FORECASTING COAL EXPORTS THROUGH THE ASIA-PACIFIC REGION

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1. Introduction

Transport Canada is in the process of rebuilding its commodity modeling and forecasting capability. The activities undertaken in this area are very much in their initial stages. Currently, the focus is on movements through the Asia-Pacific Gateway. The methodologies being developed are on a commodity-by-commodity basis and lessons learned with the Asia-Pacific Gateway forecasts will be used in the development of forecasts for other gateways/ports.

The primary objective of the activities pursued thus far (and the focus of this paper) is to forecast the volume of coal exports, through British Columbia's (BC) marine system using various scenarios. According to the International Energy Agency (IEA) coal is a family name for a variety of solid organic fuels and refers to a whole range of combustible sedimentary rock materials spanning a continuous quality scale. Two broad categories of coal – hard coal and brown coal, adopted by IEA, are considered.

Hard coal is further divided into coking coal and steam coal. Coking coal is used in industrial process for steel, cement and other goods manufacturing; whereas, steam coal is all other hard coal not classified as coking coal and is used mainly to generate power. Steam

[1] Views expressed in this paper benefited from exchanges between the authors and colleagues from Transport Canada and Natural Resource Canada. The authors thank all reviewers of this article for their useful comments. However, the views expressed herein do not necessarily reflect those of Transport Canada.

coal is also commonly known as thermal coal. Brown coal is also used in power generation.

2. Review of Data

Two databases pertaining to Canadian coal movements at the international level were reviewed. The databases were Statistics Canada's Marine Database (MDB) and Trade Database (TDB). Both the MDB and the TDB were analyzed to assess the nature of data for model development to forecast coal exports through the Asia-Pacific region.

The TDB and the MDB indicate that the marine system is quite dominant for coal movement (in value and weight terms, respectively). For example, according to the TDB, in 2007, 95 percent of coal moved out of the country through the Canadian marine system – 94 percent through BC's marine system alone (Table 1). Other ports in Atlantic and Eastern Canada were used infrequently, mainly for coal exports to the USA. The second transportation mode – rail is primarily used for exporting coal to the USA. In other words, nearly 93 percent of coal was shipped to countries in Asia, Europe and South America through the Asia-Pacific Gateway.

The data also revealed that Japan and South Korea have been Canada's major markets. In addition to these two countries, Canada exported coal to a number of other countries in Europe and South America. Table 2 provides a breakdown of coal exports to the major countries/world regions from BC's marine terminals. At the Canadian level a detailed breakdown of coal exports by countries through the marine system is provided in the Appendix (Table I).

Table 1: Value of Coal Exports by Transportation Mode, 2000-2007 (%)

Transportation Modes	2000	2001	2002	2003	2004	2005	2006	2007
Marine	94.0%	91.7%	88.0%	90.4%	90.7%	94.1%	94.4%	95.2%
Incl. BC Marine	93.5%	89.7%	84.8%	89.9%	87.5%	91.7%	92.5%	93.6%
Rail	5.6%	7.8%	11.4%	9.0%	8.9%	5.6%	5.4%	4.5%
Road	0.4%	0.4%	0.5%	0.5%	0.4%	0.3%	0.2%	0.3%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: Statistics Canada's Trade Database

Table 2: Coal Exports off BC Ports, 2000-2008

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total Shipments (Mt)	**30.4**	**28.0**	**24.1**	**25.6**	**24.6**	**25.9**	**26.4**	**29.6**	**29.9**
Share by Destination (%)									
Japan	44.6%	37.8%	39.6%	35.1%	23.8%	28.7%	32.6%	36.0%	36.0%
South Korea	17.9%	19.2%	17.9%	16.0%	17.0%	17.1%	19.0%	20.8%	22.4%
OECD Europe	20.9%	25.3%	24.0%	25.8%	28.3%	29.9%	29.8%	27.2%	22.6%
Brazil	4.4%	6.4%	5.3%	7.2%	6.7%	6.6%	6.0%	5.1%	5.3%
Other non-OECD Asia	5.2%	4.8%	5.5%	5.3%	4.8%	5.9%	5.1%	3.8%	4.7%
People Republic Of China	0.0%	0.0%	0.0%	2.8%	7.5%	3.6%	0.8%	1.0%	2.6%
Latin America (excl. Brazil)	3.1%	2.9%	1.8%	2.3%	3.6%	3.1%	3.9%	2.8%	1.9%
Mexico	1.1%	1.5%	3.7%	1.8%	4.3%	1.6%	0.9%	0.8%	2.1%
United States	0.6%	0.7%	0.6%	0.6%	0.7%	0.6%	0.8%	0.9%	0.7%
Other non-OECD Europe	0.7%	0.2%	0.0%	0.4%	0.6%	0.6%	0.3%	1.3%	1.2%
Africa	1.6%	1.0%	1.6%	2.7%	2.6%	2.3%	0.8%	0.2%	0.5%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Source: Statistics Canada's Marine Database

3. Methodology

Time series analysis using the MDB and the TDB indicated that, in general, the data were too volatile to develop a suitable econometric model. The approach adopted to forecast coal exports in this study is based on the work of the Organization for Economic Co-operation and Development (OECD) – International Energy Agency's (IEA) *World Energy Outlook 2010* and the U.S. Energy Information Administration's (US EIA) *International Energy Outlook 2010*.

It is assumed that Canadian coal production can respond to international demand without much difficulty in terms of the Canadian exporters' current price, and other costs indicators. Also,

the study assumes that the factors impacting world coal demand and ultimately the determinants of coal exports through BC have already been taken into consideration.

3.1 Forecast Scenarios

Six scenarios, three each from the IAE's *World Energy Outlook 2010* and Natural Resource Canada's (NRCan) anticipated coal mining projects were developed. The names of the IEA-based scenarios were retained: the *Current Policies Scenario*, the *New Policies Scenario* and *the 450 Scenario*. Whereas, NRCan's three scenarios were based on information on new coal mines which was provided by them for this project.

The IEA's *Current Policies Scenario* can be considered as their 'Reference case' scenario, which takes into account only those global policies that had been formally adopted by mid-2010. This scenario assumes no change in government policies and the strong global economic growth leads to world coal demand up to 4,307 million tonnes of coal equivalent (Mtce) by 2020 (30 percent higher from 2008 level) and up to 5,281 Mtce (23 percent more from 2020 level) by 2035.

On the other hand, the *New Policies Scenario* adopts a set of assumptions based on broad policy commitments by major economies. Under this scenario, the IEA assumed that the countries will implement national pledges to reduce greenhouse gases by 2020 and also reform fossil fuel subsidies. In this scenario, world coal demand is expected to be 3,966 Mtce by 2020 (20 percent more from 2020 level) and will decline marginally (-1 percent) to 3,934 Mtce by 2035.

The third scenario (*the 450 Scenario*) is based on more aggressive policies to tackle the global warming issue. It assumes implementation of the high-end of national pledges and stronger policies beyond 2020, including the near universal removal of fossil fuel consumption subsidies. The objectives of the policies are to limit the concentration of greenhouse gases in the atmosphere to 450 parts

per million of CO2-equivalent and also to limit to 2^{o}C the long-term rise in the average global temperature. In this scenario world coal demand will be just 13 percent more in 2020 (3,743 Mtce) compared to the 2008 level, and then in the following fifteen years (2035), it will reduce drastically by 33 percent (to 2,496 Mtce).

The last three scenarios are based on consultations with NRCan. They named them *Baseline*, *Possible* and *Hypothetical*. All three scenarios were developed primarily focusing on China's expected increase in demand. Therefore, in anticipation of this new demand, six new coal mines were opened recently in Canada, and six additional projects also in Canada are currently under way for their environmental assessment. Furthermore, according to the information provided to us, three projects are in the active exploration phase. According to NRCan most of the new projects have been focused on an anticipation of a surge in China's demand, particularly for coking coal.

4. Conceptual Model

The conceptual model to support the forecasting exercise takes into account the demand for both types of coal i.e. coking coal and steam coal. Coking coal is generally used in industrial processes, whereas, steam coal is mainly used in power generation. Because of the differences in end use, the demand for each type is considered separately.

The model assumes that the demand for both types of coal is dependent on the economic growth of the coal importing economies, the relative share of coal mix with primary energy use, and other conditions impacting coal utilization, already built in the IEA's and US EIA energy outlooks. The model further assumes that there can be a shift in the coal mining activity according to the demand for coking coal and that Canadian exporters will be able to meet their share of the emerging international demand.

Based on the above, the following equation was adopted.

$$\sum Y_{t+1} = \sum (HY_t * (1 + \Delta HD_t) * (1 + \Delta HM_t) + \sum BY_t * (1 + \Delta BD_t) * (1 + \Delta BM_t)$$

Where,

Y_{t+1} = Demand for coal exports (by country/region) through the BC marine system in period t+1
HY_t = Demand for coking coal in period t
ΔHD_t = Change in coking coal demand from period t to t+1
ΔHM_t = Change in Canadian share in coking coal market from period t to t+1
BY_t = Demand for steam coal in period t
ΔBD_t = Change in steam coal demand from period t to t+1
ΔBM_t = Change in Canadian share in steam coal market from period t to t+1

The model does not explicitly describe the Canadian supply (production) scenario. It is assumed that Canada, as a small exporting country, will continue to export to our major buyers such as Japan, South Korea, and other European and Latin American countries according to their demand. However, an increased coal demand from China is expected to impact Canadian coal exports, particularly coking coal.

5. Results

The results are based mainly on the knowledge developed through the outlooks and the assumptions related to Canadian growth. Aggregate forecasts of exports under the six scenarios are presented in Table 3. Detailed results and the pattern of coal exports by major countries/regions are provided in the Appendix (Tables II – VII).

The results indicate that under the IEA's *Current Policies Scenario*, exports through BC ports could see a 2.3 percent average growth per year until 2020, whereas, under other IEA scenarios, average annual growth of exports through BC's marine systems will be 1.5 percent and 0.8 percent, respectively (Table 3).

On the other hand, NRCan's scenarios (supply side scenarios) generate a higher level of export growth which ranges from 3.3 to 6.6 percent. In all scenarios, coal demand, particularly for China and other Asian countries is growing at a faster pace compared to the rest of the world countries. For example, this is evident from the fact that during the last seven years our exports to China increased eight-fold[2].

According to the first scenario (*Current Policies*), coal exports through BC ports could increase up to 39.4 Mt by year 2020 before declining slightly in the following fifteen years, reaching the 37 Mt level in 2035. Japan and South Korea along with OECD European countries (Netherland, Germany, Italy, France, UK, etc.) are expected to remain our primary coal markets (Table II; Figure I). Due to an anticipated significant increase in demand for coking coal in China in future years, Canada is expected to increase its exports to that country. The results indicate that exports to China and other non-OECD Asian countries (Taiwan etc.) could increase up to 9.8 Mt by 2020 and 12.4 Mt by 2035.

Table 3: Projected Exports to World Regions/Countries (Mt)

							AAG
	2008	**2015**	**2020**	**2025**	**2030**	**2035**	**2008-2020**
Current Policies	29.9	37.2	39.4	38.6	37.9	37.0	2.3%
New Policies	29.9	38.5	35.8	32.2	29.9	25.9	1.5%
450 Scenerio	29.9	33.6	33.1	25.8	21.1	17.8	0.8%
Baseline Scenario	29.9	42.2	43.9	43.1	42.4	41.5	3.3%
Possible Scenario	29.9	52.8	54.5	53.7	53.0	52.1	5.1%
Hypothetical Scenario	29.9	62.3	64.0	63.2	62.5	61.6	6.6%

Under the *New Policies Scenario*, coal exports to Europe and other developed countries will decrease, on the other hand, coal exports will significantly increase to Asian countries, mainly China, in the next 10-15 years (Table III). Nevertheless, in total the exports of coal will increase to 35.8 Mt by 2020 and then will reduce to 25.9 Mt by 2035.

[2] Calculated from the MDB and the information provided by Natural Resource Canada.

The results from the third scenario (*the 450 Scenario*) follow the same pattern however, with a significant reduction in coal exports (Table VI). For example, by 2035 Canada's coal exports to the world countries will be reduced by 12.1 Mt from the current level of 29.9 Mt. However, the impact of this scenario will be less severe in the next decade (2009-2020). The results indicate that coal exports through BC could still be around 33.1 Mt by 2020.

The last three scenarios are based on adopting 'supply side' assumptions (NRCan). In these assumptions, new coking coal projects, which are currently underway in Canada, were considered explicitly. These new projects currently at various stages focus mainly on the Chinese market. These scenarios assumed that an increased production of coking coal from new coal mining projects will be exported to China. In other words, these scenarios represent an increment to the IEA's forecast, for China only[3]. Since these assumptions mainly focus on China, no changes in the exports to other countries were anticipated in all of the 'supply side' scenarios.

The results from these scenarios clearly indicate that, with increased exports to China, that country will become Canada's by number one coal buyer by 2015. In the *Baseline Scenario* our coal exports to China will be around 12.2 Mt in 2020 as compared to exports to Japan which are expected to be at 10.7 Mt levels (Table V; Figure II). In aggregate, total coal exports from BC ports will reach 43.9 Mt in 2020.

The other two scenarios follow the same pattern as well. The results indicate that exports to China will reach 22.8 and 32.3 Mt in 2020 for the *Possible* and *Hypothetical Scenarios*, respectively, bringing total volume of coal exports via BC ports to 54.5 and 64 Mt by 2020 (Tables VI & VII).

The results from these scenarios were formulated considering coking coal supply information available until 2020. Therefore, coal exports beyond that time horizon do not show either an increase or a

[3] All new exports are directed to China only.

decrease, to China. However, exports to other countries take into account the IEA's projected growth information, as it was the case in first three scenarios using the IEA's assumptions.

6. Summary and Conclusions

Excluding IEA's more stringent *450 scenario* and NRCan's last two scenarios (*Possible and Hypothetical*), the coal exports through the Asia-Pacific gateway could range between 35.8 and 43.9 Mt by 2020. China and other Asian countries such as Japan, South Korea etc. could play a major role in determining volumes of coal exported through BC ports.

Thus, an increase in coal exports could have implications for Canadian transportation system. For smooth flow of coal shipments, an appropriate level of infrastructure including rail, terminals, ocean lines etc. which can handle an increased volume of coal exports may be required. However, the results may be sensitive to other factors that may change in the future. Also, the forecasts are sensitive to the availability of new information such as transportation and transactions costs for Canadian exporters. Further investigation on infrastructure capacity, individual country/regions' anticipated coal demand and Canadian coal supply is recommended.

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Appendix

Table I
Canada-wide Coal Exports by Marine, 2000 – 2008 (% tonnage)

Destination Countries	2000	2001	2002	2003	2004	2005	2006	2007	2008
Japan	44.0	37.2	38.9	34.4	23.2	28.1	32.0	35.3	35.1
South Korea	17.7	18.9	17.5	15.7	16.5	16.7	18.6	20.4	21.9
Netherlands	3.2	10.1	9.3	11.4	13.0	10.4	8.7	7.0	7.1
Brazil	4.3	6.3	5.2	7.0	6.5	6.5	5.9	5.0	5.2
Taiwan	4.0	4.0	4.6	4.4	3.7	4.8	4.5	3.4	4.0
Turkey	2.4	2.3	4.1	4.0	4.1	3.4	4.5	3.1	3.1
Mexico	1.1	1.5	3.6	1.8	4.2	1.5	0.9	0.8	2.0
United Kingdom	4.6	4.0	2.8	2.9	3.0	4.2	6.0	5.7	2.3
Italy	4.6	3.9	2.6	3.8	3.6	5.2	4.4	3.7	3.5
United States	1.6	2.3	2.5	2.5	3.5	2.8	2.7	2.8	2.8
Chile	3.1	2.7	1.8	2.3	3.3	2.9	3.0	2.3	1.6
Spain	1.2	0.6	1.3	0.8	0.7	1.3	0.6	0.9	1.0
Egypt	0.9	1.0	1.3	2.7	2.5	2.3	0.8	0.2	0.5
France	1.1	2.4	1.1	0.7	1.3	1.4	1.6	1.8	1.6
Belgium	1.6	0.6	0.9	0.9	0.0	0.2	0.0	0.0	0.0
Germany	0.8	0.5	0.8	0.2	0.9	1.3	1.5	1.8	1.5
Pakistan	0.6	0.5	0.8	0.6	0.8	0.4	0.2	0.3	0.3
Finland	0.0	0.0	0.6	0.8	0.8	1.8	1.6	0.7	0.8
South Africa	0.7	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Romania	0.6	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.8
Iceland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guatemala	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.4	0.3
India	0.1	0.0	0.0	0.0	0.2	0.0	0.3	0.0	0.0
St Pierre & Miquelon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Croatia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.4
Hong Kong	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bulgaria	0.0	0.2	0.0	0.2	0.5	0.5	0.3	0.0	0.0
Singapore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Iran	0.2	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Israel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.1
Panama	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Sri Lanka	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
China	0.0	0.0	0.0	2.8	7.2	3.6	0.8	1.0	2.5
Sweden	0.6	0.6	0.0	0.0	0.2	0.0	0.2	0.5	0.0
Peru	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0
Thailand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Poland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.4
Portugal	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bahamas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Norway	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
North Korea	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0
Grand Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Statistics Canada's Marine Database

Table II
Projected Exports to World Regions/Countries - *Current Policies Scenario* (Mt)

	2008	2015	2020	2025	2030	2035
Japan	10.8	10.7	10.7	10.3	9.9	9.1
South Korea	6.7	6.8	7.0	6.7	6.5	6.0
OECD Europe	6.7	6.9	6.7	6.4	6.1	5.9
Brazil	1.6	2.2	2.9	2.5	2.3	2.3
Other non-OECD Asia	1.4	1.8	2.1	2.3	2.6	2.9
People Republic Of China	0.8	6.7	7.7	7.9	8.2	8.5
Latin America (excl. Brazil)	0.6	0.8	1.0	1.0	1.1	1.1
Mexico	0.6	0.6	0.6	0.6	0.6	0.6
United States	0.2	0.2	0.2	0.2	0.2	0.2
Non-OECD Europe	0.4	0.4	0.3	0.3	0.3	0.3
Africa	0.1	0.2	0.2	0.2	0.2	0.2
Total Shipments (Mt)	**29.9**	**37.2**	**39.4**	**38.6**	**37.9**	**37.0**

Table III
Projected Exports to World Regions/Countries - *New Policies Scenario* (Mt)

	2008	2015	2020	2025	2030	2035
Japan	10.8	10.9	9.9	8.5	7.4	5.8
South Korea	6.7	6.8	6.3	5.6	4.9	3.9
OECD Europe	6.7	6.4	5.7	5.2	4.6	3.8
Brazil	1.6	3.1	2.6	1.9	2.0	1.9
Other non-OECD Asia	1.4	1.8	2.0	2.0	2.1	2.2
People Republic Of China	0.8	7.1	7.2	7.1	7.0	6.8
Latin America (excl. Brazil)	0.6	0.9	0.8	0.8	0.8	0.7
Mexico	0.6	0.6	0.6	0.5	0.5	0.4
United States	0.2	0.2	0.2	0.2	0.2	0.1
Non-OECD Europe	0.4	0.3	0.3	0.2	0.2	0.2
Africa	0.1	0.2	0.2	0.2	0.2	0.1
Total Shipments (Mt)	**29.9**	**38.5**	**35.8**	**32.2**	**29.9**	**25.9**

Table IV
Projected Exports to World Regions/Countries – *the 450 Scenario* (Mt)

	2008	2015	2020	2025	2030	2035
Japan	10.8	9.5	8.8	6.3	4.9	3.5
South Korea	6.7	6.1	5.7	4.2	3.3	2.6
OECD Europe	6.7	6.1	5.5	4.2	3.4	3.4
Brazil	1.6	1.9	2.2	1.6	1.2	0.9
Other non-OECD Asia	1.4	1.6	1.9	1.7	1.5	1.3
People Republic Of China	0.8	6.5	7.2	6.4	5.6	5.0
Latin America (excl. Brazil)	0.6	0.6	0.7	0.6	0.6	0.4
Mexico	0.6	0.6	0.5	0.4	0.3	0.3
United States	0.2	0.2	0.2	0.1	0.1	0.1
Non-OECD Europe	0.4	0.3	0.3	0.2	0.2	0.2
Africa	0.1	0.1	0.1	0.1	0.1	0.1
Total Shipments (Mt)	**29.9**	**33.6**	**33.1**	**25.8**	**21.1**	**17.8**

Table V
Projected Exports to World Regions/Countries – *Baseline Scenario* (Mt)

	2008	2015	2020	2025	2030	2035
Japan	10.8	10.7	10.7	10.3	9.9	9.1
People Republic Of China	0.8	11.8	12.2	12.4	12.7	13.0
South Korea	6.7	6.8	7.0	6.7	6.5	6.0
OECD Europe	6.7	6.9	6.7	6.4	6.1	5.9
Other non-OECD Asia	1.4	1.8	2.1	2.3	2.6	2.9
Brazil	1.6	2.2	2.9	2.5	2.3	2.3
Latin America (excl. Brazil)	0.6	0.8	1.0	1.0	1.1	1.1
Mexico	0.6	0.6	0.6	0.6	0.6	0.6
Non-OECD Europe	0.4	0.4	0.3	0.3	0.3	0.3
United States	0.2	0.2	0.2	0.2	0.2	0.2
Africa	0.1	0.2	0.2	0.2	0.2	0.2
Total Shipments (Mt)	**29.9**	**42.2**	**43.9**	**43.1**	**42.4**	**41.5**

Table VI
Projected Exports to World Regions/Countries – *Possible Scenario* (Mt)

	2008	2015	2020	2025	2030	2035
People Republic Of China	0.8	22.4	22.8	23.0	23.3	23.6
Japan	10.8	10.7	10.7	10.3	9.9	9.1
South Korea	6.7	6.8	7.0	6.7	6.5	6.0
OECD Europe	6.7	6.9	6.7	6.4	6.1	5.9
Other non-OECD Asia	1.4	1.8	2.1	2.3	2.6	2.9
Brazil	1.6	2.2	2.9	2.5	2.3	2.3
Latin America (excl. Brazil)	0.6	0.8	1.0	1.0	1.1	1.1
Mexico	0.6	0.6	0.6	0.6	0.6	0.6
Non-OECD Europe	0.4	0.4	0.3	0.3	0.3	0.3
United States	0.2	0.2	0.2	0.2	0.2	0.2
Africa	0.1	0.2	0.2	0.2	0.2	0.2
Total Shipments (Mt)	**29.9**	**52.8**	**54.5**	**53.7**	**53.0**	**52.1**

Table VII
Projected Exports to World Regions/Countries – *Hypothetical Scenario* (Mt)

	2008	2015	2020	2025	2030	2035
People Republic Of China	0.8	31.9	32.3	32.5	32.8	33.1
Japan	10.8	10.7	10.7	10.3	9.9	9.1
South Korea	6.7	6.8	7.0	6.7	6.5	6.0
OECD Europe	6.7	6.9	6.7	6.4	6.1	5.9
Brazil	1.6	2.2	2.9	2.5	2.3	2.3
Other non-OECD Asia	1.4	1.8	2.1	2.3	2.6	2.9
Latin America (excl. Brazil)	0.6	0.8	1.0	1.0	1.1	1.1
Mexico	0.6	0.6	0.6	0.6	0.6	0.6
Non-OECD Europe	0.4	0.4	0.3	0.3	0.3	0.3
United States	0.2	0.2	0.2	0.2	0.2	0.2
Africa	0.1	0.2	0.2	0.2	0.2	0.2
Total Shipments (Mt)	**29.9**	**62.3**	**64.0**	**63.2**	**62.5**	**61.6**

Figure I

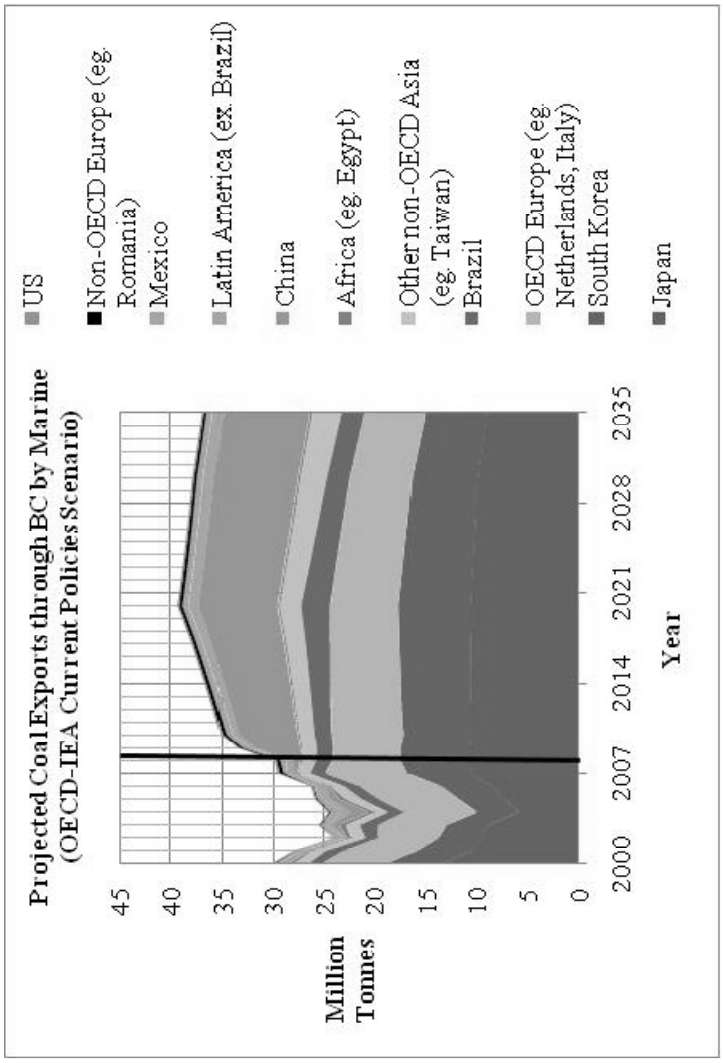
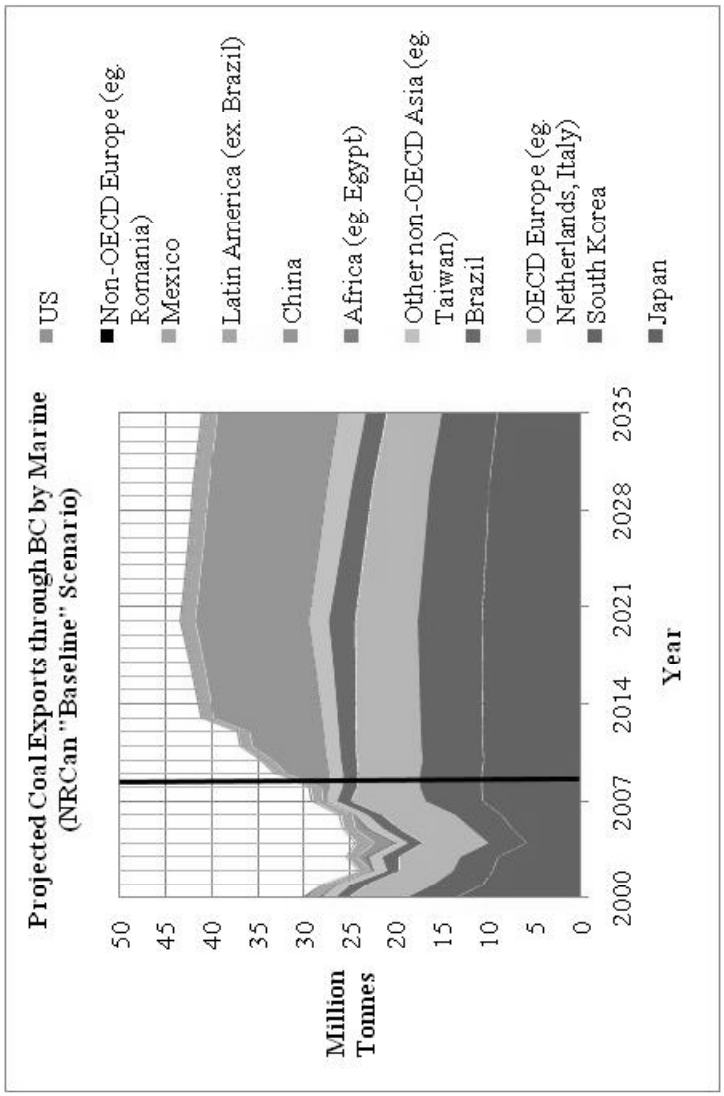

Projected Coal Exports through BC by Marine
(OECD-IEA Current Policies Scenario)
US
Non-OECD Europe (eg. Romania)
Mexico
Latin America (ex. Brazil)
China
Africa (eg. Egypt)
Other non-OECD Asia (eg. Taiwan)
Brazil
OECD Europe (eg. Netherlands, Italy)
South Korea
Japan
Million Tonnes
45
40
35
30
25
20
15
10
5
0
2000
2007
2014
2021
2028
2035
Year

Figure II


Projected Coal Exports through BC by Marine
(NRCan "Baseline" Scenario)
US
Non-OECD Europe (eg. Romania)
Mexico
Latin America (ex. Brazil)
China
Africa (eg. Egypt)
Other non-OECD Asia (eg. Taiwan)
Brazil
OECD Europe (eg. Netherlands, Italy)
South Korea
Japan
Million Tonnes
0
5
10
15
20
25
30
35
40
45
50
2000
2007
2014
2021
2028
2035
Year