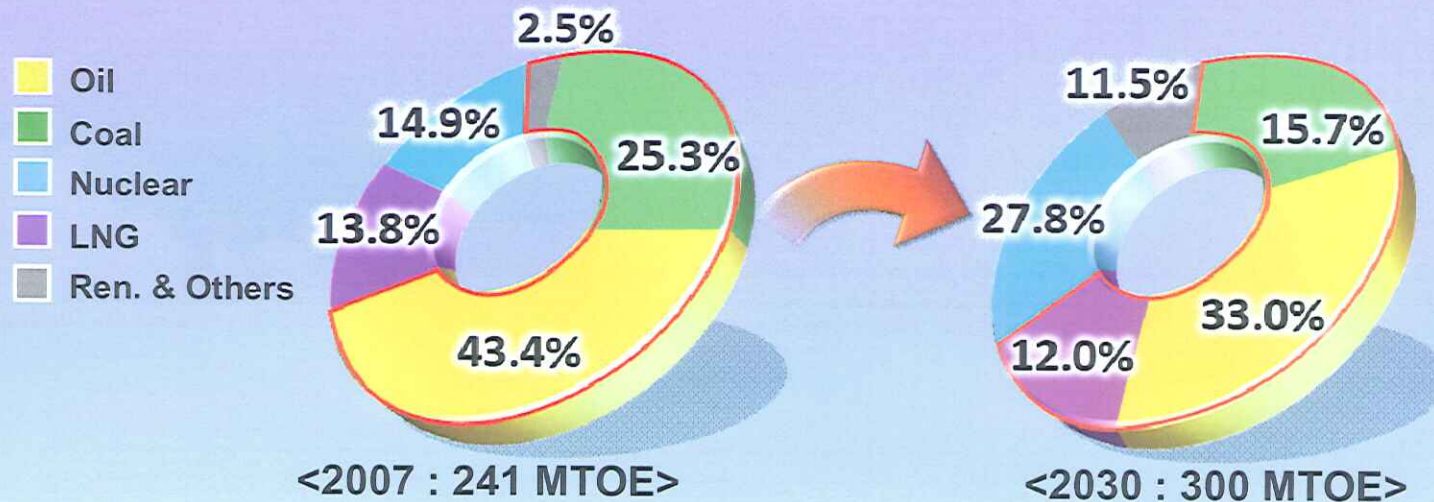
III

# 2030 Energy Strategy & Nuclear Expansion

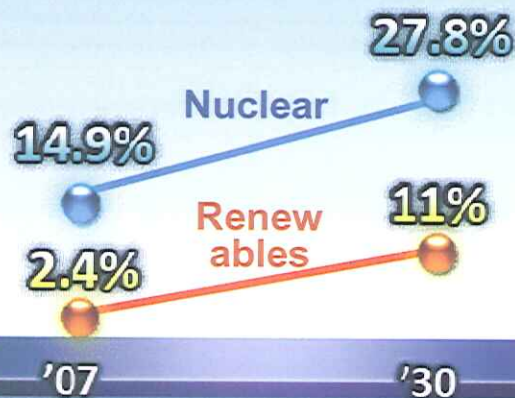




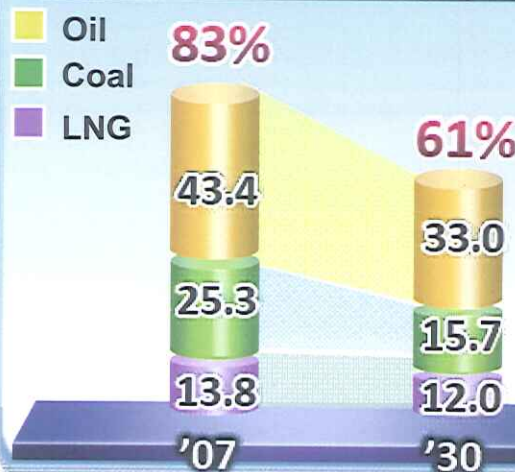
# 1<sup>st</sup> Basic Plan of Long-term National Energy



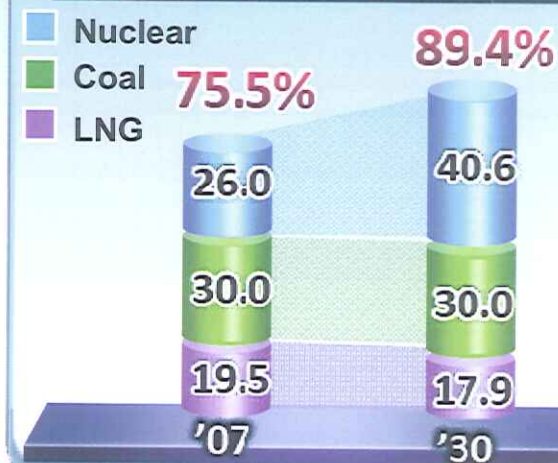
## Increase of Clean Energy Supply



## Decrease of Fossil Fuel Supply

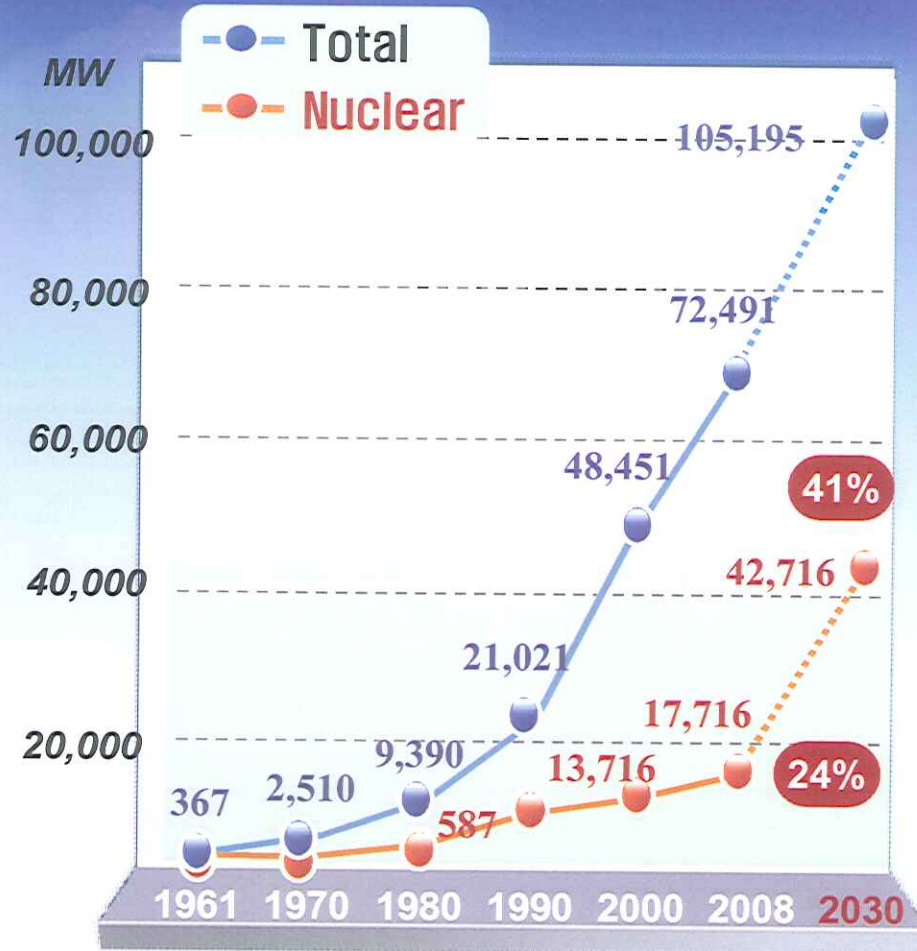


## Nuclear Power Expansion in Electricity-Mix

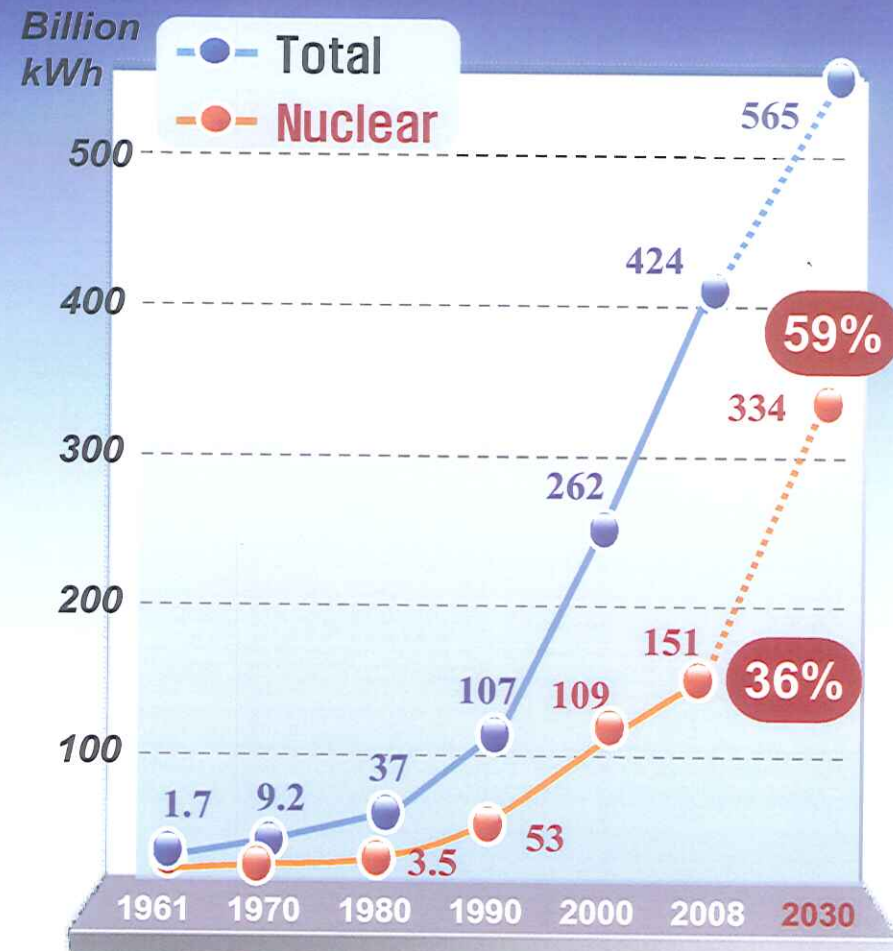


# Prospect of Nuclear Capacity until 2030

## Installed Capacity



## Electricity Generation





# Nuclear Power Development Plan

Project		Reactor Type	Capacity (MW)	Model	Commercial Operation	Remark
Shin-Kori	#1	PWR	1,000	OPR1000	Dec. 2010	Under Construction
	#2	PWR	1,000	OPR1000	Dec. 2011	
	#3	PWR	1,400	APR1400	Sep. 2013	Under Construction
	#4	PWR	1,400	APR1400	Sep. 2014	
	#5	PWR	1,400	APR1400	Dec. 2018	Planning
	#6	PWR	1,400	APR1400	Dec. 2019	
Shin-Wolsong	#1	PWR	1,000	OPR1000	Mar. 2012	Under Construction
	#2	PWR	1,000	OPR1000	Jan. 2013	
Shin-Ulchin	#1	PWR	1,400	APR1400	Dec. 2015	Under Construction
	#2	PWR	1,400	APR1400	Dec. 2016	
	#3	PWR	1,400	APR1400	Jun. 2020	Planning
	#4	PWR	1,400	APR1400	Jun. 2021	

- OPR1000 : Optimized Power Reactor 1000MW,    APR1400 : Advanced Power Reactor 1400MW
- Another 8 nuclear plants are expected to be built between the year 2023 and 2030 depending on the future electricity demand.



Chap.

IV

# Vision and Challenges of Nuclear Power





# Main issues for 2030

**Securing new plant sites**

**Finding solutions for spent fuel**

**Promoting Public Acceptance**

**Developing the origin technology**



# Vision and Challenges of Nuclear Power

**Contributing to Energy security, Environmental protection,  
National economy and human welfare**



**Contributing to the national economy through stable and  
affordable electricity supply**

**Contributing to the national Green Growth**

**Improving competitiveness of nuclear power**

**Promoting the export of nuclear plants**

**Strengthening international cooperation**



# Toward global green future

Global  
Green future

Ensuring the safety  
of operating NPPs

Including nuclear  
in CDM project

Helping infrastructure  
for new comers



**Thank You !**

