

Chapter 10

Prospects for enhancing energy security in Asia and the Pacific through regional trade

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Introduction

Trade and investment are engines of growth for Asia and the Pacific. In 2012, the region surpassed Europe to become the world's largest trading region. The general decline in import demand in developed countries continues to fuel the growth of South-South trade, further strengthening the role of Asia-Pacific, as most of that trade is contributed by this region. Therefore, intraregional exports experienced an increase in the total share of exports of these countries from 40% to 51% from 2000 to 2012 (ESCAP, 2014). However, the merchandise trade in Asia and the Pacific in 2015 continued to face significant challenges due to the regional as well as global macroeconomic outlook. ESCAP (2015a) estimated that export receipts of the Asia-Pacific economies grew sluggishly at 2.5% in 2014, while imports declined by 1.2%.

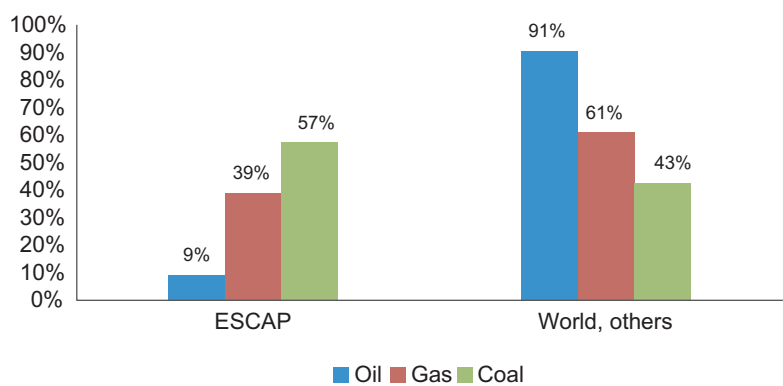
Growing demand for raw materials and the expansion of the productive capacity of emerging economies have exacerbated the region's high resource dependence, especially in energy resources such as fossil fuels. The Asia-Pacific region as a whole increased its share of global commodity imports across all sectors (minerals and metals, fuels and agriculture) during 2009-2013, from 26% to 30% (Saggu and Anukoonwattaka, 2015a and 2015b). The region's rising import bill for energy and commodities worsened its trade deficit, resulting in a net deficit with the rest of the world in 2012 (ESCAP, 2013a). Thus, growth in energy demand, coupled with increasing price volatility and dependence on fossil fuels, has made efforts for energy security more challenging. Between 2011 and 2013, the import share of petroleum products in the Asia-Pacific region remained at 16%, while the export share declined from 12% to 11%. Furthermore, growing demand has raised the price of energy resources in the past few years.¹

The overall impact of falling oil prices depends on the nature of oil-dependence (oil-importing or oil-exporting) of economies (ESCAP, 2015b). The Asian Development Bank (ADB, 2013) estimated that net oil importers in the region could see an additional 0.5% growth in their 2015 GDP if oil prices remained low. The low oil prices also reduced inflation rates and presented opportunities for importers such as Indonesia and India to reform their programmes on fuel subsidies. For oil-exporting countries, such as the Russian Federation and other Central Asia countries, this would have a negative impact on growth, depending on the role of the energy sector in the national economy.

¹ With the exception of the fall in oil prices, according to EIA (2015), as of early 2015, international oil prices had declined drastically by 47%, but then increased slightly in February 2015.

The Asia-Pacific economies² hold vast amounts of fossil and non-fossil energy resources. As a region, it is a net exporter of coal, natural gas (through the pipelines), and electricity, but a net importer of oil and liquefied natural gas (LNG). Owing to accelerated levels of economic development, internal demand is constantly rising in the region. This increase is not being matched by a sufficient rise in production, leading to reduced exports and even higher pressure for imports. Despite holding vast coal and natural gas reserves (figure 10.1), demand for fossil fuel in Asia and the Pacific is increasingly being met by imports and its trade surplus will be reduced over time. The ADB (2013) has projected net imports³ of fossil fuels (oil, coal and natural gas) in the Asia-Pacific region to almost double from 830.5 million metric tonnes of oil equivalent (Mtoe) in 2010 to 1,515.5 Mtoe in 2035.

Figure 10.1. Contribution by the Asia-Pacific economies to world fossil fuel resources



Source: US Energy Information Administration (EIA, 2013), International Energy Statistics, <http://www.eia.gov/cfapps/ipdbproject/IEDIndex3.cfm> (accessed November 2013).
 Note: Oil and natural gas reserves as of 1 January 2012; coal reserves as of 31 December 2008.

The Asia-Pacific economies face greater challenges related to energy security,⁴ which is essential for inclusive and sustainable growth. Without greater energy cooperation, building regional connectivity and providing adequate infrastructure as well as regional integration, energy security will remain a distant objective for many economies. Growing import dependency coupled with emergent regionalism has certainly enhanced the prospects for regional energy cooperation and integration of the energy sector, which can enhance the

² In this chapter, “The Asia-Pacific economies” refers to countries and territories of the five subregions of ESCAP. For more details, please refer to www.unescap.org/about/subregional-activities.
³ Net Imports = Imports – Exports.
⁴ The International Energy Agency (IEA) defines energy security as the uninterrupted availability of energy sources at an affordable price. Energy security has many aspects: long-term energy security mainly deals with timely investments to supply energy in line with economic developments and environmental needs. On the other hand, short-term energy security focuses on the ability of the energy system to react promptly to sudden changes in the supply-demand balance (see www.iea.org/topics/energysecurity/).

possibility of regional energy security. However, due to its diverse nature, such cooperation is confined to national initiatives rather than at the regional level.

This chapter examines the prospects for enhanced energy security through regional energy trade and integration. In particular, it examines the case of the Asia-Pacific Trade Agreement (APTA), a preferential trade agreement in goods which comprises Bangladesh, China, India, the Lao People's Democratic Republic, Mongolia,⁵ the Republic of Korea and Sri Lanka.

Section A first provides an overview of the energy trade in Asia and the Pacific, with focus on primary energy commodities – oil, coal and natural gas – and the cross-border trade of electricity. The analysis uses published data and literature reviews on energy trade, including recent projections. It then analyses the structure and evolution of trade in primary energy commodities, cross-border electricity as well as climate-smart goods and technologies within and from the ESCAP subregions. The focus is on flows of oil, natural gas (through pipelines and LNG), coal, electricity, and climate-smart goods and technologies from, to and within the ESCAP region. The analysis closes with a summary of the key points highlighting the main energy exporters and importers, as well as the value of the trade in energy resources to national economies, using both GDP and overall merchandise exports and imports as the basis of comparison.

Section B focuses on the analysis of energy trading under regional frameworks, and specifically APTA. This section also provides a broad overview of the existing initiatives for energy cooperation. Despite the genuine interest in, and efforts made by certain countries and regions to deepening energy cooperation, much still needs to be done. The case of APTA is examined in order to understand the energy demands of the Participating States of APTA. Based on their demand, this section examines how the Participating States of APTA can gain from their engagement with the Central Asian economies in their endeavour to ensure energy security. It then examines the sources and destinations of the different forms of energy traded by individual Participating States of APTA and the potential for energy trade between them and the individual economies of Central Asia through APTA. It points out the potential mutual benefits from a partnership between the Participating States of APTA and the economies of Central Asia.

Section C concludes the chapter by explaining that regional cooperation for achieving energy security collectively is a viable alternative to traditional individual or bilateral attempts and that APTA is an ideal vehicle in providing energy security through enhanced trade due to tariff concessions to be offered on energy products and through the expansion of its membership to include energy-supplying countries.

⁵ Mongolia recently acceded to APTA and is in the process of ratifying the agreement.

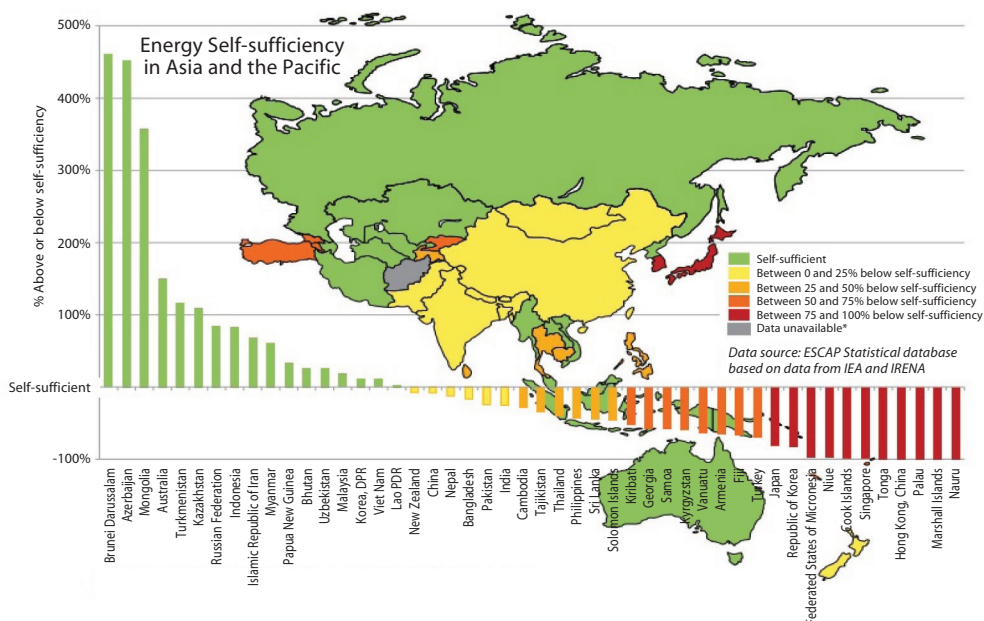
A. Trade and energy

1. Importance of energy trade in Asia and the Pacific

Trade in energy balances the differences in energy resource endowments among countries. International trade helps to meet the energy demands of an energy-deficient country as it can import the resources, while increasing the national income of energy-exporting countries. The extra resources generated from exports can be used to achieve their diversification objectives. In fact, countries with surplus energy resources tend to be highly dependent on energy exports, making it crucial to secure demand in the same way that energy import-dependent countries need to secure their energy sources.

In its *World Energy Outlook 2013*, the International Energy Agency (IEA) stated that global energy trade had re-oriented from the Atlantic basin to the Asia-Pacific region (IEA, 2013). Figure 10.2 shows that the economies in the northern and southern parts of the region are generally energy self-sufficient, while the economies in the eastern and western parts are more prone to rely on exports to meet their energy needs.

Figure 10.2. Energy self-sufficiency in the Asia-Pacific region



Source: ESCAP, Statistical Perspectives, 2013b.

* Data was unavailable for Afghanistan, Maldives, Timor-Leste and Tuvalu.

Note: Energy self-sufficiency values for this chart were derived by subtracting the ratio of production over TPES from one.

Countries may try to achieve self-sufficiency in secondary (electricity) and refined energy, at the very least, but this endeavour is almost impossible due to the massive infrastructure costs that such a venture would entail. In addition, availability of the latest technology to limit damage to the environment will be a major challenge for them, as they would need to adopt sustainable energy production and consumption practices. Energy sufficiency does not immediately guarantee equal access of energy across the countries or that power demand will be adequately met due to infrastructure, geography, and other structural challenges. Hence, promoting and diversifying energy trade arrangements is pivotal to securing energy security in order to address both external and internal imbalances for any economy.

The energy imports by the Asia-Pacific region have been constantly increasing, mainly driven by the rise in imports by the economies of East Asia and South Asia. Therefore, promoting energy trade on preferential terms could be one of the steps towards providing a better opportunity for energy security in the region. Addressing these issues will be important for economies in the region to achieve the sustainable development goals in the post-2015 era.

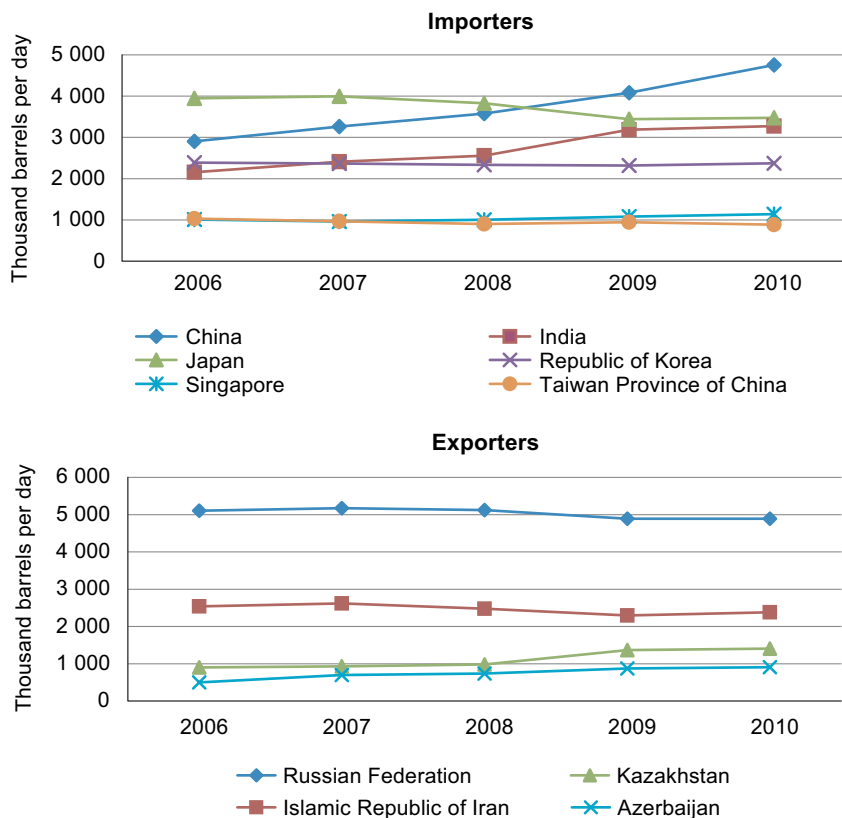
2. Oil trade

Oil is a concentrated energy source of strategic considerations, especially for transportation. Despite considerable interest in exploring the use of other energy sources for transportation, these initiatives have not taken off on a large scale because of oil's intrinsic advantage over other energy resources; oil is liquid, making it the most economically competitive and convenient energy source. With a 34% share of global energy demand, oil remains the reference energy (Favennec, 2011).

The Asia-Pacific region's rapid growth and increasing consumption has led to a rise in demand for energy. The region has the largest trade deficit in oil (figure 10.3). According to the EIA International Energy Statistics (2013), Asia-Pacific crude oil imports of 18,785 thousand barrels per day in 2010 accounted for 43% of global oil imports, while the region's oil exports of 11,152 thousand barrels per day in the same year represented 26% of the world's total.

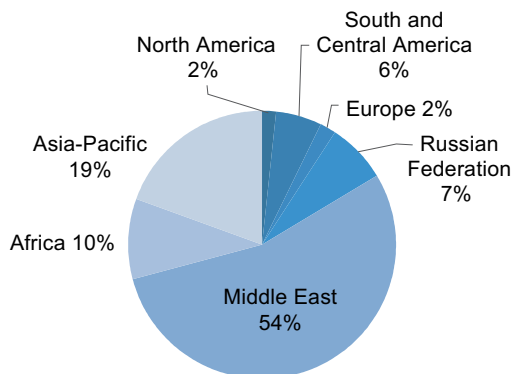
The Middle East remained the single largest source of Asia-Pacific oil imports, both crude and petroleum, supplying more than 54% of the region's total oil imports in 2012. Intraregional oil trade within the Asia-Pacific region contributes 19% of the region's total oil imports. The largest exporters from the region are Azerbaijan, the Islamic Republic of Iran, Kazakhstan and the Russian Federation. In addition, Australia, China, India, Japan and Singapore also trade oil (mostly refined oil products) in smaller quantities, most of which is exported within the region.

Figure 10.3. Top crude oil importers and exporters in the Asia-Pacific region, 2006-2010



Source: Authors' calculation, based on EIA International Energy Statistics (accessed November 2013).

Figure 10.4. Sources of Asia-Pacific oil imports, 2012



Source: Authors' calculation, based on BP Statistical Review of World Energy, 2009 and 2013.

Oil exports by North Asia, Central Asia and the Russian Federation⁶ represented 15% of the world's total oil exports and 7% of the Asia-Pacific region's total in 2012.

From 2008 to 2012, limited import diversification occurred, with the Middle East and intra-Asia and Pacific remaining the largest sources of ESCAP region oil imports, although imports from both regions decreased by 7 percentage points and 3 percentage points, respectively, during that period. The decrease in imports from "traditional suppliers" was offset by an increase in imports from Africa, South America, North and Central Asia and the Russian Federation by 8 percentage points.

3. Natural gas trade

Natural gas is mostly used in the industrial and electricity-generating sectors to produce heat. It is typically seen as secondary to oil as it is less concentrated. Some 1,100 m³ of "gaseous" natural gas are needed to obtain one metric tonne of oil equivalent (toe) (Favennec, 2011). However, rising climate change concerns have led to gas, which is seen as the "cleaner" fossil fuel, coming to the forefront of global energy demand. There are three main markets for gas – the United States of America, Europe and Asia.

Transportation costs account for a large share of gas prices because gas transportation only occurs either through a pipeline or by liquefied natural gas (LNG) carriers – mainly ships, which require a non-interruptible and rigid chain for handling. As a result, trade takes place only through those two modes. Trade by pipeline accounted for 68% of total trade in 2012. The ADB (2013) estimated that demand for natural gas would grow by 3.9% annually, to reaching 1,463.2 Mtoe in 2035. Furthermore, this projected growth will be the most rapid among all fossil fuels because of the lower environmental burden from gas and its ease of use.

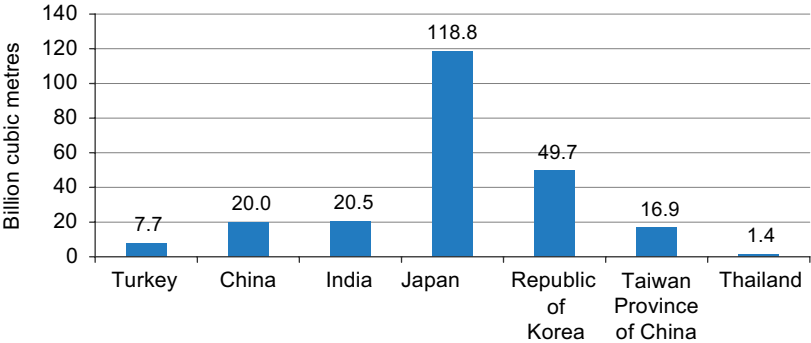
The Asia-Pacific market for natural gas is not homogeneous, owing to the lack of a well-connected sophisticated pipeline system, such as that developed in North America and Europe. Regional connectivity is thus very important for Asia and the Pacific, at least for select subregions. The Asia-Pacific market can be split into three major markets: (a) North-East Asia, i.e., Japan, the Republic of Korea and Taiwan Province of China; (b) emerging markets, such as China and India; and (c) South-East Asia, which is home to the majority of the region's LNG producers, i.e., Brunei Darussalam, Indonesia and Malaysia.

The Asia-Pacific region is the foremost player in LNG trade as a net importer. It imported 235 billion m³ of LNG in 2012, accounting for 71% of global LNG imports. In 2012, ESCAP members and associate members imported more than twice as much LNG (234.9 billion m³) as it exported (108.8 billion m³). Japan alone accounted for 51% of the total Asian LNG imports in 2012, representing 36% of the world's total, largely due to resurgent demand following the Fukushima incident. Turkey, China, the Republic of Korea, Taiwan Province of China, Thailand and India have been the other major LNG importers in Asia (BP, 2013).

⁶ The classification of North Asia, Central Asia and the Russian Federation done by the authors refers to the following countries: Armenia; Azerbaijan; Belarus; Georgia; Kazakhstan; Kyrgyzstan; the Russian Federation; Tajikistan; Turkmenistan; Ukraine; and Uzbekistan.

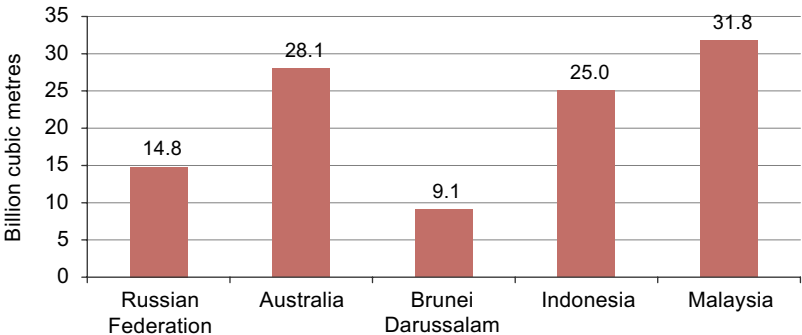
The single largest exporter of LNG to the Asia-Pacific region is Qatar, which supplied 67.7 billion m³ (29%) of the region's LNG import demand in 2012. It is also the leading LNG exporter globally. Other Middle Eastern countries that exported large quantities of LNG to Asia were Oman, Yemen and the United Arab Emirates. In total, the economies in the Middle East exported about 92.3 billion m³ of LNG to Asia and the Pacific, approximately equivalent to 39% of the region's imports. The African countries of Algeria, Egypt, Equatorial Guinea and Nigeria also shipped LNG to the region, totalling 28.3 billion m³ (12%) of the total shipments to Asia-Pacific. However, in aggregate, most LNG imports by Asia come from within the region, including the Russian Federation, Australia, Brunei Darussalam, Indonesia, and Malaysia (figures 10.5 and 10.6), which together supplied 46% of the region's total LNG imports in 2012. Those five countries, which account for 33% of global LNG trade, are the only LNG-exporting countries from the region that essentially trade only within the region.

Figure 10.5. Liquefied natural gas imports by selected Asia-Pacific economies, 2012



Source: Authors' calculation, based on BP Statistical Review of World Energy, 2013.

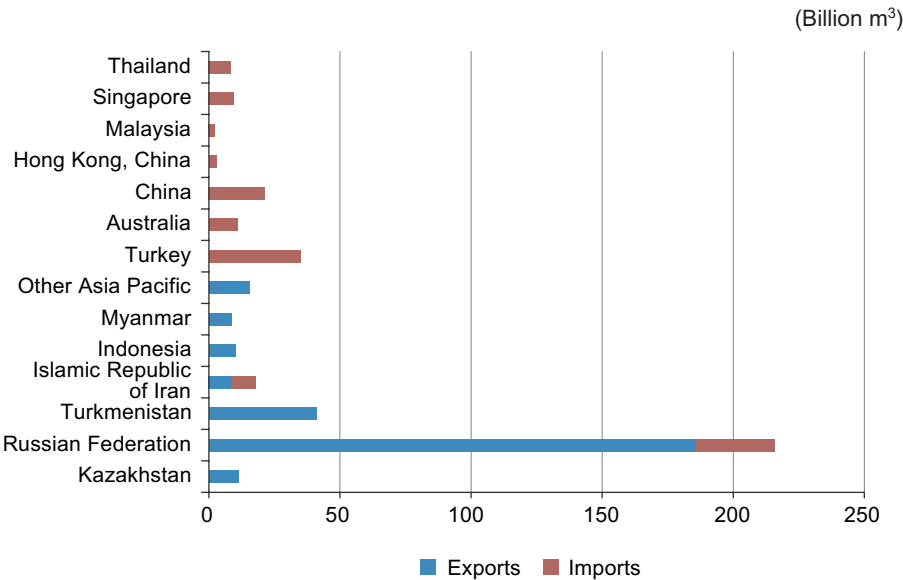
Figure 10.6. Liquefied natural gas exports by selected Asia-Pacific economies, 2012



Source: Authors' calculation, based on BP Statistical Review of World Energy, 2013.

The major Asian countries that export gas by pipeline are Kazakhstan, the Russian Federation, Turkmenistan, the Islamic Republic of Iran, Indonesia and Myanmar (figure 10.7). Other than the Russian Federation, those economies export natural gas to a small number of importers, as they each have a relatively small natural gas surplus: the Islamic Republic of Iran mainly exports to Turkey; Myanmar only to Thailand; and Indonesia only to Singapore and Malaysia. Transporting gas through pipelines is geographically constrained, as seen in the concentration of intra-South-East Asian flows as well as in the flows among the Russian Federation and Central Asian States. One exception is gas exports from Turkmenistan to China, estimated to be 21.3 billion m³. This is largely facilitated by the new Central Asian pipelines connecting Turkmenistan, Uzbekistan and Kazakhstan with China. In addition to China, other Asia-Pacific countries that import piped gas are Australia, Malaysia, Singapore and Thailand. With the inclusion of the Russian Federation, the Islamic Republic of Iran and Central Asia, the Asia-Pacific region is a net exporter of natural gas as far as natural gas trade by pipeline is concerned, with exports mainly heading to Europe.

**Figure 10.7. Natural gas imports and exports by pipeline
of selected Asia-Pacific economies, 2012**



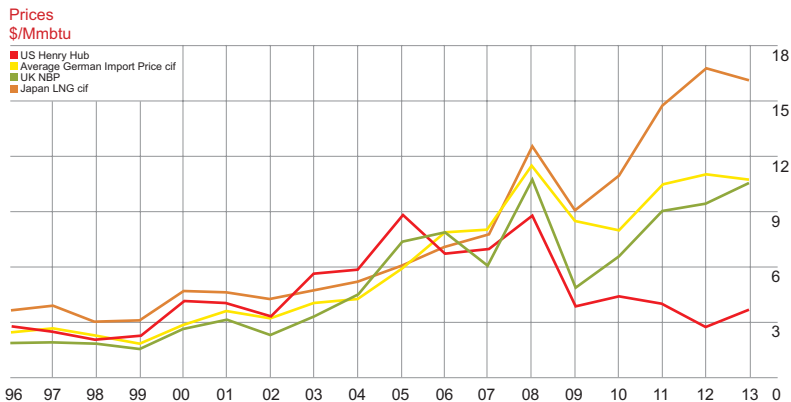
Source: Authors' calculation, based on BP Statistical Review of World Energy, 2013.

4. Natural gas prices

In addition to gas supply, gas prices are also a major concern that needs to be addressed when considering energy security. The prices of gas in the Asia-Pacific region almost doubled between 2009 and 2012. Unlike oil and coal prices, which are largely consistent with global prices, gas prices in Asia and the Pacific are considerably higher compared

with world prices. Asian gas contracts are typically indexed to crude-oil prices with maturity terms as long as 20 years. Thus, not only are the region's gas prices vulnerable to oil price volatility, they are also almost quadruple the prices in the United States (figure 10.8).

Figure 10.8. Natural gas prices, 2013



Source: BP Statistical Review of World Energy, June 2014, available at www.bp.com/content/dam/bp-country/de_de/PDFs/brochures/BP-statistical-review-of-world-energy-2014-full-report.pdf (accessed November, 2013).

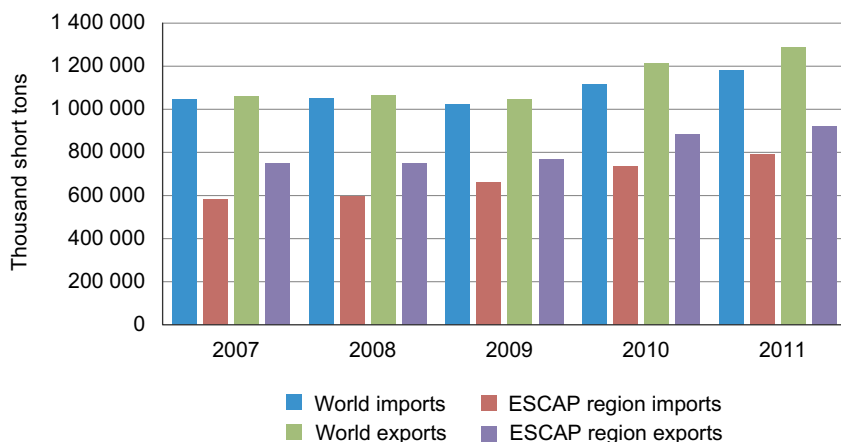
An ideal situation would be to delink gas prices from oil and move towards gas-to-gas competition. This is seen as a natural trajectory for the Asian gas market to follow. Such a scenario would be further boosted if surplus gas from North America were exported. Using crude oil as a benchmark for gas prices in Asia is not a credible long-term situation as oil prices are frequently distorted by the paper market, making them unrepresentative of market fundamentals. As gas is no longer seen as a direct substitute for oil in power generation, the linking of gas to oil prices is no longer relevant. Artificially maintained high gas prices in Asia negatively affect competitiveness and limit the potential for the market share of gas in the energy mix to increase. This explains why coal is still the dominant energy resource in Asia.

5. Coal trade

ADB (2013) projected that the region would become a net coal importer in 2015 while statistics from the EIA suggest that the Asia-Pacific region has already become a net coal importer (figure 10.9). Total coal exports from the region reached 920 million short tons in 2011, while coal imports amounted to 791 million short tons. Excluding the Russian Federation and Central Asia, the region was a net coal importer, with a trade deficit of 17 million short tons. Total Asia-Pacific coal exports also represented 72% of the global coal trade, while the imports accounted for 67% of world imports. The region's coal imports grew almost three times as fast as the global growth between 2007 and 2011, with coal imports increasing at a more rapid rate of 36% than its exports, which increased by 23%.

This phenomenon was largely fuelled by burgeoning Chinese domestic demand where coal accounted for some 70% of total energy use in 2011. Imports to China ballooned 349% from 2007 to 2011 alongside dwindling exports.

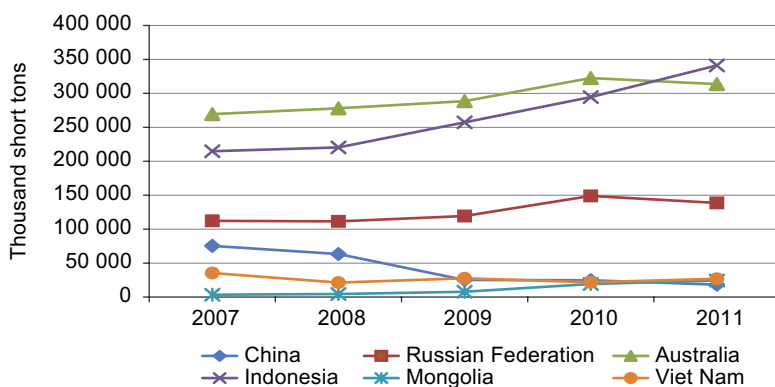
Figure 10.9. Global and ESCAP region coal trade, 2007-2011



Source: Authors' calculation, based on EIA International Energy Statistics (accessed November 2013).

The Russian Federation, Australia and Indonesia are the region's largest coal exporters. Their combined coal exports of 793 million short tons in 2011 represented 62% and 86% of the world and region's total exports, respectively. Coal exports from those three countries increased by 33%, from 2007 to 2011, due largely to the high growth of coal exports from Indonesia (59%, from 2007 to 2011). Indonesia has also emerged as the largest coal exporter in the region (figure 10.10).

Figure 10.10. Growth of coal exports in key Asia-Pacific economies, 2007-2011



Source: Author's calculation, based on EIA, International Energy Statistics (accessed November 2013).

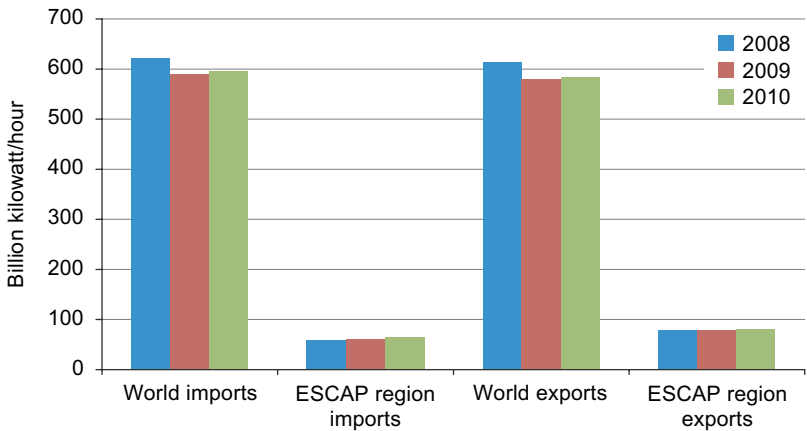
China, India, Japan and the Republic of Korea are also major importers of coal from the region. Together, they accounted for 58% of the world's total coal imports in 2011 and 87% of the region's total imports.

China is expected to continue to be a user of coal in Asia, but based on projections by ADB, growth in that country's demand will slow to 1.4% per year through to 2035 as a result of energy efficiency and an increase of other sources in the country's energy mix. Demand for coal in India, on the other hand, will increase steadily, at 3.1% annually until 2035. At the same time, South-East Asia is poised to play a bigger role in the coal trade as certain countries in the region begin to encourage the use of coal to augment energy security, especially Indonesia, which is set to become the fourth-largest coal user in Asia and the Pacific by 2035. This means that it could soon follow the path of China and see a marked erosion of its net coal exports.

6. Cross-border electricity trade

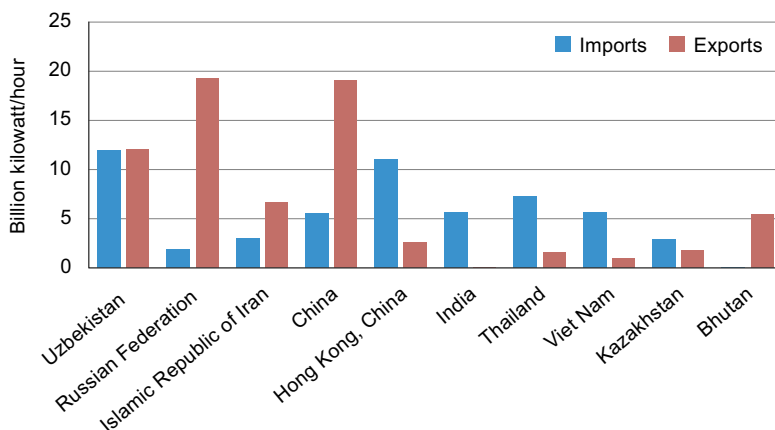
The Asia-Pacific region registered net exports of 14.77 terawatt-hours (TWh) in 2010, making it a net exporter; this was mainly driven by the export of electricity from North Asia and Central Asia. The region's electricity exports represented 14% of the world's total electricity exports, while its electricity import share was 11%. Notably, global electricity imports decreased by 4% from 2008 to 2010, while imports from the Asia-Pacific region increased by 10% during the same period. Similarly, exports decreased by 5%, while exports to Asia and the Pacific increased by 2%. This shows that the intra-Asia-Pacific electricity trade is increasing, which is a positive development in terms of regional integration (figures 10.11 and 10.12).

Figure 10.11. Global and Asia-Pacific electricity trade, 2008-2010



Source: Authors' calculation based on EIA International Energy Statistics (accessed November 2013).

Figure 10.12. Electricity trade of key Asia-Pacific economies, 2010



Source: Authors' calculation based on EIA International Energy Statistics (accessed November 2013).

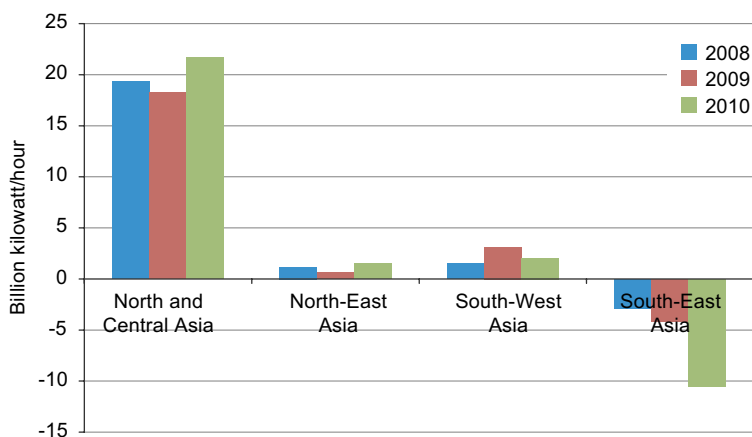
Bhutan, China, the Islamic Republic of Iran, the Russian Federation and Uzbekistan are key electricity-exporting economies, while China, Hong Kong, China, India, Kazakhstan, Thailand, Uzbekistan and Viet Nam are key electricity-importing economies. Most of the trade, due to its nature of supply, was concentrated among neighbouring countries.

Interestingly, Uzbekistan imported more or less the same amount of electricity that it exported, which represented some 18% of the Asia-Pacific region's imports and 15% of its exports. Electricity exports from China and the Russian Federation each made up 24% of the region's exports. As shown in figures 10.11 and 10.12, both countries' imports were much less than their exports. A further 8% of ESCAP region electricity exports came from the Islamic Republic of Iran. The majority of electricity exports from Bhutan are sent to India, which is its largest trade partner. Bilateral power trade has been driven by the 2006 Agreement on Trade, Commerce and Transit between the two countries, coupled with continued growth in hydropower projects in Bhutan that are often supported by India.

While Hong Kong, China imports of electricity are high in absolute terms, representing 17% of the region's total imports and approximately equivalent to the imports of China and India combined, its case is unique given that its entire trade is conducted with China.

Unlike trade in primary energy commodities, electricity trade can happen only within well-defined subregional markets, due to the specific transmission and distribution requirements. The bulk of electricity trade in Asia and the Pacific is currently taking place in North Asia and Central Asia, accounting for 39% of the total electricity trade in the region in 2010. Substantial electricity trade also occurs in East Asia and North-East Asia, which accounted for close to 29% of the region's total electricity trade in 2010. Similarly, significant volumes of electricity trade also occurred in South-West Asia and South-East Asia.

Figure 10.13. Cross-border electricity trade in the Asia-Pacific region, 2008-2010



Source: Authors' calculation based on EIA International Energy Statistics (accessed November 2013).

The nature of the trade is such that it requires adequate infrastructure and a distribution network at and behind the borders. In view of the fact that electricity cannot be stored, most of the countries have tried to bring predictability of supply through State-led buy-back agreements, which are bilateral in nature. Also, the generation of electricity through joint projects (especially for hydropower) has enhanced those bilateral flows. However, at the subregional or regional level much still needs to be done to facilitate the dialogue for a regional agreement.

7. Summary of key energy exporting and importing countries

As shown in table 10.1, a few countries are consistently the top fossil fuel energy exporters and importers in the Asia-Pacific region, with notable exporting countries located in Central Asia and South Asia, and the major importers being China, Japan, India and the Republic of Korea.

The values of the fossil fuel energy trade are significant to the overall import and export bills of the respective countries as well as to their GDP. As shown in table 10.2, fossil fuel energy exports represent almost one-third of the GDP of Kazakhstan and Azerbaijan, half of the merchandise exports of the Russian Federation, and more than half of the total merchandise exports of Azerbaijan, the Islamic Republic of Iran and Kazakhstan. On the other hand, energy imports are equivalent to almost 10% of the GDP of India, and more than one-third of its total merchandise imports. Even the advanced diversified East-Asian economies of Japan and the Republic of Korea spend 30% of their total merchandise imports on such energy commodities.

Table 10.1. Top primary (non-renewable) and secondary energy exporters and importers in Asia and the Pacific

Exporter	Oil		Natural gas (pipeline)		Liquefied natural gas (LNG)		Coal		Electricity	
	Importer	Exporter	Importer	Exporter	Importer	Exporter	Importer	Exporter	Importer	Exporter
Russian Federation	China	Russian Federation	Turkey	Malaysia	Japan	Indonesia	Japan	Russian Federation	Uzbekistan	
Islamic Republic of Iran	Japan	Turkmenistan	Russian Federation	Australia	Republic of Korea	Australia	China	China	Hong Kong, China	
Kazakhstan	India	Kazakhstan	China	Indonesia	India	Russian Federation	Republic of Korea	Uzbekistan	Thailand	
Azerbaijan	Republic of Korea	Indonesia	Australia	Russian Federation	China	China	India	Islamic Republic of Iran	India	
Indonesia	Singapore	Islamic Republic of Iran	Singapore	Brunei Darussalam	Taiwan Province of China	Kazakhstan	Taiwan Province of China	Hong Kong, China	Viet Nam	

Source: Authors' calculations based on section A.3-A.6 of this chapter.

Table 10.2. Exports and imports of energy for selected Asia-Pacific countries in 2012*

Country	Value of exports (US\$ billion)	Energy exports as percentage of GDP	Energy exports as percentage of total merchandise exports	Value of imports (US\$ billion)	Energy imports as percentage of GDP	Energy imports as percentage of total merchandise imports
Azerbaijan	20.92	31.41	64.10	0.00459	0.01	0.04
Islamic Republic of Iran	89.94	17.49	68.13	0.0395	0.01	0.07
Kazakhstan	61.1	30.03	66.21	2.9	1.43	6.52
Russian Federation	263.8	13.09	49.84	1.47	0.07	0.44
China	7.08	0.09	0.35	266.6	3.24	14.66
India	0.32	0.02	0.11	177.9	9.66	36.33
Japan	0.15	0.00	0.02	270.2	4.53	30.50
Republic of Korea	0.35	0.03	0.06	158	13.99	30.42

Source: Authors' calculations. Values of energy exports taken from United Nations COMTRADE data, downloaded from WITS database (accessed December 2013). GDP values taken from World Bank Country Profiles (accessed December 2013). Values of merchandise exports and imports taken from UNCTADstat (accessed December 2013).

Note: Energy exports and imports comprise oil (HS 2709), gas (HS 2711), coal (HS 2701) and electricity (HS 2716).

* All values stated are for 2012, except for those from the Islamic Republic of Iran, which are based on 2011 figures. Values for total merchandise exports and imports of the Islamic Republic of Iran in 2011 have been estimated by UNCTAD.

As a result, key energy exporting countries are heavily reliant on their fossil fuel energy exports to strengthen their economic development, while energy imports pose a considerable burden on the trade balance of major energy-importing countries.

Table 10.3 shows that North-East and South-East Asian countries dominate trade in renewable energy systems. Unlike trade in fossil fuel resources, the same few countries are both exporting and importing most of the low-carbon goods and technologies in the region.

It is thus clear that enough opportunity exists for trade in energy within the region. This only requires good connectivity at the national and subregional levels, for which investments in cross-border infrastructure will be required. At the same time, in order to achieve predictability and sustainability, legally binding commitments and cooperation by all parties in energy trade will be required.

Table 10.3. Top renewable energy exporters and importers in Asia-Pacific

Climate-smart goods and technologies		Solar photovoltaic		Wind power		Clean coal		Energy-efficient lighting	
Exporter	Importer	Exporter	Importer	Exporter	Importer	Exporter	Importer	Exporter	Importer
China	China	China	China	Japan	China	Japan	Australia	Indonesia	China
Japan	Republic of Korea	Japan	Republic of Korea	China	Republic of Korea	Singapore	Russian Federation	Japan	Indonesia
Republic of Korea	Japan	Republic of Korea	Hong Kong, China	Republic of Korea	Japan	Russian Federation	Japan	Russian Federation	Thailand
Singapore	Hong Kong, China	Malaysia	Japan	Singapore	Indonesia	India	Singapore	Republic of Korea	Japan
Malaysia	Russian Federation	Singapore	Australia	India	India	Thailand	Republic of Korea	Thailand	India

Source: ESCAP, 2011b.

B. Regional trade and energy security

In their quest for energy security, countries are engaged in agreements on energy trade. Most of these agreements are bilateral in nature. Efforts are also being taken at a regional level to talk about energy cooperation and security. The regional trade agreements, now an essential part of the international trading system, are also playing an important role in facilitating energy trade for energy security. The RTAs, being economic integration agreements, can facilitate trade in energy either through the offer of preferential tariff concessions or a larger agenda on cooperation and security. In the Asia-Pacific region the regional integration efforts have also led to cooperation agreements on energy. The Association of South-East Asian Nations (ASEAN) has an Agreement on Energy Cooperation (1986) to ensure and develop the ASEAN sources of energy in strengthening the economic resilience of ASEAN members. SAARC also has a Framework Agreement for Energy Cooperation (Electricity) (2014) for enhancing cooperation in the energy sector to facilitate energy trade as well as the development of efficient conventional and renewable energy sources including hydropower. Energy is a sector for cooperation in BIMSTEC, which acts a bridging link between ASEAN and SAARC.

1. Efforts towards energy cooperation and security

In view of the burden that rising energy costs are placing on national income, and recognition by energy-rich and energy-poor countries of the importance of sustainable development, greater efforts have been undertaken towards consolidating energy security. Such initiatives vary in terms of commitment and impact. This subsection covers several pertinent ones in recent years.

At the multilateral level, the Energy Charter Treaty was established in 1994 and entered into legal force in 1998. The fundamental aim of the Treaty is to strengthen the rule of law on energy issues by creating a level playing field of rules to be observed by all participating Governments, thereby mitigating risks associated with energy-related investment and trade (Energy Charter). Its specific focus on energy trade and investment differs from other framework agreements, in which trade and investment issues are typically subsets of a broader goal. In addition, it is a legally-binding multilateral instrument with a comprehensive dispute settlement process. The Treaty has been signed or acceded to by 52 States, the European Community and Euratom;⁷ it therefore has 54 members (Energy Charter). A total of 14 ESCAP member countries have full member status in the Energy Charter Treaty, including all the North Asian and Central Asian countries, Afghanistan, Australia, Japan, Mongolia and Turkey; China, Indonesia, the Islamic Republic of Iran, the Republic of Korea and Pakistan are observers to the Treaty.

At the regional level, ESCAP member States have forged a ministerial declaration and plan of action on regional cooperation for enhanced energy security and the sustainable use of energy in Asia and the Pacific for 2014-2018. This is an outcome of the inaugural Asian and Pacific Energy Forum, which was held in Vladivostok, Russian Federation in

⁷ European Atomic Energy Community.

May 2013. It is based on implementing ESCAP Commission Resolution 67/2 on promoting regional cooperation for enhanced energy security and the sustainable use of energy in Asia and the Pacific, which was adopted on 25 May 2011. Energy trade and investment is one of the seven focus areas identified for regional cooperation (ESCAP, 2013a).

At the same time, another ESCAP-led initiative, the Asian Energy Highway, was also endorsed in 2011, under ESCAP Resolution 68/11 – Connectivity for Energy Security. Through the resolution, the Commission seeks to realize the development of an integrated regional power grid. Advances in energy generation and transmission technologies such as the improvement of high-voltage transmission systems – e.g., high-voltage direct current (HVDC) and smart grid communication and management technologies – have made the Asian Energy Highway increasingly feasible (ESCAP, 2013a).

Energy trade has also figured prominently in numerous subregional energy initiatives. In South-East Asia, the ASEAN Power Grid project as well as the ADB-backed interconnection projects under the Greater Mekong Subregion programme promotes electricity trade and is complementary to the Asian Energy Highway. The programme notably connects China to South-East Asia. In addition, ASEAN initiated the Trans-ASEAN Gas Pipeline to enhance natural gas trade. Inter-subregional cooperation also exists, particularly between South Asia and Central Asia. Funded by ADB, the Turkmenistan-Afghanistan-Pakistan-India Natural Gas Pipeline Project aims to export up to 33 billion m³ of natural gas per year through a proposed 1,800-kilometre (km) pipeline running from Turkmenistan to Afghanistan, Pakistan and India (ADB, 2013).

Beyond traditional energy trade cooperation, extensive cooperation on trade intelligence, particularly in the oil trade, has been attempted on a global level. A prominent example is the Join-Oil Data Initiative, which seeks to promote energy security through improved oil data and greater data reliability and transparency. Members of the initiative comprise six pioneer organizations: the Asia-Pacific Economic Cooperation (APEC), the Statistical Office of the European Communities (Eurostat), the International Energy Agency (IEA), the Latin-American Energy Organization (OLADE), the Organization of Petroleum Exporting Countries (OPEC) and the United Nations (through its Statistics Division) (JODI,⁸ 2013). More than 90 countries, representing around 90% of global oil supply and demand, participate in submitting critical energy data through the initiative (JODI, 2013).

2. Energy security and trade implications for regional trade agreements – the case of the Asia-Pacific Trade Agreement

The Asia-Pacific Trade Agreement (APTA),⁹ the oldest preferential trade agreement among developing countries of the Asia-Pacific region, aims at promoting South-South regional trade through the exchange of mutually-agreed concessions by member countries. The objectives of APTA, as stipulated in Article 2 of the revised text, are:

⁸ Joint Organisations Data Initiative, jodinfo@ief.org.

⁹ ESCAP's Trade, Investment and Innovation Division functions as the APTA Secretariat.

“To promote economic development through a continuous process of trade expansion among the developing member countries of ESCAP and to further international economic cooperation through the adoption of mutually beneficial trade liberalization measures consistent with their respective present and future development and trade needs.”

In order to achieve these objectives, the members exchange tariff concessions among themselves on selected goods.

This subsection discusses how Participating States of APTA are trading in energy and whether APTA can be useful in connecting the Participating States with the other economies of the Asia-Pacific region in enhancing energy trade and facilitating energy security.

Efforts aimed at achieving energy security through connectivity and integration are being undertaken at various levels. Given the importance of international trade with regard to energy integration, a platform to facilitate trade in energy at a much lower cost is a requisite. Most countries, even those that are highly dependent on energy, charge import duties and other taxes on imports. This raises the cost of energy for the ultimate consumer and consequently has a spillover effect on other economic activities and development. In order to create a more efficient and cheaper energy trade system, and thus a more secure option, it is important to implement a trade agreement among the countries that are part of shared national, subregional or regional energy supply and demand connectivity. Having preferential terms of trade through some agreement would thus be important for energy security in the long term. In this regard, it is essential to examine whether a framework exists in Asia and the Pacific for facilitating energy security through a trade agreement or if a new initiative is required on this front. This subsection examines this aspect.

The Asia-Pacific Trade Agreement applies to goods traded at the regional level. It is open to developing member countries of ESCAP. Currently, there are more than 150¹⁰ preferential trade agreements in Asia and the Pacific. The Asia-Pacific Trade Agreement being reviewed for this report, as it is the only agreement that is region-wide and includes among its Participating States the three major economies of Asia and the Pacific – China, India and the Republic of Korea – which are the greatest users of energy in the region. The Agreement is legally binding and tariff concessions on goods are being exchanged under it. Focusing on a subregional agreement/grouping, instead individual country-specific energy demand, can benefit not only the Participating States of APTA, but also other countries that become a part of energy supply chain. Limited concessions on energy goods have already been given under APTA in the Fourth Round of negotiations as shown in table 10.4.

Energy security through international trade is important to the Participating States of APTA. China, India and the Republic of Korea remain among the top importers of the three primary fossil fuels (oil, gas and coal). Conversely, Azerbaijan, the Islamic Republic of Iran, Kazakhstan, the Russian Federation and Turkmenistan are the top fossil fuel exporters in the region. In view of this fact, the following subsection examines how the Participating States of APTA as well as the Central Asian and South Asian economies will benefit if they all accede to APTA and exchange preferential tariff concessions on energy.

¹⁰ ESCAP Asia-Pacific Trade and Investment Database, April 2015.

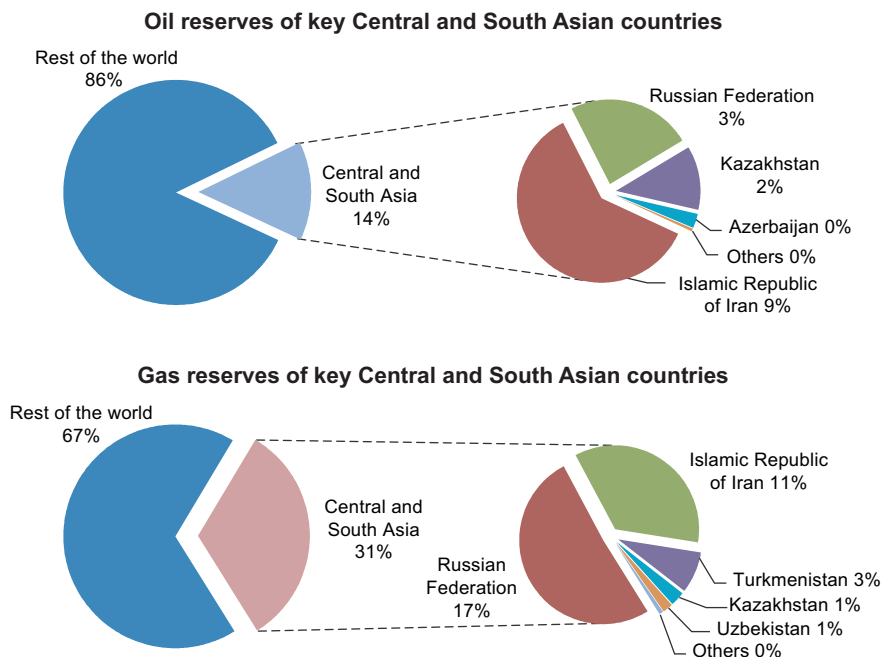
Table 10.4. Energy concessions given under the Asia-Pacific Trade Agreement in the Fourth Round negotiations

Energy source	Bangladesh	China	India	Lao People's Democratic Republic	Mongolia	Republic of Korea	Sri Lanka
Coal	No	Yes	Yes	No	No	No	Yes
Oil	No	No	No	No	No	Yes	No
LNG	Yes	No	No	No	Yes	No	No
Natural gas	No	No	No	No	No	Yes	No
Electricity	Yes	No	No	No	No	No	No

Source: Authors' compilation based on APTA concessions.

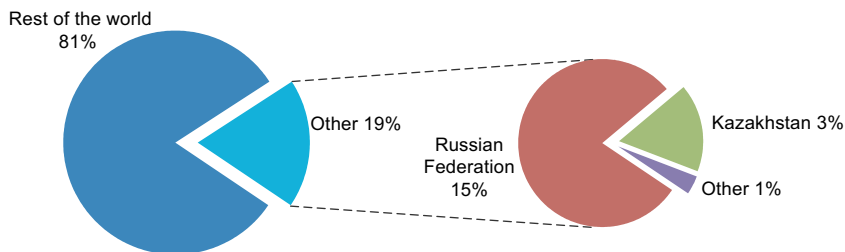
In addition to being large exporters of fossil fuels, the Central and South Asian countries possess significant fossil fuel reserves (figure 10.14). As a group, the 11 countries of Central Asia and South Asia,¹¹ possess 14% of global oil reserves, 31% of global gas reserves, and 19% of global coal reserve.

Figure 10.14. Fossil fuel reserves of key Central and South Asian countries



¹¹ The Central and South Asian grouping includes Armenia, Azerbaijan, Georgia the Islamic Republic of Iran, Kazakhstan, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan, Uzbekistan and Turkey.

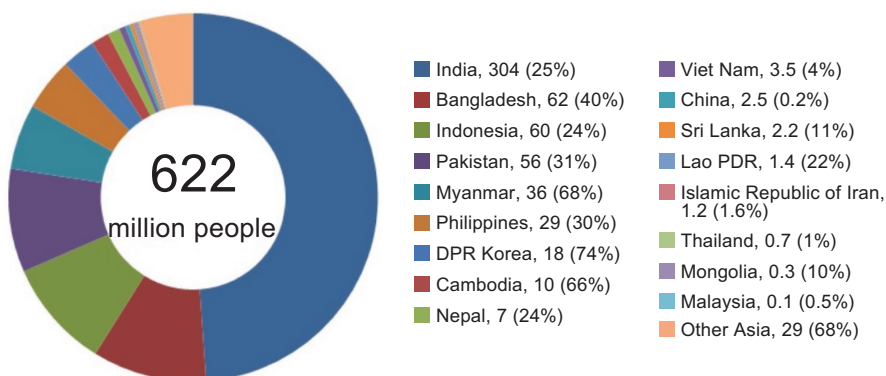
Coal reserves of key Central and South Asian countries



Source: Authors' calculations based on EIA International Energy Statistics.

The electricity trade is also a key issue for Participating States of APTA, as six out of the seven Participating States (the Republic of Korea is the exception) were among the countries in Asia and the Pacific with the greatest number of people without access to electricity in 2012 (figure 10.15).

Figure 10.15. Number of people without access to electricity in the Asia-Pacific region, 2012



Source: ESCAP' *Regional Trends Report on Energy for Sustainable Development in Asia and the Pacific 2015* (based on EIA, 2014).

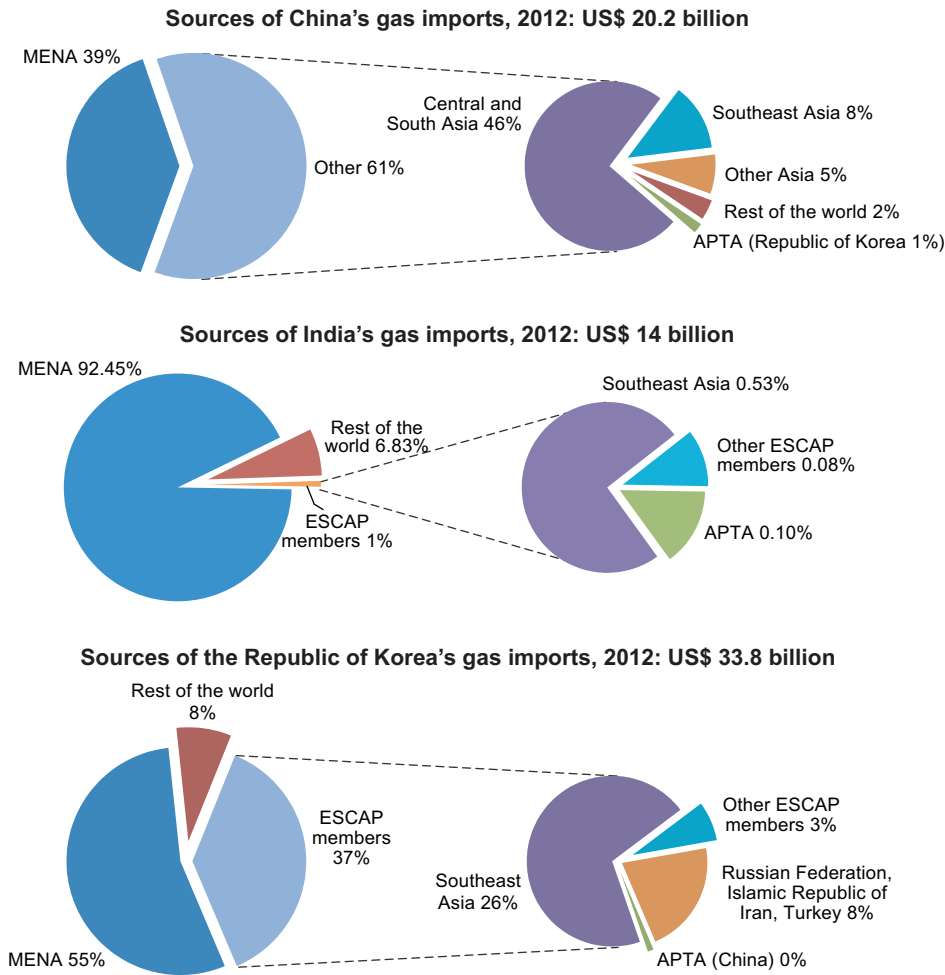
Despite the obvious benefits of enhanced energy trade between Central Asia, South Asia and Participating States of APTA, flows have been rather limited. China is an exception, having imported significant quantities of oil (22%) and gas (45%) from Central Asia and South Asia in 2012; however, the Republic of Korea and India imported only 10% and 9% of their total oil imports from that subregion, respectively, during the same year. On the other end of the spectrum, Sri Lanka and Bangladesh have yet to diversify their energy imports. Sri Lanka imports most of its gas from Oman and most of its coal from Indonesia. Gas imports by Bangladesh come predominately from South-East Asia. Moreover, half of the oil imports by Sri Lanka are sourced from the Middle East, with the other half coming from the Islamic Republic of Iran, whereas all oil imports by Bangladesh come from the

Middle East. Thus, there is tremendous potential for the Participating States of APTA to diversify their energy mix with imports from countries in Central Asia and South Asia. The export and import partners of the Participating States of APTA are shown in subsections 3 to 6 below.

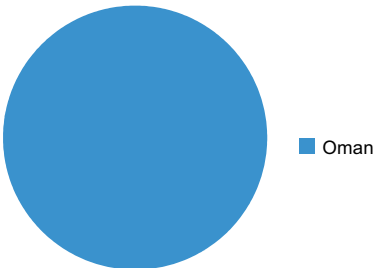
3. Imports of gas by APTA Participating States

Figure 10.16 shows the sources of gas imports by China, India, the Republic of Korea, Sri Lanka and Bangladesh in 2012; the highest imports were by the Republic of Korea and the lowest imports were by Bangladesh (2007 figure). In addition, while other jurisdictions imported gas from several other countries, Sri Lanka imported gas only from Oman.

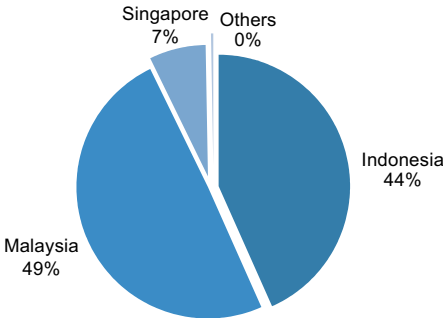
Figure 10.16. Sources of gas imports by Participating States of APTA



Sources of Sri Lanka's gas imports, 2012: US\$ 218.8 billion



Sources of Bangladesh's gas imports, 2007: US\$ 9.68 million

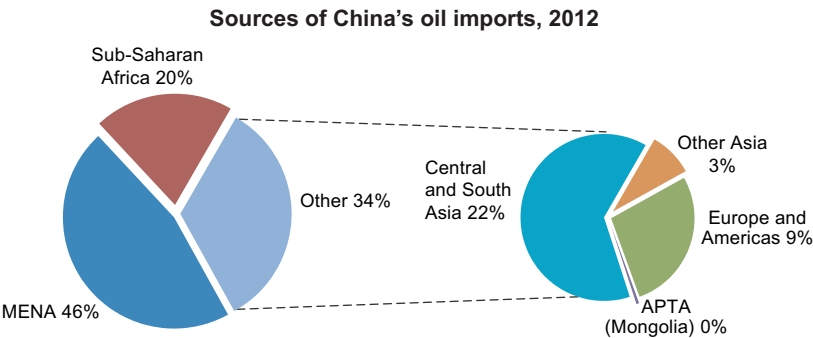


Source: Authors' calculation based on United Nations COMTRADE data, downloaded from WITS database (accessed November 2013).
Note: MENA – Middle East and North Africa.

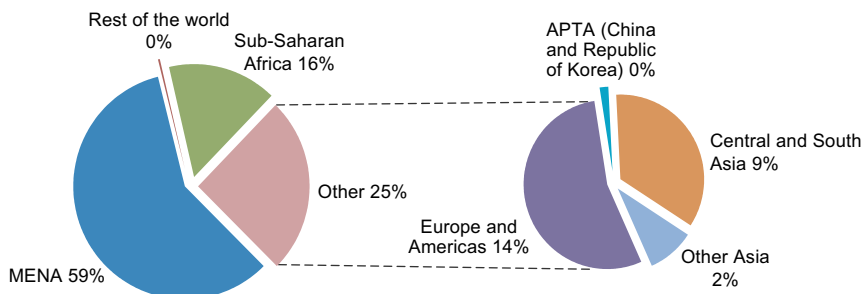
4. Imports of oil by Participating States of APTA

Several countries were the sources of oil imports by Participating States of APTA in 2012. Figure 10.17 shows that the Middle East and North Africa were the largest exporters of oil to Participating States of APTA, especially to the Republic of Korea. In the case of Bangladesh, the United Arab Emirates was the largest exporter (2007 figure).

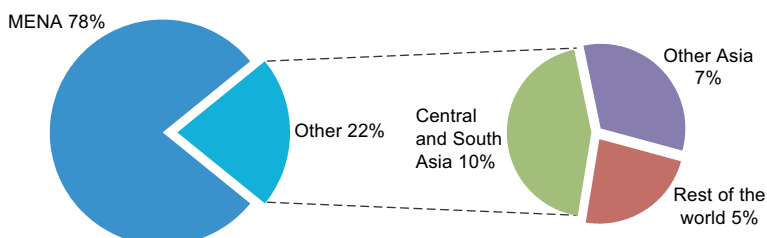
Figure 10.17 Sources of oil imports by Participating States of APTA



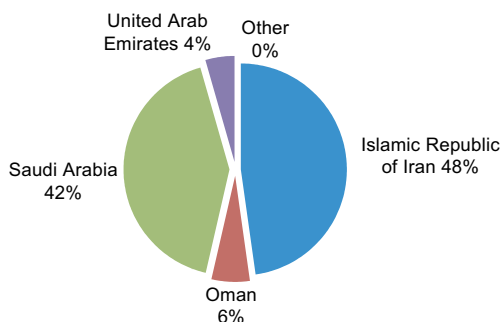
Sources of India's oil imports, 2012: US\$ 148.8 billion



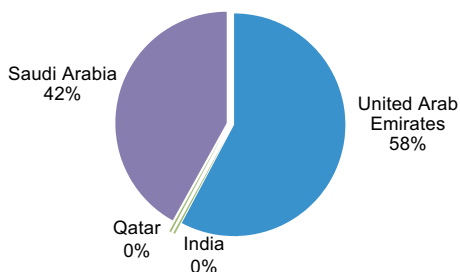
Sources of the Republic of Korea's oil imports, 2012: US\$ 108.3 billion



Sources of Sri Lanka's oil imports, 2012: US\$ 1.3 billion



Sources of Bangladesh's oil imports, 2007: US\$ 222 million

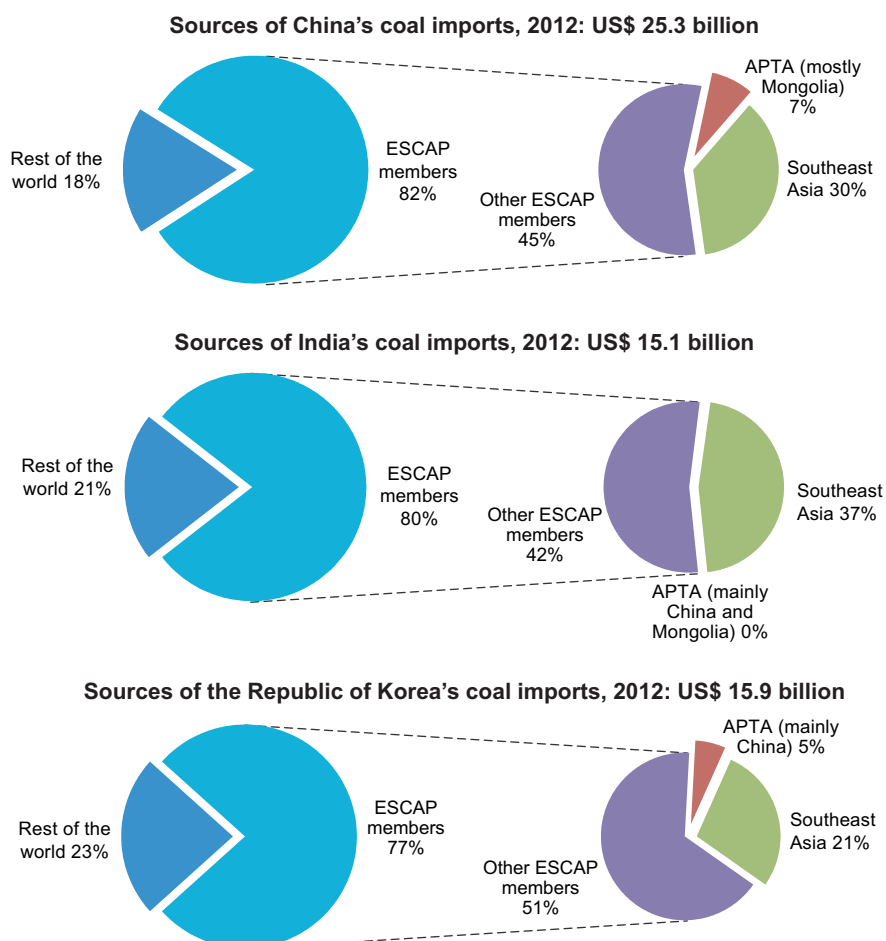


Source: Authors' calculation based on United Nations COMTRADE data downloaded from WITS database (accessed November 2013).

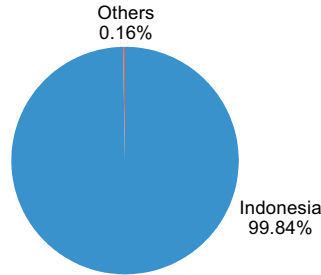
5. Imports of coal by Participating States of APTA

Figure 10.18 shows the source of coal imports by Participating States of APTA in 2012, which were mostly from ESCAP member countries, especially in China and India. More than 80% of coal imports by Participating States of APTA were from ESCAP member countries. In Sri Lanka, the largest coal imports were from Indonesia. China was the biggest exporter of coal to Bangladesh (2007 figure).

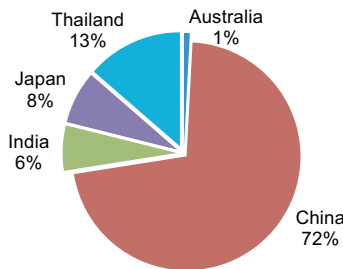
Figure 10.18. Sources of coal imports by Participating States of APTA



Sources of Sri Lanka's coal imports, 2012: US\$ 119.5 billion



Sources of Bangladesh's coal imports, 2007: US\$ 37,900



Source: ESCAP calculation based on United Nations COMTRADE data downloaded from WITS database (accessed November 2013).

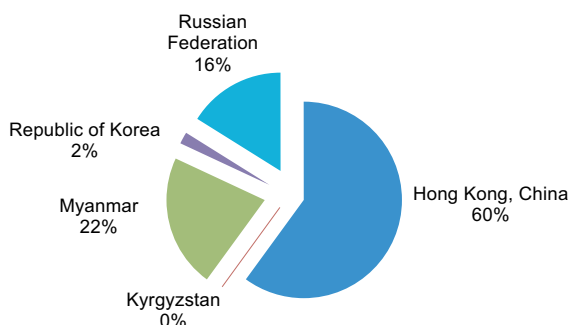
6. Imports of electricity by Participating States of APTA

Figure 10.19 shows the imports of electricity by Participating States of APTA. The highest imports in 2011 were by Hong Kong, China (60%), followed by Myanmar (22%). In 2012, while Hong Kong, China remained as the highest importer of electricity at 46%, but that was a decrease from 2011. The Russian Federation was second-highest at 35%, which was higher than in 2011.

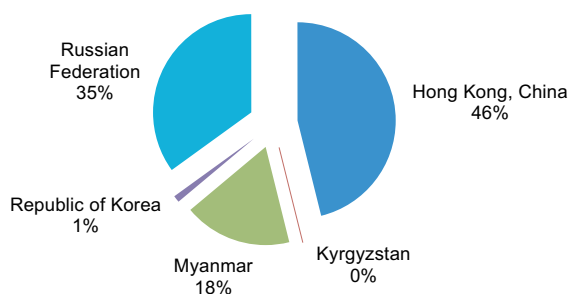
In contrast to its dependence on imports of fossil fuels, China is a net exporter of electricity. It has a reciprocal electricity trading relationship with Hong Kong, China as well as Myanmar and the Republic of Korea. Data for 2012 show that some 54% of the country's electricity exports went to Hong Kong, China, while 46% of its imports came from Hong Kong, China. Viet Nam and Macau, China are the two other major export destinations of China's electricity. China also supplies electricity in smaller quantities to the Democratic People's Republic of Korea, the Lao People's Democratic Republic, Mongolia and Myanmar. Fifty-three per cent of the electricity exports from China were taken by the Russian Federation and Myanmar. Also of note, if China's exports of electricity to its special administration regions of Macau, China and Hong Kong, China are not counted, China would have been a borderline net electricity importer at about \$17.34 million.

Figure 10.19. Imports of electricity by Participating States of APTA, 2011 and 2012

Imports of electricity by Participating States of APTA, 2011



Imports of electricity by Participating States of APTA, 2012

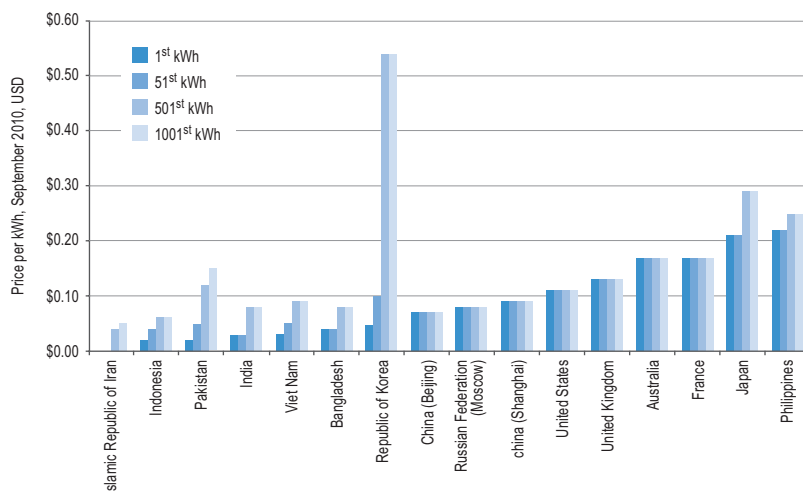


Source: ESCAP calculation based on United Nations COMTRADE data downloaded from WITS database (accessed November 2013).

Electricity is not a physical good. Consequently capturing trade data on it is more complex compared to oil, gas, and coal. Other than China, data on electricity are limited for Participating States of APTA. However, for the Lao People's Democratic Republic it is possible to derive data on trade with Thailand. In 2012, the Lao People's Democratic Republic exported about \$797,497 million of electricity to Thailand, which represents 99% of its electricity imports. Conversely, the country imported about \$70.7 million of electricity from Thailand, or 45% of total electricity exports by Thailand. This highlights the successful bilateral connectivity that exists between these two countries. The bilateral trade is also reflective of the supply of electricity in different geographical regions within the countries – one province is a recipient while another is a supplier. With the implementation of the ASEAN Power Grid Project, electricity trade between the Lao People's Democratic Republic and Thailand as well as with the rest of ASEAN countries is expected to increase.

It appears that the Republic of Korea is self-sufficient with regard to electricity generation. This probably explains its high household electricity tariffs (figure 10.20).

Figure 10.20. Household electricity tariffs for selected ESCAP member States, September 2010



Sources: ESCAP Statistical Perspectives, 2013b; data were taken from GTZ "Power in G-20 and N-11 countries – At What Cost?", 2010.

Recognizing that spatial grid integration can bring the benefits of enhancing reliability and affordability, extensive plans to boost electricity trade have been undertaken within and across most of the ESCAP subregions, notably within the regions in the Greater Mekong Subregion and ASEAN. Similarly, such an initiative could also be undertaken in the Participating States of APTA, together with North-Central Asian countries.

7. Implications for accession of selected Central and South Asian countries to APTA

The Central and South Asian countries that are key players in energy trade include Armenia, Azerbaijan, Georgia, the Islamic Republic of Iran, Kazakhstan, Kyrgyzstan, Tajikistan, Turkey, Turkmenistan and Uzbekistan.

Notwithstanding the fact that export diversification by those countries is becoming increasingly important as Europe, their traditional market, gradually moves towards a renewable path. Central Asian and South Asian countries could also benefit from the geographical proximity, regional connectivity and climate synergy of trading their energy resources with Asia and the Pacific, especially if they were to get preferential market access to the Participating States of APTA. Central Asian countries also face unique geopolitical circumstances, particularly the landlocked countries located between the Russian Federation and the Islamic Republic of Iran, the two dominant energy players. The coastal States have strong interests in ensuring their continued energy dominance and that exports from Central Asia do not bypass them. Thus, Central Asian countries might face less geopolitical resistance if they were to send their energy exports to the connected countries

near to them. The APTA provides them with this opportunity to exploit the situation to their advantage. To do this, they will need to consider acceding to APTA. The process of accession is detailed in table 10.5.

Table 10.5. Accession process to Asia-Pacific Trade Agreement

Step	Action
1	An applicant country notifies the Executive Secretary of ESCAP of its intention to accede to APTA.
2	The Executive Secretary informs the existing Participating States of that intention, and the ESCAP secretariat prepares a programme of negotiations for approval by the Participating States of APTA.
3	Bilateral negotiations.
4	Multilateralization of agreed concessions.
5	The Agreement comes into force for an eligible acceding country on the date of deposit of its corresponding instrument of accession, accompanied by the National List of concessions and the related administrative notification (e.g., government notification, such as a customs notification) with the ESCAP Executive Secretary.

Source: Asia-Pacific Trade Agreement Brochure, ESCAP.

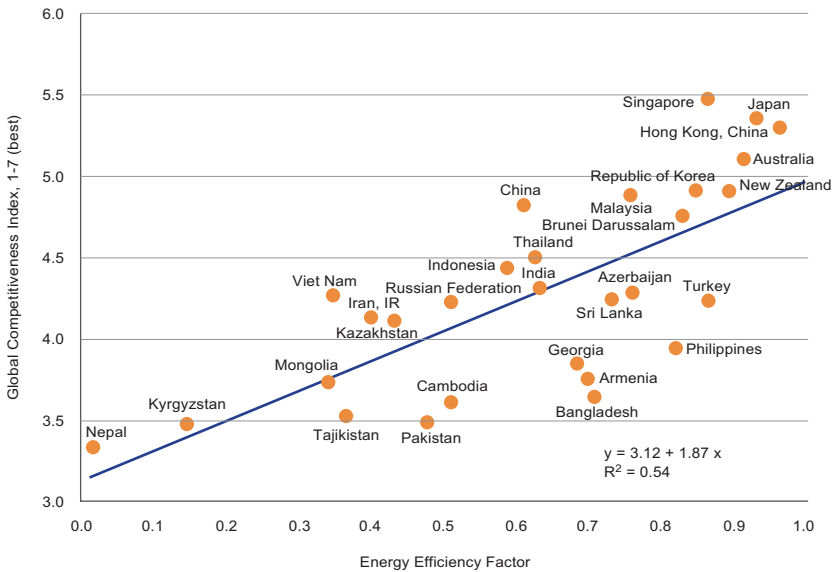
As noted above, the Central and South Asian subregion dominates electricity trade in Asia and the Pacific. There is vast potential for developing a power exchange relationship involving the subregion and some of the Participating States of APTA, specifically China and India, given their geographic proximity to the subregion. Electricity cooperation already exists among Afghanistan, Kyrgyzstan, Pakistan and Tajikistan under the CASA-1000 electricity transmission system project. The project's objective is the transfer electricity from hydropower facilities in the Kyrgyzstan and Tajikistan to electricity consumers in Afghanistan and Pakistan (CASA-1000, 2011). Hence, surplus power generation in Central Asian and South Asian countries during the summer months can be channelled for a profit to offset power shortages that frequently occur in Pakistan and Afghanistan during that period. The difference in climate conditions in the two subregions – some countries in Central Asia and South Asia are only prone to power shortages during winter, as opposed to South Asia, which requires more electricity during summer – created an opportunity for mutual gain.

Another major challenge for the Central Asian and South Asian countries that can be addressed through deepening their engagement with Participating States of APTA is energy intensity. Energy intensity refers to the energy required to produce a unit of GDP. It is used to measure energy efficiency and conservation. As mentioned in the ADB Asia-Pacific Energy Outlook 2013, energy efficiency and conservation is a means of enhancing energy supply security, especially for countries facing limited resources. It is affected by various factors, including industry structure, technology, lifestyle and climate conditions. In addition, energy prices as well as access to infrastructure can also affect energy intensity.

Energy intensity in the Asia-Pacific region is very high, representing two-thirds of global energy intensity in 2010, mainly due to North Asian and Central Asian countries. The

subregion displays the highest energy intensity, about 1.75 times that of the average for ESCAP countries' average, making it highly energy inefficient. Energy efficiency is positively correlated with economic competitiveness. Thus, economic development in countries such as Armenia, the Islamic Republic of Iran, Kazakhstan, Kyrgyzstan and Tajikistan are hampered by energy usage inefficiencies (figure 10.21).

Figure 10.21. Energy efficiency and economic competitiveness,¹² 2010



Sources: ESCAP Statistical Perspectives, 2013b; and data were taken from IEA and NAMAD.

By acceding to APTA, the countries of Central Asia and South Asia could benefit from technology transfer to ameliorate their energy efficiency performance, as it would facilitate transfers of hard and soft technologies from Participating States of APTA, i.e., China, India and the Republic of Korea. Implementation of the framework agreements on trade in services, trade facilitation and investment will promote intraregional investment flows as well as establish backward-forward linkages between industries and a regional supply chain. The higher trade volumes resulting from the framework agreements will generate greater domestic economic activity in meeting the developmental objectives of the countries of Central Asia and South Asia. In addition, given the fact that tariff concessions are offered on numerous items, the Central Asian and South Asian countries could diversify their export commodities to Participating States of APTA to include miscellaneous other products (non-energy related) and services.

¹² The Global Competitiveness Index is a composite statistic published annually by the World Economic Forum. The Energy Efficiency Factor is derived by subtracting final energy intensity from 1. A higher value represents greater efficiency.

C. Conclusion

Efforts aimed at achieving energy security in Asia and the Pacific have mostly favoured bilateral approaches, with the bulk of energy trade occurring with extraregional countries. Regional cooperation has occurred mainly within established subregional groupings, such as ASEAN. As a result, periphery countries have largely been marginalized, even though such countries tend to possess rich resources. This chapter has also shown that there is vast potential for synergistic gains to be achieved through intraregional trade pacts that are backed up with energy security goals.

APTA is poised to serve as a framework for effective cooperation in energy trade. It not only spans East Asia and South Asia to include LDCs together with the three major economies in the region; it is also the only operational trade agreement linking the economic powerhouses of China and India. Under the Fourth Round negotiations, tariff concessions have been both widened and deepened for more than 10,000 mutual-interest items (ESCAP, 2013a). In addition, certain items related to energy are already present in this concession list, thus providing a foundation for the expansion of energy trade.

Although this chapter has not analysed clean technology and renewable energies in detail, through APTA, there are potential gains for the Participating States of APTA as well as Central Asian and South Asian countries with regard to clean energy technology transfers and harmonizing of power grids to overcome the problem of intermittency in using renewable energy sources. Asia and the Pacific is considered to be the most dynamic region in terms of application of climate-smart goods and technologies (ESCAP, 2011b),¹³ with the Participating States of APTA leading the way. Hence, there exists a mutually beneficial opportunity for consolidated trade cooperation. According to a report by The Pew Charitable Trusts Research Center (2013), China “advanced its position as the epicentre of clean energy finance” in 2012 and the Asia-Pacific region became the “leading regional destination for clean energy financing” amid a decline in other parts of the world. Thus, the strategic combination of fossil fuels and clean/renewable energies can forge a clear path for sustainable energy transition for the Participating States of APTA as well as Central Asian and South Asian countries without sacrificing growth.

In view of the above analysis of trends, Central Asian and South Asian countries and the Participating States of APTA should consider jointly working towards expanding APTA membership to attain a ‘win-win’ situation for energy trade and energy security. As APTA is open-ended, it is easy for any ESCAP member to seek accession, which would also facilitate the free flow of goods and technological know-how for creating energy efficiency.

¹³ During 2002-2008, imports of climate-smart goods and technologies increased six-fold.

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