

## Chapter 4

# Reduction of Carbon Intensity: Rhetoric or Reality?

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### ABSTRACT

*Global warming is unequivocal and almost certainly caused by recent human activities that have increased the greenhouse gas (GHG) emissions. Emissions reductions of carbon dioxide and cumulative carbon emissions from energy consumption have created widespread concern of various government agencies, scientific circle, and the general public. The states and the international community are simultaneously struggling to address climate change. Impacts of carbon emission are inevitable and there is a long debate as to who bears the losses incurred due to the carbon emission. Both the developing and the developed economies need to reduce their CO<sub>2</sub> intensity significantly for stabilizing the Earth's climate at no more than a 2°C temperature rise. However, for the sake of health, safety, and environment, the supply of oil and gas as well as emission of carbon need to be operated in an environmentally sustainable manner so as to avoid environmental harms.*

### INTRODUCTION

Global warming is unequivocal and almost certainly caused by recent human activities that have increased the greenhouse gas (GHG) emissions. Despite the 1992 UN Framework Convention on Climate Change and the 1997 Kyoto Protocol, the GHG emissions continue to rise worldwide. The public, media and governments have devoted considerable attention to the issue of climate change and the warming of average global temperatures being caused due to increases in greenhouse gas (GHG)

DOI: 10.4018/978-1-5225-7302-9.ch004

concentrations. The states and the international community are simultaneously struggling to address climate change.

The amenities of human lives like water and sanitation, food production and storage, light, heating and cooling, transportation, medical devices, pharmaceuticals, clothing, building materials greatly rely on the supply of oil and natural gas. Oil and gas are important to meet the growing demand of energy, and eventually support economies around the globe. For the sake of health, safety, environment, the supply of oil and gas as well as emission of carbon require to be operated in an environmentally sustainable manner so as to avoid environmental harms.

Climate change will have an impact on prospects for sustainable development. Undeniably, the effects of climate change cause sufferings in human lives. Therefore, international climate policy, environmental law, and human rights law have gained popularity. Impacts of recent climate change on natural and human systems are increasingly detected at the local, regional and global level (Cramer et al. 2014).

## **INDUSTRIAL DEVELOPMENT AND EMISSION OF CARBON**

Emissions reductions of carbon dioxide and cumulative carbon emissions from energy consumption have created widespread concern of various government agencies, scientific circle, and the general public (Wen et al., 2014). CO<sub>2</sub> emissions of China have surpassed those of the United States and became the highest in the world in 2006 (Huang et al., 2011). Non-fossil energy consumption to primary energy consumption is predicted to be 15% or so in China at around 20 percent. The proportion of secondary industry increased from 40.05% to 51.99% in 2000–2010, and the proportion of tertiary industry was stable around 40%. The proportion of secondary industry of China was to be forecast to be 48.7% by 2050 (Zhao & Tao, 2011). The Republic of Korea also announced a voluntary action plan to reduce greenhouse gas emissions by 37% from the business-as-usual (BAU) level of 851 million by 2030 (World Energy Outlook, 2015).

In particular, Korea's construction industry accounts for 48% of the total material consumption and 40% of the national energy consumption. In terms of CO<sub>2</sub> emissions during the production of construction materials, in addition, the construction sector accounts for about 25% (Cho & Chae, 2011). There has been a rising demand for certification on carbon emissions and reduction in construction materials and inventories in Korea (Korea Institute of Civil Engineering and Building Technology, 2016). In addition, the development of carbon reduction technologies has been active, and diverse low-carbon products have been produced (Korea Environmental Industry & Technology Institute, 2016). Green building contributes to the reduction of GHG emission (Liu et al. 2016). 85% of total carbon emissions may be caused

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