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Likely Green Investment Trends in 2010

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Summary

- The basic outline of the Japanese government's new growth strategy, agreed by the Cabinet at end-2009, targets the creation of over Y50 trillion in new markets and 1.4 million new jobs in environmental and energy fields. We expect the government to flesh out the outline with specific measures during 2010. This report focuses on three areas: domestic policies, overseas growth prospects, and negotiations on the next global emissions framework.
- As frameworks for combating global warming are made concrete worldwide in 2010, we think investor interest will focus on names likely to benefit from (1) measures to promote commercialization of technologies, (2) adoption of Japanese systems as international standards, and (3) market share gains. Players either holding advantageous positions in relevant fields, or with the capital spending budgets necessary to enter them, will likely find favor.
- On a medium- to long-term horizon, our focus is on growth prospects stemming from government support measures for infrastructure/systems exports. We think these prospects lie in countries (markets) set for future growth in environmental projects, rather than in already large markets such as China and the US. In particular, water supply, energy, and transport projects in Asia appear to be promising fields.
- In the negotiations on the next global emissions framework, which have been extended, China, India, Brazil, and South Africa have all made their presences felt. Notably, these nations together with the US account for roughly 70% of global production volume of both coal and bioethanol.
- In the near term, our focus is on (1) whether the end-January 2010 deadline for some of the initiatives agreed at the COP15 conference is met, and (2) concrete domestic policies, set to be released in Mar-Jun.

**Concrete climate
change frameworks
likely to be implemented
in 2010**

On 30 December 2009, the basic outline of a new growth strategy was agreed by the Hatoyama Cabinet. We positively view the inclusion of specific targets, such as creating over Y50 trillion in new markets and 1.4 million jobs in environmental and energy fields by 2020. That said, it was truly a basic outline—there were no specifics about budgets, funding, and frameworks. We expect the government to flesh out the outline with specific measures over the coming year.

Japan is not alone in endeavoring to establish frameworks for combating global warming. A clean energy bill including an emissions trading scheme will likely be enacted in the US during 2010, and in China also, the new five-year plan from 2011 will be drawn up this year, and will probably include environmental measures as one core element.

**Policies likely to have
more impact than
energy prices**

In a previous report (*Green Industrial Revolution Gaining Momentum*; 3 Jul 2009), we noted that green names tend to be impacted by policy measures and energy prices. Crude oil is currently trading at around \$80/bbl, but we attribute this more to the weak dollar than to concerns over supply shortages (due to recovering economic conditions), the driver behind the previous crude oil price boom. Still we advise watching nations' monetary policies and exit strategies from economic stimulus measures for hints of economic recoveries accelerating (would revive concerns of supply shortage) or the dollar turning up.

In 2009, the major factor for green equities was policy support measures such as Green New Deal strategies. In 2010 as well, we think the impact of policy measures, such as the aforementioned implementation of concrete global warming frameworks, will remain stronger than that of energy prices. In this report, we look at short-, medium-, and long-term trends, focusing on domestic policies, overseas growth prospects, and negotiations on the next global emissions framework.

1. New Growth Strategy—Could Impact Market Shares

**Strategy as indicated in
METI process chart**

Specific policies, including a process chart, for Japan's new growth strategy are being compiled with the aim of completion in early June. The Ministry of Economy, Trade & Industry (METI) is drawing up the concrete plans, including for early action items (Chart 1) and the longer-term process chart (Chart 2). As a growth strategy, it will naturally probably aim to boost medium- to long-term competitiveness. The question is whether there are policies likely to accelerate growth in 2010.

First, the early action items (Chart 1) look set to account for 9% of national government expenditures under the government's emergency economic countermeasures, and 0.5% of general account expenditures under the FY10 budget. Funds from the FY10 budget are to be primarily allocated for accelerating the development and commercialization of materials/components including LEDs, power semiconductors, carbon nanotubes, and photovoltaic materials, while funds from emergency economic countermeasures are mostly to be spent on three environment-based consumption boosting initiatives ("eco-points", eco-cars, eco-homes).

**Extension of emergency
economic
countermeasures
nothing new**

First, looking at the "eco-point" scheme included in the emergency economic countermeasures (item 6 in Chart 1), the budget is around Y600 billion, roughly double the Y300 billion allocated (for home electronics only) in the first supplementary budget for FY09. However, the scheme is unlikely to have as large an impact in FY10 as in FY09—the change in governing party led to concerns over whether the scheme would be maintained, so it is highly likely that most parties looking to take advantage of the scheme have already done so.

Likewise, the measures for solar power merely build on the existing framework, and so are not innovative. A feed-in tariff system for solar power started in November 2009, and extension of subsidies for residential installations (¥70,000/kWh) was also already decided. Still, changes to the tariff scheme such as (1) loosening locational restrictions on installations, (2) increasing the range of renewables eligible for the feed-in tariff, and (3) hiking tariff rates, could provide a tailwind, as could price declines for solar generation systems as they spread.

Early Action Projects (¥ bil)		Chart 1	
Item	Emergency economic countermeasures	FY10 budget	
1 Promotion of intensive green innovation R&D investment and commercialization	17.3	267.6	
2 Establishment of support schemes for low-carbon investments (installation grants, loans, etc.)	29.7	8.2	
3 Support for infrastructure/systems exports using Japanese cutting-edge eco-friendly technology	0.8	-	
4 Support for securing rare metals and other resources essential for low-carbon societies	0.3	5.6	
5 Building of next-gen energy and social systems such as developing regional energy management systems	-	8.7	
6 Three environment-based consumption boosting initiatives (" eco-points ", eco-cars , eco-homes)	593.0	-	
7 Investigation of introduction of full feed-in tariff scheme for renewables	-	-	
8 Tightening of energy-efficiency standards (TVs) and improvement of fuel efficiency through additional regulations (autos)	-	-	
Total	641.0	290.1	

Source: Government materials; compiled by DIR.

One measure that could provide a boost for green names is the introduction of a full feed-in tariff system for renewables. However, though this is listed as an early action item (item 7), the plan only mentions investigating introduction. Meanwhile, the plan does mention loosening restrictions in the factory location law, which may stimulate factory installations aimed at selling electricity. However, renewables are not stable generation sources, so they are not suited to providing plant power supplies. It is unclear how many firms there are with both the financial muscle to install solar power systems, and the interest to do so.

Promotion of commercialization, development of international standards, market share growth expectations

Item 4 (securing rare metal supplies) involves enhancing the role of JOGMEC (Japan Oil, Gas and Metals National Corporation), a state-sponsored enterprise, and item 3 (support for infrastructure/systems exports) focuses on finding and winning projects (forming consortiums, inter-governmental negotiations). Both are chiefly concerned with laying groundwork and do not offer prospects for near-term growth.

On the other hand, items 1 (promotion of commercialization of green innovation; large allocation from FY10 budget), 2 (establishment of support schemes for low-carbon investments), 5 (building of next-gen energy and social systems), and 8 (strengthening of energy-efficiency standards) could be implemented in 2010. Items 1 and 2 could translate into first-mover benefits if commercialization is accelerated, item 5 could lead to firms gaining competitive advantages if systems become international standards, and item 8 could give players competitive edges and shift market shares by pushing out cheap but inefficient products. Such expectations may be priced into related stocks going forward.

Chart 2 shows the process chart released by METI and rejigged by us. It includes tighter energy-efficiency standards for TVs and eco-cars (in bold on chart), which were major beneficiaries of stimulus measures in 2009. As economic conditions normalize in 2010, the beneficiaries of policy measures will likely be narrowed down to more strategic, advanced fields. Players either holding advantageous positions in relevant fields, or with the capital spending budgets and competencies necessary to enter these fields, will likely find favor from 2010 as the various frameworks are put in place.

A detailed domestic policy proposal incorporating assessments and suggestions from various quarters is being drawn up by a committee, aiming for completion in March. Specific policies are then expected to be compiled by June. We will be keeping an eye on the policies that emerge over the next six months.

Process Chart for New Growth Strategy				Chart 2
Category	Policies			Related names/fields (our picks)
	FY09	10	10-13	
Solar power	Support solar power system installations Initiate feed-in tariff scheme for solar power	Loosen restrictions in factory location law	Massively increase solar panel installations in homes, public buildings	Mitsubishi Electric (6503), Sharp (6753), Kyocera (6971)
Solar, wind, biomass, geothermal	-	Offer option of full feed-in tariff system	Revise regulations to promote installation of renewables	Above 3 firms and Japan Wind Development (2766), Fuji Electric Holdings (6504), Mitsubishi Heavy Industries (7011)
Energy-efficient appliances, glass, insulation	Enhance "eco-point" system	Tighten energy-efficiency standards (TVs, buildings, etc.)	-	Asahi Glass (5201), Nippon Sheet Glass (5202), Panasonic (6752)
Next-gen cars, storage cells, railways	Subsidies, tax deductions for eco-cars	-	Tighten auto fuel efficiency standards Investigate additional measures for transport	Nissan Motor (7201), Toyota Motor (7203), Mitsubishi Motors (7211), Honda Motor (7267), Stella Chemifa (4109), Ube Industries (4208), Panasonic (6752)
Rare metals	-	Step up efforts to secure supplies of rare metals essential for low-carbon society	-	Dowa Holdings (5714), Asahi Holdings (5857), Matsuda Sangyo (7456)
Development of innovative technologies	Accelerate development of innovative technologies		Achieve high-performance, low-cost next-gen solar and storage cells	Next-gen autos, storage cells, clean coal, green IT, solar cells; pioneers in storage cell-related fields
Supporting low-carbon industries	Subsidies for establishing low-carbon industries	Public funding support for low-carbon industries, introduction of lease guarantees for low-carbon investments	-	All green names
Building next-gen energy and social systems	-	Demonstration trials of next-gen energy and social systems	Build Japanese smart grid, next-gen electricity transmission network Develop "smart communities" utilizing next-gen technologies and systems nationwide	Hitachi (6501), Toshiba (6502), Mitsubishi Electric (6503), Meidensha (6508), Panasonic (6752), Toyota Motor (7203), electric utilities, etc.
Support for overseas expansion	Support for infrastructure/systems exports using cutting-edge eco-friendly technology	Implement <i>Hatoyama Initiative</i>	Meaningful expansion of infrastructure/systems exports through public-private sector cooperation	Fields involving railways, water, rare metals

Source: Government materials; compiled by DIR.

2. Global Warming-related Growth Potential in Developing Nations

Global warming policies differ by region

In the medium to long term, the global market will likely be key for growth. In this regard, early action item 3 (support for infrastructure/systems exports) is likely to garner attention. Infrastructure projects typically do not require renewal for decades and need long-term maintenance. As such, government backing, such as maintenance guarantees, is likely a key issue. If the Japanese government acts as a top advocate for Japanese firms, this should enhance prospects for sustained business in the field.

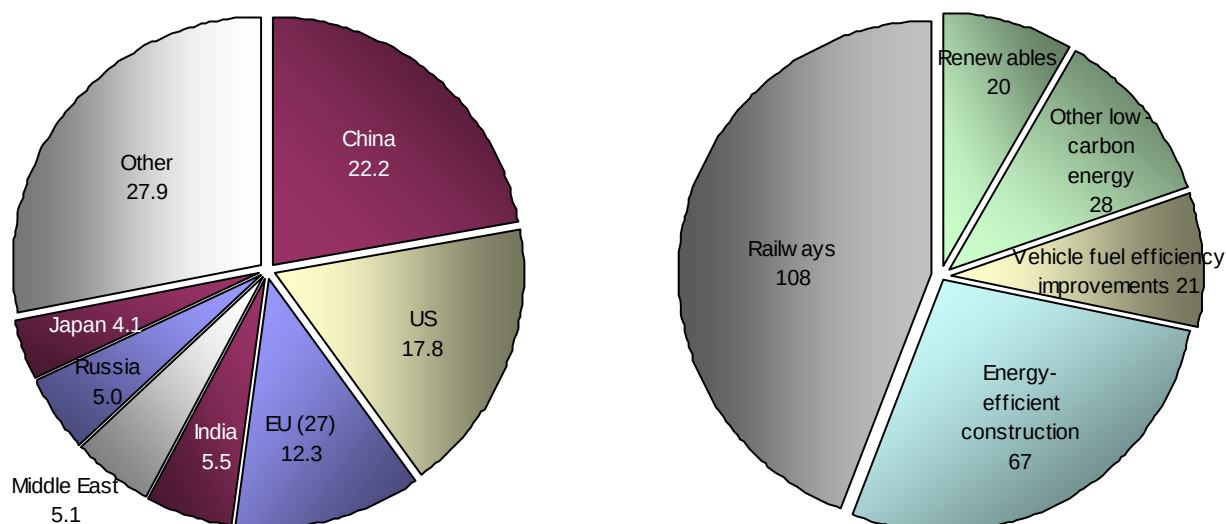
Regarding promising global markets, large emitters China, the US, and India are likely to need funds and technologies for combating global warming. It is worth bearing in mind though that the required energy strategies differ according to regional conditions.

For instance, data on CO₂ emissions from energy consumption in 2008 (preliminary estimates) shows that the US and China stand out in terms of emissions volumes (Chart 3 left). The right side of Chart 3 breaks down energy-related global warming investments announced by G20 nations as stimulus measures during the financial crisis. The main investment fields were railways and energy-efficient construction. China accounted for over half of railway investment, and the US for half of energy-efficient construction outlays. In other words, the US and China also stand out in terms of global warming investments, though naturally the focal points of their policies differ.

Focus on potential growth markets rather than large markets

Unfortunately however, there is little evidence that Japanese firms, which boast excellent clean-tech expertise in these green fields, have been major players in these investments. We think the opportunities may lie in markets with future growth potential rather than these large markets. Specifically, we are looking at regions where Japan has an informational advantage over rival countries and that have less opposition to receiving Japanese support. As such, our focus is on countries receiving Japanese ODA.

CO₂ Emissions from Energy Consumption (%); 2009 Green/energy Investments in Stimulus Packages (\$ bil)
Chart 3



Source: Oak Ridge National Laboratory (preliminary data); compiled by DIR.
Note: As of CY08.

Source: IEA; compiled by DIR.
Note: Investments in 2009.

Support for water, energy, transport, etc.

Japan's *ODA White Paper* shows that social and economic infrastructure & services accounted for half of bilateral (country receiving support known) ODA in FY07. In particular, water supply and sanitation, energy, and transport and storage were major fields. Most projects are funded through soft yen loans, and India, Iraq, Indonesia, Vietnam, and Thailand (all Asian countries) were the top recipients (Chart 4 left). Looking at cumulative data through FY07 as well, the top recipients (Indonesia, China, India) are all in Asia.

The Ministry of Foreign Affairs publishes a breakdown of ODA provision by major nations (aggregate of 2003-7) on its homepage. This data shows that Japan accounted for roughly 40% of total ODA provision for water and sanitation and infrastructure (energy and transport; note that classifications differ slightly from white paper), with a significant gap back to the US (around 20%) and Germany (roughly 10%). Within this field, we believe Japan's aid expenditures are largest for water systems (tap water and sewage), then railways and roads, then natural gas-fired thermal power stations.

ODA: Yen Loans (¥ bil)			Chart 4		
Rank	Country	FY07 total	Rank	Country	Cumulative thru FY07
1	India	225.1	1	Indonesia	4,271.9
2	Iraq	160.6	2	China	3,316.5
3	Indonesia	106.0	3	India	2,946.1
4	Vietnam	97.9	4	Thailand	2,107.2
5	Thailand	62.4	5	Philippines	2,069.2
6	China	46.3	6	Vietnam	1,291.1
7	Bangladesh	43.0	7	Malaysia	969.3
8	Bulgaria	36.9	8	Pakistan	880.1
9	Philippines	36.5	9	Sri Lanka	721.3
10	Mongolia	28.8	10	South Korea	645.5
			11	Bangladesh	640.8
			12	Turkey	550.1
			13	Egypt	515.3
			14	Myanmar	403.0
			15	Peru	364.3
			16	Brazil	326.6
			17	Iraq	298.1
			18	Mexico	229.6
			19	Tunisia	219.4
			20	Kenya	215.7

Source: Government materials; compiled by DIR.

Note: Based on official agreements, excludes debt relief.

UN target of halving water and food poverty by 2015

Developed countries have mostly already secured safe water and food supplies, so they tend to focus on energy security in terms of global warming policies. But in developing/emerging nations that are still growing (main ODA recipients), domestic disparities in living standards are often vast, and ensuring safe (unpolluted) water supplies and food supplies is a major issue alongside securing the energy supplies necessary for industrialization-driven economic growth. Access to clean water and food is a particularly pressing issue in areas with large low-income populations.

The UN's Millennium Development Goals were set in 2000. They consist of eight goals to be attained by 2015, and 21 quantifiable targets for their achievement, including for access to water (halve proportion of people without sustainable access to safe water and basic sanitation) and food (halve proportion of people suffering from hunger).

Water supplies are increasing, but demand is also surging, both for drinking water (essential for maintaining life) and water for irrigation and other agricultural applications and purified water for industry. Demand for food is also rising, including for increased livestock rearing and new usages such as biofuels to replace gasoline.

Against this backdrop, both the UK and the US announced national water strategies in 2008. Singapore, which had low water self-sufficiency, also made water security a national strategic issue, and has improved self-sufficiency to around 60%, as well as developing a water industry based on its expertise. In other words, governments think that securing water supplies is a serious issue warranting national strategies. If more countries wheel out national water and food strategies going forward, this should spark market growth for water production and water infrastructure management businesses.

Potential for smart water grids

Incidentally, one reason that smart grids have come to the fore in the US is the need to reduce transmission losses from the aging electricity grid. We believe the same could apply for water supplies, meaning smart management in the same manner as electricity grids will likely become necessary for water pipe networks in the future. For instance, it may be possible to build a smart water grid in which water stored in various regions can be filtered and managed so that it only flows

into pipes where it is needed. Utilizing renewables as the energy source for managing water flows would also be an option.

Japan has long been a major presence in rolling stock for high-speed railways. Recently however, Japanese firms have been building a track record in delivering all-Japanese systems including the tracks themselves, signals and safety devices, and other components. We call on Japanese players in water and energy management to learn from this and build larger global stages for themselves, as we believe that Japanese expertise, centered on accuracy and precision, will find favor there.

Railway, Water Names			Chart 5
Field	Related names		Operation/management
	Components (rolling stock, membranes, etc.)	Control systems/ infrastructure	
Railways	Hitachi (6501), Mitsubishi Heavy Industries (7011), Kawasaki Heavy Industries (7012), Nippon Sharyo (7102), Kinki Sharyo (7122)	Nabtesco (6268), Mitsubishi Electric (6503), Toyo Electric Mfg. (6505), Nippon Signal (6741), Daido Signal (6743)	East Japan Railway (9020), West Japan Railway (9021), Central Japan Railway (9022)
Water	Toray Industries (3402), Asahi Kasei (3407), Kubota (6326), Torishima Pump Mfg. (6363), Nitto Denko (6988)	JGC (1963), Hitachi Plant Technologies (1970), Sasakura Engineering (6303), Organo (6368), Kurita Water Industries (6370), Mitsubishi Electric (6503), Meidensha (6508),	Marubeni (8002), Mitsui & Co. (8031)

Source: Various materials; compiled by DIR.

3. Implications of COP15 Conference—Rise of BASIC Nations

**Progress in
implementing
Copenhagen Accord
would be positive
surprise**

Lastly, we turn to negotiations on a new global emissions framework, which have been extended into 2010, as an indicator of potential long-term developments.

There were hopes for agreement of a legally binding new global emissions framework at the recent COP15 conference. In the end however, nations merely agreed to abide by the Copenhagen Accord—not even a political agreement was reached. Most of the 193 UN members supported the accord, but there were several dissidents, including Cuba, Venezuela, Bolivia, and Sudan. As the conference required unanimous approval for any agreements, the opposition of even a handful of nations meant that an agreement could not be reached. In response, the UK and other countries taking aggressive anti-global warming measures are trying to move on with building the new emissions framework among the countries that signed up to the accord, citing the fact that the vast majority of nations supported it.

In a previous report (*COP15 to Address Future of Climate Initiatives*; 1 Dec 2009), we suggested that funding mechanisms would be a key issue at the conference. The Copenhagen Accord incorporates the following funding measures: (1) developed nations to provide \$30 billion in additional funding support in 2010-12; (2) goal of mobilizing annual funding support of \$100 billion by 2020. However, this funding comes with strings attached—recipients must sign up to the UN's MRV (measurable, reportable, verifiable) mechanism.

Among the funding provision proposals released before the conference, the largest proposal (tabled by China and G77) was for \$200-400 billion annually (equivalent to 0.5-1% of developed countries' GNI according to UNFCCC estimates). Notably, \$200 billion in funding would be equivalent to the amount allocated to environmental fields in the fiscal stimulus measures (total value of \$2.4 trillion) enacted by the G20 nations during the financial crisis (Chart 3 right).

The proposal of \$100 billion annually by 2020 represents a compromise with China and the G77 countries. Notably though, the phrase “mobilizing” does not mean that developed nations’ governments will pick up the entire tab—it leaves room for other initiatives, such as measures to boost investment from the private sector.

The accord also includes an end-January 2010 deadline for developed nations to submit emission cutting targets for 2020 and for other nations to submit proposed mitigation actions. If nations actually meet this deadline, it would probably increase the likelihood that they will implement other elements of the accord as well. More ambitious agreements lend impetus to global warming initiatives. Taking the reverse, the goals and actions proposed by nations by end-January should give a hint as to whether an agreement on a new emissions framework will be reached.

Main Elements of Copenhagen Accord		Chart 6
Item	Content	
Shared vision	Recognize need to keep rise in global temperatures to less than 2°C based on scientific evidence	
Mitigation	Developed nations to set national emissions cut targets for 2020 by end-Jan 2010 Signatories to Kyoto Protocol to cut emissions further Developing nations to submit emissions mitigation plans by end-Jan 2010	
Technology	Technology mechanisms for technology development and transfer to be established	
Funding	Copenhagen Green Climate Fund (CGCF) to be set up Majority of funding for adaptation measures, deforestation relief, clean-tech development to be channeled through CGCF Developed nations to provide \$30 bil in additional funding in 2010-12 \$100 bil in annual funding to be mobilized by 2020 predicated on implementation and transparency of mitigation actions by developing nations	
Verification	Assessment of progress in implementing accord to be completed by 2015. Strengthening of long-term targets to be considered.	

Source: Various materials; compiled by DIR.

Focus going forward on BASIC nations

Notably, when the contents of the accord were being agreed, there were meetings first between the US and Chinese delegations, and then between the US and delegations from China, India, Brazil, and South Africa. This indicates that these four countries have emerged as influential players in climate change negotiations. This group of four nations (BASIC) and the US together account for 70% of global coal production volume (excluding Brazil), and Brazil and the US together account for 70% of global production volume for bioethanol, which is seen as a potential replacement for gasoline (Chart 7). In other words, they are major players in the energy field.

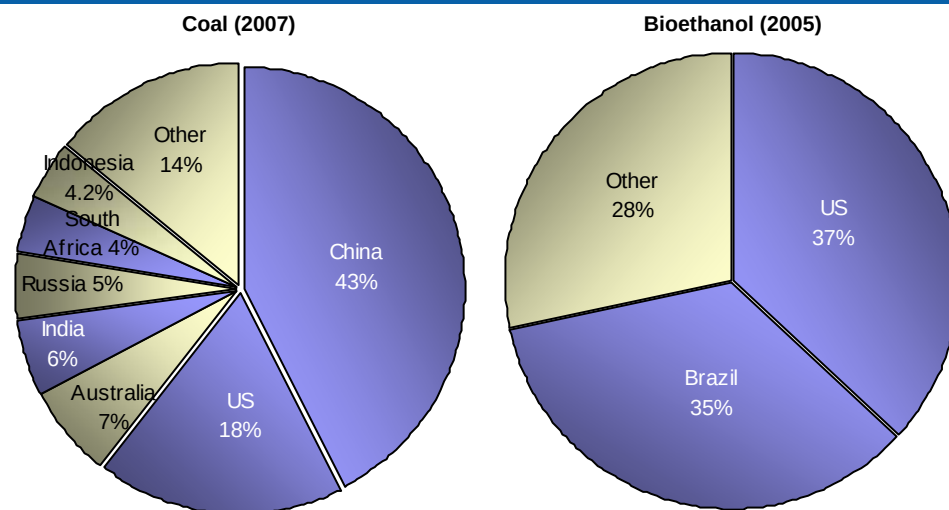
The EU, where global warming policies are most advanced, has set targets of 20% of final energy consumption provided by renewables and 10% of transportation powered by biofuels by 2020. Even if it achieves these goals, this means that 80% of final energy consumption will still be provided by coal, natural gas, oil, and nuclear power, and that the majority of means of transportation will still be oil-powered. In other words, oil and coal should remain vital factors in energy supplies even as global warming policies progress.

For oil, which as a liquid is highly in demand as a transport fuel, there are predictions of a surge in crude oil prices, as well as “peak oil theory,” which holds that crude oil supplies will run out within 30 years. If these predictions are born out, then bioethanol should see higher demand and rising prices as a liquid fuel to replace gasoline. In addition, the role of coal, which is inexpensive and widely available worldwide, could be revisited in spite of its lofty CO₂ emission levels. It could be converted into a clean energy source through application of clean coal technology, and may also have a role as an alternative transport fuel through liquidification.

It was the BASIC nations, which would enjoy a stronger presence if crude oil prices soar, rather than the developed nations (have funds) or the EU (aggressively pushing global warming measures), that played a central role in the drafting of the Copenhagen Accord. As concerns over global warming measures and energy supplies grow internationally, these nations will probably become increasingly influential. We will be focusing on the BASIC nations as the new global emissions framework is being drawn up.

Global Fuel Production Volumes

Chart 7



Source: BP; compiled by DIR.

Source: Various materials; compiled by DIR.

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