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**CAPACITY DEVELOPMENTS IN THE WORLD STEEL INDUSTRY**

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## FOREWORD

OECD Steel Committee delegates discussed a draft of this report at the Steel Committee meeting on 30 November and 1 December 2015. Delegates agreed to declassify the report in February 2016. The report will be made available on the Steel Committee website: <http://oe.cd/steel>.

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## **CAPACITY DEVELOPMENTS IN THE WORLD STEEL INDUSTRY**

Naoki Sekiguchi, Hokuto Otsuka, Anthony de Carvalho, Filipe Silva

OECD Paris

### **ABSTRACT**

Excess capacity is a pressing challenge facing the global steel sector today. In order to improve transparency and provide policymakers with the necessary data for pursuing policies in the area of steel, the Secretariat of the OECD Steel Committee has been monitoring steelmaking capacity developments closely and will continue to do so. This paper provides an overview of recent steelmaking capacity developments around the world, including projections until 2017, based on data available until December 2015. Despite the currently high level of global excess steelmaking capacity and weak market conditions, capacity is projected to grow further in 2015-2017. Capacity in the OECD area is expected to remain roughly unchanged, with a few new projects being offset by capacity closures. Much of the world's capacity growth is likely to occur in regions that are currently net importers of steel. As a result of numerous investment projects currently taking place around the world, global steelmaking capacity is projected to increase to 2.42 billion tonnes per year by 2017, with non-OECD economies accounting for approximately 72.4% of the total capacity in 2017.

Keywords: Steel; Capacity; Investment; Data

JEL Classification: L61; Y1

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## CAPACITY DEVELOPMENTS IN THE WORLD STEEL INDUSTRY

### I. Background

Excess capacity is a pressing challenge facing the global steel sector today. In order to improve transparency and provide policymakers with the necessary data for pursuing policies in the area of steel, the Secretariat of the OECD Steel Committee has been monitoring steelmaking capacity developments closely and will continue to do so. This monitoring work has involved two broad activities: *i*) steelmaking capacity developments in non-OECD economies; and *ii*) new investment projects in crude steelmaking capacity. The Secretariat is now making efforts to improve its data infrastructure by monitoring postponements/cancellations of new or proposed projects as well as plant closures. Box 1 explains these three broad monitoring activities in more detail.

This paper provides an overview of recent steelmaking capacity developments around the world, and provides projections of capacity until 2017. As explained in Box 1, in December 2015 the Secretariat completed its updates of the two-yearly study of capacity developments in non-OECD economies and its yearly update of the investment project database for OECD and non-OECD economies. It also started to take into account project postponements/cancellations as well as plant closures in the projections to 2017. Taken together, these three updates were employed to produce the capacity projections presented in this document. It should be noted that there are considerable uncertainties with respect to closure information (e.g., permanent versus temporary closures), and that capacity numbers are likely to evolve rapidly with incoming information. The figures presented in this document are based on data available until December 2015.

The next section of this report provides a global summary of capacity developments by region. The third section summarises postponements/cancellations of investment projects as well as recent information on closures. Section 4 presents the two-yearly report on steelmaking capacity of non-OECD economies, highlighting key investment projects by economy and accompanied by policy information in some cases.

### Box 1. Capacity monitoring activities

The Secretariat has been monitoring steelmaking capacity developments for many years. Much of this work has been made possible through the generous support of the Japan Iron and Steel Federation, which has seconded staff to the OECD to help monitor capacity developments. The two main outputs have been the two-yearly publication *Developments in Steelmaking Capacity of Non-OECD Economies* and, more recently, a continuously updated database of new and proposed crude steelmaking investment projects taking place in both OECD and non-OECD economies. Greater efforts are now being made to gather information on postponements/cancellations of planned projects over time as well as information on the closure of steelmaking capacities.

- **Steelmaking capacity developments in non-OECD economies.** In the past, the Secretariat prepared a publication on steelmaking capacity developments in non-OECD economies every two years. The series includes a number of editions available online at: [http://www.oecd-ilibrary.org/industry-and-services/developments-in-steelmaking-capacity-of-non-oecd-countries\\_19991606](http://www.oecd-ilibrary.org/industry-and-services/developments-in-steelmaking-capacity-of-non-oecd-countries_19991606). In the past, this publication included detailed tables of existing and planned new steelmaking capacity facilities in hardcopy format. In light of developments taking place broadly at the OECD with the aim to increase transparency, strengthen the Organisation's statistical infrastructure and facilitate the access to statistical outputs, the database and the contents of the publication *Developments in Steelmaking Capacity of Non-OECD Economies* will now be provided on-line (on the OECD steelmaking capacity portal, available at: <http://www.oecd.org/sti/ind/steelcapacity.htm>) in a user-friendly format and more amenable for statistical analysis instead of in hardcopy format. The analytical content of the publication that summarises capacity developments and the economic context across non-OECD economies was updated in December 2015, and is provided in a specific section of this paper.
- **New investment projects in crude steelmaking capacity.** To better understand the evolution of global steelmaking capacity, in 2014 the Secretariat started to monitor steel investment projects taking place around the world. The first monitoring report, prepared in June 2014 (OECD, 2014), as well as the policy paper released in early 2015 (OECD, 2015) showed that, despite the currently high level of global excess steelmaking capacity and relatively weak demand conditions, investments continue to take place at a rapid pace and many new steel plants are likely to come on stream in many regions of the world over the next few years. This work stream complements the activity on steelmaking capacity developments in non-OECD economies insofar as it provides information on new crude steelmaking capacity additions that are planned or underway not only in non-OECD economies, but also in the OECD region. Accordingly, this report also provides a very brief update of steelmaking capacity developments taking place in the OECD region. The investment project database was updated in December 2015.
- **Changes in the status of investment projects and capacity closures.** At the last two sessions of the Steel Committee in December 2014 and May 2015, the OECD Secretariat was asked to improve the collection of data on new investments in crude steelmaking capacity by including new features, such as information on modifications to planned projects over time as well as information on the closure of capacities. Accordingly, the Secretariat has started collecting additional information regarding cancellations and postponements of new investment projects. In addition, the Secretariat is currently working with external experts to compile information on steelmaking capacity closures. This paper provides a very brief overview of the recent modifications (postponements and cancellations) to new crude steelmaking capacity investment projects and identifies some major closures.

## II. Global summary of steelmaking capacity

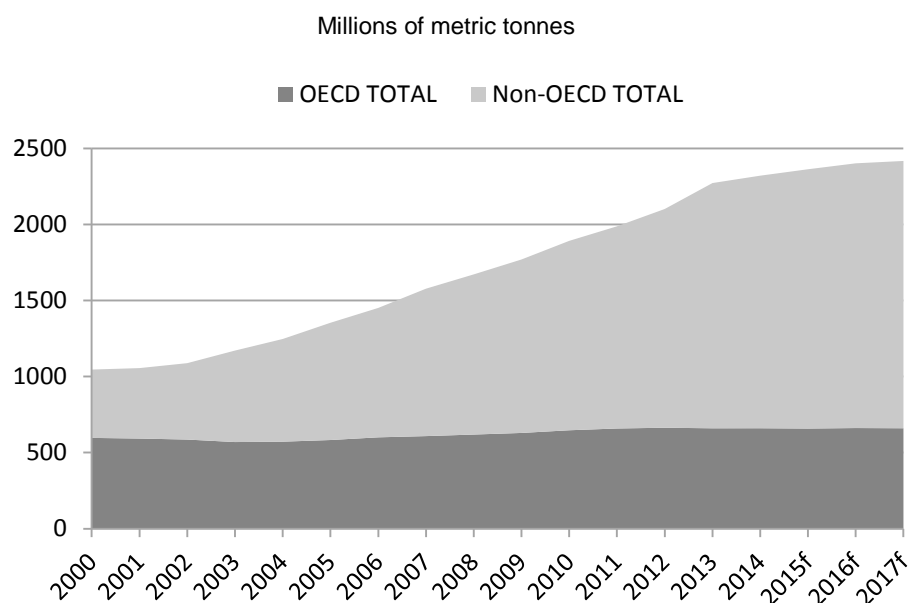
Global steel demand has increased steadily over the past decade (at an average annual rate of 4.2% in crude steel equivalent terms), reaching a record high level of 1.66 billion tonnes in 2014. World steelmaking capacity (in nominal terms) expanded at a faster rate than demand, rising from 1.35 billion tonnes per year (tpy) in 2005 to 2.32 billion tpy in 2014, i.e. at an average annual rate of 6.2%. Most of the growth in steelmaking capacity has occurred in non-OECD economies, which accounted for 71.5% of global steelmaking capacity in 2014.

Despite the currently high level of global excess steelmaking capacity and weak market conditions, capacity is projected to grow further in 2015-2017, though developments will vary widely across regions. Capacity in the OECD area is expected to remain roughly unchanged, with a few new projects being offset by capacity closures. Much of the world's capacity growth is likely to occur particularly in regions that are currently net importers of steel. Many developing economies are aiming to increase their so-called "self-sufficiency rates" (domestic production as a share of national steel consumption) and to improve their steel trade balances. As a result of numerous investment projects currently taking place around the world, global steelmaking capacity is projected to increase to 2.42 billion tpy by 2017, with non-OECD economies accounting for approximately 72.4% of the total in 2017.<sup>1</sup>

An examination of regional trends suggests that Asia will account for the largest part of the non-OECD steelmaking capacity increase until 2017. Asian capacity is currently expected to increase by 71.5 million tpy in the period to 2017, accounting for 71.3% of the total 100.3 million tpy increase for all non-OECD economies. This is followed by the Middle East (with 18.1 million tpy capacity increase), Latin America (4.6 million tpy), the Commonwealth of Independent States (4.1 million tpy) and Africa (2.0 million tpy). In contrast, no capacity additions are being planned in non-OECD European countries.

Within the OECD area, a slight net increase in capacity in the North American Free Trade Agreement (NAFTA) region of 1 million tpy is expected in the period until 2017, the result of a 3.2 million tpy increase in Electric Arc Furnace (EAF) capacity being offset by closures amounting to 2.2 million tpy of Basic Oxygen Furnace (BOF) capacity. In OECD Asian countries, decisions have already been taken to reduce production capacity, which will more than offset some projected capacity increases. On net, OECD Asian capacity is expected to decline by 1.1 million tpy by 2017. Elsewhere in the OECD, capacity is expected to remain unchanged during the forecast horizon.

Combining these regional projections, Figure 1 below shows the development of global capacity, by OECD and non-OECD aggregates as of October 2015. Due to the challenging market conditions, the pace of new capacity additions in the world has been moderating since 2014, driven mostly by slower capacity growth in some non-OECD economies. The overall increase in steelmaking capacity in non-OECD economies between 2014 and 2017 will be around 6%, compared to the rapid capacity build-up of 25% experienced during the equivalent 3-year period between 2011 and 2014. As noted above, OECD capacity will remain more or less unchanged. All in all, world capacity is expected to increase to 2 422 million tpy in 2017, which is 61 million tpy more than what was estimated in early 2015 before the update of the investment project database. However, it should be pointed out that information about the status of investment projects as well as possible plant closures is evolving rapidly in the current period, implying a high degree of uncertainty in the projections.

**Figure 1. World crude steelmaking capacity**

Source: OECD Secretariat calculations.

### III. Regional capacity developments

#### *Non-OECD economies*

Table 1 presents the capacity projections by non-OECD region/economy until 2017. Although the rate of growth of Chinese capacity is slowing significantly, supported by government policy measures aimed at constraining the industry's expansion, the construction of some very large integrated steel plants may keep the level of capacity on an upward path. Many Chinese mills are also looking to build steel plants in overseas markets, such as Southeast Asia and Africa, as the overcapacity challenge is making it difficult for companies to make a profit in the domestic market. As a result of several investment projects, steelmaking capacity in People's Republic of China (hereafter 'China') is expected to increase from 1.14 billion tpy to 1.17 billion tpy between 2014 and 2017, i.e. a lower rate of increase than that observed in recent years.

In India, significant amounts of new production capacity are scheduled to come on stream in the next few years to meet domestic demand. However, capacity expansions (particularly greenfield projects) have proceeded slowly in recent years due to obstacles associated with land acquisition and difficulties in obtaining the required environmental and forest clearances. The main contribution will come from brownfield expansions, which do not require dealing with prolonged land acquisition processes. Steelmaking capacity in India is expected to increase from 108.0 million tpy to 138.8 million tpy between 2014 and 2017.

Although the Association of Southeast Asian Nations (ASEAN) region has traditionally been a large net importer of steel, many greenfield integrated steel plant projects have been announced, possibly because steel demand growth was relatively strong over the last few years. Investment in new steelmaking capacity by Chinese steelmakers is also taking place in the region. Steelmaking capacity in ASEAN-6<sup>2</sup> is projected to increase from 44.9 million tpy in 2014 to 57.0 million tpy in 2017.

The Middle East has also traditionally been a substantial importer of steel products because it did not have much steelmaking capacity until the middle of the last decade. Many projects have been announced

recently in order to reduce import dependency. The Middle East might become the fastest-growing steel-producing region in the period until 2017. However, the oil market downturn and barriers such as insufficient power generation capacity as well as geopolitical tensions could hamper future growth in steelmaking capacity. Steelmaking capacity in the non-OECD Middle East region<sup>3</sup> is expected to increase from 57.6 million tpy in 2014 to 75.7 million tpy by 2017.

In the Commonwealth of Independent States (CIS) region, efforts to modernise steel production facilities continue to take place, with several mini-mill projects and the replacement of outdated open-hearth furnaces (OHF) with new BOF and EAF having been announced. Several long product mini-mill projects have been planned to meet steel demand from the growing construction sector in the region. CIS steelmaking capacity is projected to increase somewhat, from 146.7 million tpy in 2014 to 150.8 million tpy by 2017.

In Africa, various upstream projects are taking place, with a view to promoting industrialisation and economic development. However, technical and electricity/gas supply problems as well as political unrest have delayed the start-up of some projects. These projects are concentrated in northern Africa and have the objective of supplying steel for housing and infrastructure projects. Steelmaking capacity in Africa is forecast to increase from 33.9 million tpy in 2014 to 35.9 million tpy by 2017.

**Table 1. Estimates for non-OECD steelmaking capacity until 2017**

Unit: million tonnes

	Existing 2014 (A)	Increase to 2017		Capacity in 2017		Changes	
		Underway (B)	Planned (C)	Low (A)+(B)	High (A)+(B)+(C)	Volume (B)	% (A+B)/(A)
Non-OECD Europe	8.3	0.0	0.0	8.3	8.3	0.0	0.0
CIS	146.7	4.1	9.5	150.8	160.3	4.1	2.8
Russian Federation	89.0	4.1	7.0	93.1	100.1	4.1	4.6
Ukraine	42.5	0.0	1.5	42.5	44.0	0.0	0.0
Latin America	68.1	4.6	16.8	72.7	89.5	4.6	6.8
Brazil	48.0	2.0	12.8	50.0	62.8	2.0	4.2
Africa	33.9	2.0	14.6	35.9	50.5	2.0	5.9
Egypt	11.2	2.0	2.0	13.2	15.2	2.0	18.0
Middle East	57.6	18.1	34.0	75.7	109.7	18.1	31.4
Iran	27.0	11.8	22.9	38.8	61.7	11.8	43.7
Saudi Arabia	12.5	4.7	6.2	17.2	23.4	4.7	37.9
Asia	1337.6	71.5	256.4	1409.1	1665.5	71.5	5.3
China	1140.0	27.7	13.3	1167.7	1181.0	27.7	2.4
India	108.0	30.8	206.7	138.8	345.5	30.8	28.5
Other Asia	89.6	13.0	36.4	102.5	138.9	13.0	14.5
Non-OECD TOTAL	1652.1	100.3	331.3	1752.5	2083.8	100.3	6.1

Notes: CIS denotes the Commonwealth of Independent States. ASEAN-6 denotes the aggregate of Indonesia, Malaysia, Philippines, Singapore, Thailand and Viet Nam. Low refers to the capacity level resulting from all projects currently underway (A+B), while high refers to the level resulting from all projects currently underway and planned (A+B+C). Changes in capacity are estimated based on the capacity additions that are considered "underway" (B).

Source: OECD Secretariat calculations.

*OECD economies*

Table 2 displays the projected capacity development for OECD economies/regions. Among OECD countries, several projects are currently underway and expected to add 2.1 million tonnes of crude steelmaking capacity by 2017. However, a number of closures are expected to reduce steelmaking capacity by around 2.17 million tonnes, leading to a net decrease in total crude steelmaking capacity of 70 thousand tonnes in the period until 2017. For the OECD area as a whole, therefore, steelmaking capacity is expected to remain roughly unchanged in the period until 2017. A brief summary of new capacity additions and closures by OECD region is provided below.

- There are no capacity additions underway in European Union.
- There are no capacity additions underway in OECD Member countries located in “Other Europe”, i.e. Norway, Switzerland, and Turkey.
- In the North American Free Trade Agreement (NAFTA) region, an addition of 1.2 million tpy of EAF-based steelmaking capacity is planned by 2017. Identified closures in the region amount to 0.18 million tpy of BOF steelmaking capacity, leading to a net steelmaking capacity increase of 1.02 million tpy.
- In Latin America, there are no capacity additions underway in Chile.
- In the Middle East region, there are no capacity additions underway in Israel.
- In Oceania, there are no capacity additions underway in Australia and New Zealand.
- In the Asian region, total crude steelmaking capacity additions currently underway in OECD Member countries (i.e., Japan and Korea) amount to 0.9 million tpy. Most of these projects involve EAF technology. However, as part of a rationalisation process and structural reform in the industry, decisions have already been taken to reduce production capacity. Total crude steelmaking capacity closures in the region amount to 1.99 million tpy. Overall, the net change in crude steelmaking capacity will be negative and amount to 1.09 million tpy by 2017.

**Table 2. Estimates for OECD steelmaking capacity until 2017**

OECD Economies

	Existing 2014 (A)	Increase to 2017		Capacity in 2017		Changes % (A+B)/(A)
		Underway (B)	Planned (C)	Low (A)+(B)	High (A)+(B)+(C)	
<b>OECD Europe</b>	281.0	0.0	4.4	281.0	285.4	0.0
Other Europe	57.7	0.0	4.4	57.7	62.1	0.0
Turkey	49.4	0.0	4.4	49.4	53.8	0.0
<b>NAFTA</b>	160.4	1.0	10.3	161.4	171.7	0.6
<b>Oceania</b>	9.1	0.0	5.0	9.1	14.1	0.0
Australia	8.2	0.0	5.0	8.2	13.2	0.0
New Zealand	0.9	0.0	0.0	0.9	0.9	0.0
<b>OECD Latin America</b>	1.5	0.0	0.0	1.5	1.5	0.0
Chile	1.5	0.0	0.0	1.5	1.5	0.0
<b>OECD Middle East</b>	0.5	0.0	0.0	0.5	0.5	0.0
Israel	0.5	0.0	0.0	0.5	0.5	0.0
<b>OECD Asia</b>	217.0	-1.1	0.8	215.9	216.7	-0.5
Japan	131.1	-2.0	0.0	129.1	129.1	-1.5
Korea	85.9	0.9	0.8	86.8	87.6	1.0
<b>OECD TOTAL*</b>	669.5	-0.1	20.5	669.4	689.9	0.0

Source: OECD Secretariat calculations.

#### IV. Postponements, cancellations and closures of capacity

##### *Postponements and cancellations*

At the last session of the Steel Committee in May 2015, the OECD Secretariat was requested to provide additional information regarding cancellations and postponements of new investment projects. Since then, some cases of postponement or cancellation of investment projects have been identified. These changes are reflected in the updated investment project database and a brief summary is provided below.

- In the Commonwealth of Independent States (CIS) region, planned or underway investment projects amounting to a total of 3.33 million tpy steelmaking capacity have been postponed (2.88 million tpy) or cancelled (0.45 million tpy). The majority of the investment projects concerned intend to deploy EAF-based facilities. Reasons cited for the postponement and cancellation are weak market conditions, shortages of funding, and difficulties in finding suitable sites for some mills.
- In Africa, an investment project that planned to commission EAF-based plants has been put on hold due to power connection issues. The production capacity of investments that were postponed is estimated at 2.05 million tpy.
- In the Middle East, investment projects which aim to add 2 million tpy of steelmaking capacity have been postponed because of power connection issues, and a lack of financing sources. In addition, a project with an estimated capacity of 0.24 million tpy has been cancelled. The total

amount of cancellations and postponements amounts to 2.24 million tpy. Most of these projects focus on the EAF production route, which is common in the region.

- In Asia, new investment projects which plan to add 1.57 million tpy of EAF steelmaking capacity in the region have been put on hold due to the current economic situation and market conditions. An additional project with planned EAF capacity of 0.6 million tpy has been cancelled, bring the total amount of cancellations and postponements to 2.17 million tpy.
- Within the OECD area, the status of several Turkish projects has changed, with some cancellations and postponements observed. For example, BOF and EAF projects amounting to 2.4 million tpy, slated to come on stream in 2014 and 2015, have been cancelled. Moreover, a 500 000 tonne EAF project that was underway for completion this year has been postponed.

Overall, new investments projects that were either planned or underway totalling 9.79 million tpy have been postponed or cancelled in different regions in the world, some due to market conditions and others as a result of technical difficulties encountered (e.g. location or funding). The OECD Secretariat will continue to monitor these developments and reflect any changes in the steelmaking capacity estimates. Delegates are encouraged to provide comments and corrections on the information disclosed to ensure maximum accuracy.

### *Closures*

Closures are particularly challenging to incorporate in capacity forecasts, given difficulties in discerning permanent from temporary closures. Often, reference to a closure means that a company is selling assets and/or is restructuring, in which case the assets remain in place and possibly become operable under a new owner in the future. The so-called mothballing of a plant will stop production at the plant, but the capacity is preserved by the owner and may be restored if needed. Moreover, in some instances closures of a plant occur when the steel company is opening a more modern and usually bigger plant. These and many other factors suggest that there are difficult distinctions to be made about closures that are likely to reduce capacity permanently, capacity that is made latent and which can be put back into production at some point in the future and closures that are merely replaced by more modern equipment. Political decisions taken after the announced closure may also change the eventual nature and scope of the closure, adding to these uncertainties.

Incoming information about potential recent and future closures is still quite scattered. Most of the plants affected so far appear to be BOF-based plants, but this may reflect the fact that such facilities are larger than EAF plants and affect more workers, and thus they receive more media attention than EAF closures. Moreover, a serious caveat is the need to obtain information on the closure of Chinese steel plants. However, the Secretariat hopes to address these issues in the future through a joint project with the Development Research Center of China on industrial upgrading. A brief summary of potential closures are listed below and an explanation is provided on whether or not they were taken into account in the capacity forecasts.

- In the European Union, there appears to have been a total of around 6.7 mmt of closure in 2014, occurring in Belgium, Italy and Hungary. The age of the BOF plants ranged from 32 to 51 years. Including a 2.5 mmt closure in Belgium in 2013, the total amount of capacity closure in the EU since 2013 has been 9.2 mmt. These are taken into account, and reflected in the Secretariat's existing capacity for the EU in 2014. Very recently, there has been an announcement of a 3.9 mmt capacity closure in the UK. This has not yet been included in the capacity estimate for the EU.

- In the NAFTA region, closure information has emerged during 2015, with two potential BOF closures in Canada and one in the U.S. The combined capacity is 7.47 mmt. Because recent news suggested that the company in Canada was seeking an order to continue operations and obtain further relief, the Canadian closures have not yet been accounted for in the 2015 NAFTA capacity figure until there is further confirmation. The U.S. closure was included in the NAFTA capacity estimate, because the company involved made reference to a permanent shutdown of the blast furnace.
- In Asia, closures in Korea amounting to 2.68 mmt in 2014-2015 were referred to at previous sessions of the Steel Committee. In Japan, an EAF is closing a mill with a capacity of 400 000 tonnes in 2015. Another mini-mill decided to stop its last remaining electric-arc furnace and has started to dismantle it. Thus, a further 480 000 tonnes of EAF capacity will be closed in Japan by 2016. In addition, 1.4 mmt of Japanese blast furnace capacity will be shut down by 2017. These Korean and Japanese closures have been taken into account in the capacity estimates.
- Elsewhere, closures of 3 mmt of OHF capacity in India are planned, but given their uncertain nature, have not been taken into account in the capacity figures presented in this document. Reference to Russian closures amounting to approximately 3.8 mmt of capacity have also been referred to at recent sessions of the Steel Committee, but have not yet been taken into account due to uncertainties pertaining to the whether they are being replaced by other capacity. In the Middle East, closures in Qatar of 600 000 tonnes have also been announced, but are not confirmed.
- To summarise, a total of nearly 17 mmt of closures is reflected in the Secretariat's capacity figures. However, the current market downturn is likely to result in further closures over time of the financially weakest companies, and these figures may change rapidly. Moreover, there are a number of uncertainties surrounding closure estimates and further work will have to be done to improve the quality and comprehensiveness of the information. These issues will be discussed at the next session of the Steel Committee.

## **V. Developments in steelmaking capacity of Non-OECD economies: Two-yearly report**

### ***Recent developments***

#### *Trends in capacity, production and consumption*

The total steelmaking capacity of non-OECD economies expanded rapidly over the past decade, rising from 760.8 million tpy in 2005 to 1.65 billion tpy in 2014. For the decade as a whole, growth in capacity amounted to 117.1%. The most significant increase occurred in China, where steelmaking capacity increased by 716.2 million tpy, accounting for 80.4% of the total 891.3 million tpy increase for all non-OECD economies during this decade (Table 3).

**Table 3. Change in steelmaking capacity***Unit: million tonnes*

	2005	2007	2009	2012	2014	Changes	
	(A)				(B)	(B-A)	(B/A %)
Non-OECD Europe	7.6	7.6	7.6	8.3	8.3	0.8	9.9
CIS	125.2	134.7	141.5	144.4	146.7	21.5	17.2
Latin America	51.5	56.6	61.1	67.3	68.1	16.5	32.0
Africa	27.7	29.8	30.6	30.8	33.9	6.1	22.2
Middle East	19.7	22.2	28.8	42.7	57.6	38.0	193.1
Asia	529.1	707.6	860.0	1135.9	1337.6	808.4	152.8
China	423.8	588.5	718.0	959.9	1140.0	716.2	169.0
India	52.0	60.0	75.0	96.5	108.0	56.0	107.7
Other Asia	53.4	59.1	67.0	79.5	89.6	36.2	67.8
<b>Non-OECD total</b>	<b>760.8</b>	<b>958.4</b>	<b>1129.5</b>	<b>1429.4</b>	<b>1652.1</b>	<b>891.3</b>	<b>117.1</b>

*Capacity utilisation and self-sufficiency*

Of the total 1.65 billion tpy steelmaking capacity for the non-OECD economies at the end of 2014, 70.1% was being utilised, as indicated in Table 4. Capacity utilisation rates in non-OECD Europe, Asia and the CIS exceeded 70%, while utilisation rates in Latin America, Africa and the Middle East remained at low levels of 66.4%, 44.3% and 51.5% respectively.

**Table 4. Capacity utilisation rate***Unit: million tonnes*

	Capacity 2014	Crude steel production 2014	Utilisation rate
	(A)	(B)	(B/A %)
Non-OECD Europe	8.3	6.2	74.3
CIS	146.7	106.1	72.3
Latin America	68.1	45.2	66.4
Africa	33.9	15.0	44.3
Middle East	57.6	29.7	51.5
Asia	1337.6	956.3	71.5
China	1140.0	822.7	72.2
India	108.0	87.3	80.8
Other Asia	89.6	46.4	51.8
<b>Non-OECD total</b>	<b>1652.1</b>	<b>1158.5</b>	<b>70.1</b>

*Note:* CIS denotes the Commonwealth of Independent States.

*Sources:* OECD (for capacity) and the World Steel Association (for production).

In Asia, self-sufficiency rates in both China and India have been increasing, in line with their rapid capacity expansion (Table 5). In contrast, Africa and Other Asia, including ASEAN-6, have some of the lowest self-sufficiency rates, indicating a greater reliance on imported steel. In addition, Latin America's self-sufficiency rate has been on a decreasing trend over the past several years, as steel imports have increased strongly. Although the Middle East's self-sufficiency rate is still very low, it is on an upward trend, which is indicative of significant capital investment activity in the region. The CIS region has a high self-sufficiency rate of approximately 168%, reflecting the high degree of export orientation of steel producers in this region. Nevertheless, the CIS self-sufficiency rate has been declining since 2010.

**Table 5. Self-sufficiency rate of crude steel***Unit: million tonnes*

	Crude steel production (C)		Apparent consumption (D)		Self-sufficient rate (C/D %)	
	2010	2014	2010	2014	2010	2014
	Non-OECD Europe	7.9	6.2	8.7	9.9	90.4
CIS	108.2	106.1	55.5	63.3	194.8	167.7
Latin America	44.1	45.2	47.6	51.0	92.7	88.7
Africa	16.6	15.0	30.2	40.0	55.0	37.6
Middle East	19.7	29.7	50.8	53.6	38.7	55.3
Asia	749.3	956.3	769.2	938.1	97.4	101.9
China	638.7	822.7	612.1	740.4	104.4	111.1
India	69.0	87.3	69.1	81.7	99.8	106.9
Other Asia	41.5	46.4	88.1	116.1	47.2	39.9
<b>Non-OECD total</b>	<b>945.7</b>	<b>1158.6</b>	<b>962.1</b>	<b>938.1</b>	<b>98.3</b>	<b>123.5</b>

Note: CIS denotes the Commonwealth of Independent States.

Source: OECD calculations based on data from the World Steel Association.

### Outlook until 2017

Between 2014 and 2017, the total steelmaking capacity of non-OECD economies is expected to increase from 1.65 billion tpy to 1.75 billion tpy, or by 6.1 % during the period as a whole (Table 6). This corresponds to an average annual growth rate of 2.0%. In terms of volume, the largest expansion is expected to occur in India, which should account for 30.7% of the total capacity increase in non-OECD economies. This is followed by China (27.6%), Islamic Republic of Iran (hereafter 'Iran') (11.8%), Viet Nam (8.7%) and Saudi Arabia (4.7%).

**Table 6. Estimates for steelmaking capacity in 2017***Unit: million tonnes*

	Existing 2014 (A)	Increase to 2017		Capacity in 2017		Changes	
		Underway (B)	Planned (C)	Low (A)+(B)	High (A)+(B)+(C)	Volume (B)	% (A+B)/(A)
Non-OECD Europe	8.3	0.0	0.0	8.3	8.3	0.0	0.0
CIS	146.7	4.1	9.5	150.8	160.3	4.1	2.8
Russian Federation	89.0	4.1	7.0	93.1	100.1	4.1	4.6
Ukraine	42.5	0.0	1.5	42.5	44.0	0.0	0.0
Latin America	68.1	4.6	16.8	72.7	89.5	4.6	6.8
Brazil	48.0	2.0	12.8	50.0	62.8	2.0	4.2
Africa	33.9	2.0	14.6	35.9	50.5	2.0	5.9
Egypt	11.2	2.0	2.0	13.2	15.2	2.0	18.0
Middle East	57.6	18.1	34.0	75.7	109.7	18.1	31.4
Iran	27.0	11.8	22.9	38.8	61.7	11.8	43.7
Saudi Arabia	12.5	4.7	6.2	17.2	23.4	4.7	37.9
Asia	1337.6	71.5	256.4	1409.1	1665.5	71.5	5.3
China	1140.0	27.7	13.3	1167.7	1181.0	27.7	2.4
India	108.0	30.8	206.7	138.8	345.5	30.8	28.5
Other Asia	89.6	13.0	36.4	102.5	138.9	13.0	14.5
<b>Non-OECD TOTAL</b>	<b>1652.1</b>	<b>100.3</b>	<b>331.3</b>	<b>1752.5</b>	<b>2083.8</b>	<b>100.3</b>	<b>6.1</b>

Notes: CIS denotes the Commonwealth of Independent States. ASEAN-6 denotes the aggregate of Indonesia, Malaysia, Philippines, Singapore, Thailand and Viet Nam. Low refers to the capacity level resulting from all projects currently underway (A+B), while high refers to the level resulting from all projects currently underway and planned (A+B+C). Changes in capacity are estimated based on the capacity additions that are considered "underway" (B).

The capacity expansion in non-OECD economies over the next few years was supported by expectations of continued and stable growth in steel demand and the availability of raw materials. While China continues to lead this capacity expansion, other developing economies are accounting for a rising share of the capacity increase, as governments target growth, and in some cases self-sufficiency, in steel production. The Middle East, the CIS region, India, and other developing Asian economies are becoming increasingly important in this context. A summary of key investments by economy is presented below.

### ***Key investments by economy***

#### *Non-OECD Europe*

Few changes affecting steelmaking capacity are expected in this region. Currently, efforts are being made to modernise and restructure the steel industry.

#### *The Commonwealth of Independent States (CIS)*

Owing to plentiful raw material supplies, the CIS region produces more steel than it demands, and has become the largest net exporting region in the world. With regard to steel demand, apparent crude steel consumption in the region grew by 13.9% to 63.3 mmt between 2010 and 2014. However, steel consumption is still below its 2013 level due to the Ukrainian crisis. Efforts to modernise steel production facilities continue to take place in the region, with several mini-mill projects and the replacement of outdated OHF furnaces with new BOF and EAF furnaces having been announced. Between 2005 and 2014, the region's share of crude steel production via the energy-intensive OHF technology decreased from 26.8% to 7.1%, while the share of BOF and EAF production has risen to 67.0% and 25.9% respectively during this period.

To improve the **Russian** steel sector's technological level and competitiveness, in 2009 the Russian government announced a programme entitled "Strategy for Development of the Metallurgical Industry of Russia until 2020". The government is updating this strategy by focusing on the reduction of inefficient production capacity, improving the quality and sustainability of production, and reducing energy and raw material use in the steel industry. The Russian Federation is aiming to replace all of its OHF facilities by 2015. **Ukraine** expects to complete the replacement of its open hearth technology by 2018.

Several EAF projects have been planned, which may result in higher future scrap demand, although some projects have been delayed due to lack of funding. **Russian** electric arc furnace steelmaking is expanding and the government expects the share of EAF production to reach 39% by 2020. Nevertheless, the BOF process is likely to remain the main production process in the region. In the CIS region, steelmaking capacity is projected to increase from 146.7 million tpy in 2014 to 150.8 million tpy in 2017 (at an average annual rate of 0.9%). A brief summary of the major projects occurring in the region is provided below:

- *Tulachermet-Steel*, a pig iron producer in **Russia**, is building an integrated steelmaking and rolling plant at its Tulachermet pig iron plant. The first phase of the steelworks project will be completed by 2016. The new plant will install a 160-mt BOF (2.0 million tpy) and the output will be sold domestically, particularly in the Central Federal District. Investments into the project are estimated at RUB 30 billion. In addition, the company is considering the possibility of the second phase of the project.
- *Stavropol Steel (StavStal)* in **Russia** commissioned its rebar rolling mill in July 2014. Construction of the second phase is underway. The second phase of the project involves the

construction of an electric steelmaking complex (500 000 tpy), comprising an EAF and a billet caster. The new steelmaking complex is expected to begin operations in 2015.

- *Tekhnopark-Tatelektromash* managing company in **Russia** is proceeding with the construction of the *Kamsky Metallurgical Plant TEM-PO* long plant. The new plant comprises a 65-mt electric arc furnace, a three-strand continuous casting machine and a rolling mill. It has an installed capacity of 500 000 tpy of crude steel. The products will be sold mainly in domestic market. The plant is expected to begin operations in 2016.

### *Latin America*

In Latin America, where competitively priced slab dominated global steel markets in the 1980s and 1990s, major steelmakers aimed at setting up slab-for-export works, especially in **Brazil**, to take advantage of low operational costs owing to one of the world's highest quality iron ore deposits. As a result, several greenfield slab-for-export projects have been announced since then. Between 2010 and 2014, apparent crude steel consumption of non-OECD economies in Latin America increased from 47.6 mmt to 51.0 mmt, in other words by 7.2% during the period. However, Latin America's self-sufficiency rate has been on a decreasing trend over the past several years, as steel imports have increased strongly. Indeed, the region has recently passed from being a net exporter to a net importer of finished steel.

Most of the capacity expansion projects in Latin America will occur in **Brazil**. Several greenfield slab projects have been planned by major mining groups or steelmakers because of the proximity to key raw materials such as iron ore, even though some projects have been postponed or cancelled due to reasons such as recent market weakness and logistical problems. For example, major steelmakers such as *Baosteel* and *ArcelorMittal* abandoned plans for slab-for-export works in the country. *The CSA Siderúrgica do Atlântico* project, which was commissioned by *ThyssenKrupp AG*, was based on the premise that slabs would be produced at low cost using high-quality Brazilian ore. On the other hand, several projects are starting in the long products segment in the country, to meet demand for construction steel. For instance, major Brazil steelmaker *Companhia Siderúrgica Nacional (CSN)* has commissioned its new long plant to enter the Brazilian long products market. Elsewhere in Latin America, governments and state owned enterprises (SOEs) are playing a role in investment projects, in cooperation with Chinese companies. For example, **Plurinational State of Bolivia (hereinafter 'Bolivia')** and **Ecuador** aim to build their first integrated steel mills.

On the one hand, steel production via the BOF route is likely to remain the major steelmaking process in Latin America owing to many greenfield slab-for-export projects. On the other hand, several EAF projects are starting in the long products segment. As a consequence of several investment projects, the steelmaking capacity of non-OECD economies in Latin America is estimated to increase to 72.7 million tpy by 2017, from 68.1 million tpy in 2014 (at an average annual rate of 2.3%). Major projects occurring in the area are provided below:

- In **Brazil**, future slab maker *Companhia Siderúrgica do Pecém (CSP)* is a joint venture of Brazil mining group *Vale* (50%) and Korean steel producers *Dongkuk* (30%) and *POSCO* (20%). The slab-making project is expected to begin producing 3 million tpy of slabs by 2016. The USD 4.29 billion Phase I involves installation of a 3 800 cubic metre blast furnace and a 300-mt BOF (3 million tpy). After Phase II, steelmaking capacity will be doubled to 6 million tpy.
- State-owned company *Siderurgica Nacional (SN)* in **Bolivarian Republic of Venezuela (hereinafter 'Venezuela')** is constructing a new plant in Ciudad Piar, Bolivar. The USD 3.8 billion project will include installation of a 1.55 million tpy EAF complex, consisting of a 200-mt

electric-arc furnace, a continuous slab caster and a heavy-plate mill. The plant is projected to begin operations in 2015.

- **Brazil's Gusa Nordeste** currently operates three blast furnaces (360 000 tpy in total). The company plans to complete installation of a 600 000 tpy BOF plant and a bar and rod mill with the same capacity in Acailandia in 2016. Investments are estimated at USD 500 million. The company plans to double its capacity to 1.2 million tpy upon the second phase.

### *Africa*

Over the past few years, African steel demand has been affected by political turbulence and the so-called “Arab Spring” that began in late 2010. Nevertheless, Africa’s apparent crude steel consumption has grown steadily (from 30.2 mmt to 40.0 mmt between 2010 and 2014), supported by state-funded construction projects. The automotive industry has also become an important steel-consuming market, with major carmakers announcing plans to build new plants in North Africa. Africa is still reliant on steel imports to meet demand, but the region is aiming to lower its dependence on imports. To increase its self-sufficiency and press forward with industrialisation, many upstream projects have been planned, notably in North Africa. These projects may have a significant impact on southern European exporters of long products.

**Algeria** is now the fastest growing steel-consuming market in Africa, supported by government plans to build new cities and due to housing as well as other infrastructure needs. In order to diversify its economy, which is focused on hydrocarbon exports, the government is aiming to continue increasing domestic steel production. Algeria and Qatar plan to strengthen their economic cooperation in various sectors, including mining, marine transport, oil and gas, and petrochemicals. The construction of the new plant *Algerian Qatari Solb Company* (4 million tpy in total) in Jijel province will be an example of the successful cooperation between the two countries and will promote regional industrial development. Although **Egypt** is the largest Direct-Reduced Iron (DRI) producer in Africa, the country is experiencing a shortage in natural gas distribution, which has delayed the launch of some plants. In addition, the government of Egypt has decided to remove the natural gas subsidies for the steel industry under an economic improvement strategy, which is likely to affect the mills that operate DRI/HBI-modules. In **South Africa**, *ArcelorMittal South Africa* has played a dominant role, but China’s state-owned *Hebei Iron & Steel (Hegang)* has announced plans to build a 5 million tpy greenfield steelworks to be supplied by output from its iron ore mine in the country.

Although Africa is still reliant on steel imports to meet demand, some DRI-based mini-mill projects are expected to raise the region’s self-sufficiency rate gradually. However, technical and electricity/gas supply problems as well as political unrest may delay the start-up of some projects. The EAF route is expected to remain the main steelmaking process. Steelmaking capacity in the region is forecast to increase from 33.9 million tpy in 2014 to 35.9 million tpy by 2017 (at an average annual rate of 1.9%). Several projects underway in the region include:

- In **Egypt**, *Beshay Steel* has installed a 1.76 million tpy DRI-module and started production at the 650 000 tpy steelmaking complex No.1 in 2014. Initially the melt shop was planned to be commissioned in 2011 but start-up was postponed due to the unstable political situation and electricity and gas supply interruptions. Currently, the construction of a melt shop No.2 (650 000 tpy of billets) is underway.
- Also in **Egypt**, *Egyptian Steel Group* is building two mini-mills in Beni Suef and Ain Al Sokhna, each with a designed capacity of 830 000 tpy of steel and 530 000 tpy of rebar. Consequently, the

group's production capacity will reach 1.66 million tpy of steel and 1.76 million tpy of long products. Investments are estimated at EGP 5 billion.

- *El Marakby for Steel* in **Egypt** is continuing to install EAF equipment (45-mt) with a capacity of 350 000 tpy. Total investments are estimated at USD 90 million.

### *Middle East*

Despite the political turmoil, the Middle East is considered as an important market in terms of steel demand, supported by ongoing construction and infrastructure activity. However, the oil market downturn is now clouding demand developments. Between 2010 and 2014, apparent crude steel consumption in the non-OECD Middle East region grew by 5.5% to 53.6 mmt. Currently, oil exporters are aiming to diversify their economies and this could support steel demand from the manufacturing sector. Low energy and labour costs make the region one of the most competitive for producing DRI. Although the Middle East has traditionally been a substantial importer of steel products because it had little steelmaking capacity, many projects have recently been announced, which may reduce the region's dependency on steel imports.

The **Iranian** government has announced plans to increase national steelmaking capacity to 55 million tpy by 2025 and to be a net steel exporter after it achieves self-sufficiency. For instance, eight mini steelworks have been under construction by state-owned *IMIDRO* since 2006. Although, several projects were put on hold due to the economic sanctions and inability to import technologies, prospects of industrial development and the lifting of sanctions may attract investors who were waiting for the investment climate to improve. In **Saudi Arabia**, several infrastructure projects based on state oil revenues and many housing projects have given a significant boost to steel demand. This has led to an increase in the economy's steelmaking capacity. However, a shortage in natural gas allocation and electricity generation capacity has delayed the launch of a number of steelworks. As an economy that is highly dependent on oil exports, **Oman** is currently trying to diversify its economy. Growing steel demand (driven by construction activity) is encouraging domestic producers to increase their capacities and is attracting new investors to the steel industry. **Bahrain** launched its first crude steelmaking plant recently.

The Middle East might become the fastest growing steel-producing region in the period until 2017. DRI is generally expected to remain a major feedstock in EAF steelmaking, and the EAF process is expected to continue to play a dominant role in the region's steel production. However, insufficient power generation capacity and geopolitical tensions in the region could hamper future growth in steel production capacity. Steelmaking capacity in the non-OECD Middle East region is expected to increase from 57.6 million tpy to 75.7million tpy between 2014 and 2017 (at an average annual rate of 10.5%). Several important projects in the region include:

- In **Iran**, Middle East Mines Industries Development Holding Company (MIDHCO) is involved in three greenfield projects in the country: Butia Steel Company (BISCO), Sirjan Iranian Steel Company (SISCO) and Zarand Iron & Steel Company (ZISCO). The ZISCO project involves building a blast furnace and a BOF-based steel melt shop (1.7 million tpy), while DRI-based EAF steelmaking shops will be equipped at BISCO (1.5 million tpy) and SISCO (1.0 million tpy) plants.
- **Iran's Kish South Kaveh Steel Co (SKS)** plans to begin the commissioning of a new steel melt shop (1.2 million tpy), equipped with a 170-mt EAF under Phase I of the expansion project by 2015, which was launched in 2009. After Phase II, the company's capacity will be doubled.
- In **Saudi Arabia**, Jordan's *Taybah Steel Group* commissioned an induction furnace-based plant (0.25 million tpy), under the name of *Watani Steel I* to produce rebar in 2015. In addition, the

construction of *Watani Steel II* has been launched. The new steelworks will be equipped with a 1.5 million tpy EAF.

### *China*

China has been showing significant growth in recent years, with its apparent crude steel consumption increasing from 612.1 mmt in 2010 to an estimated 740.4 mmt in 2014, in other words by 21.0% during the period. However, the rate of increase in Chinese steel demand has been slowing: Chinese steel demand in 2014 saw negative growth for the first time since 1995 amid a property market slowdown. The role of fixed asset investment as a driver of steel demand should continue to decline, while the service sector's share in total output is expected to increase. In China, a decline in steel intensity would be expected over time as the country becomes more dependent on services as a source of growth. Although many analysts had previously predicted that steel demand/production in the country would peak around 2020 or 2025, now that point could be reached much sooner. After three decades of significant economic development, China is now said to be shifting to a lower but still rapid and likely more sustainable growth path, the so-called the "New Normal".

Over the past decade, China has displayed a sharp increase in steelmaking capacity, and has accounted for most of the world's capacity growth since the early 2000s. As a result of overly optimistic estimates of future steel demand, the country is facing a considerable excess capacity challenge. The Chinese steel industry has been suffering recently from declining profits and many Chinese mills have faced losses over the last few years. Currently, the Chinese government is making efforts to eliminate outdated steel capacity to mitigate overcapacity and air pollution. On 6 October 2013, the State Council issued the Guidelines for Resolving Overcapacity, targeting the closure of 80 million tpy of steel capacity by the end of 2017, in addition to addressing overcapacity problems in the cement, aluminium, plate glass and shipbuilding industries. Moreover, the Ministry of Industry and Information Technology (MIIT) has called for public feedback on a draft of the Policy for Restructuring of the Steel Industry, an update of the initial version of the Steel Industry Development Policy issued in 2005. Some key points are summarised as follows:

- By 2017, alleviate the degree of excess capacity and increase the capacity utilisation ratio to 80%;
- New projects should be accompanied by the closure of an equal or greater amount of the existing capacities by 2017;
- Remove restrictions on foreign investment in the Chinese steel industry;
- Aim to lift the share of China's top ten steel mills in total output above 60% and form three to five ultra-large steel conglomerates, both by 2025; and
- Promote scrap usage, lifting the proportion to no lower than 30% of the scrap feedstock by 2025.

The location of China's steelworks has important implications not only for the structure of steel supply, but also in terms of how raw materials are accessed. There appears to have been a shift in focus from the tradition of building mills in resource-rich inland regions to coastal areas, where it is convenient to import raw materials, because domestic supplies have become insufficient in meeting the requirements of mainland production. Despite this trend, several projects still have been announced in resource-rich regions such as Xinjiang. The commissioning of the Yingkou Bayuquan Project in 2008 (in Liaoning Province) and the Caofeidian Project in 2010 (in Hebei Province) are examples of the significant transformation that has occurred in China's steel industry towards coastal plants that are focused on the

production of flat steel products. Most coastal steelworks are designed to produce high value-added products to meet demand for flat products in the automotive and home appliance industries in China.

Although the growth rate of Chinese capacity is slowing down owing to government policy measures aimed at constraining the industry's expansion, the construction of some very large integrated steel plants may keep the level of capacity on an upward path. Many Chinese mills are also looking to build steel plants in overseas markets, such as in Southeast Asia and Africa, as the overcapacity challenge is making it difficult for them to make a profit in the domestic market.

The BOF production process will remain the dominant route in China in the years to come, while the EAF share may increase slowly along with increasing availability of domestic scrap. As a result of several investment projects, steelmaking capacity in China is expected to increase from 1.14 billion tpy to 1.17 billion tpy between 2014 and 2017 (at an average annual rate of 0.8%). The rate of increase in Chinese capacity is nevertheless slowing. Despite a slowdown in China's capacity growth rate compared to previous years, large steelworks that focus on the production of flat products are being built in the country, namely:

- *Baosteel's* greenfield Zhanjiang steelworks project, which is approximately 200 km from *Wuhan's* Fangchenggang plant, was launched in May 2012. *Baosteel* will install two 5 050 cubic metre blast furnaces (8.2 million tpy capacity in total) and three 350-mt BOFs (8.9 million tpy capacity in total) at the Zhanjiang works. The steelworks' location close to the port complex will facilitate imports of iron ore used as feedstock. The RMB 41.5 billion project is scheduled to be completed by 2016. Equipment commissioning will progress in stages: crude steel, slab and HRC production is expected to start in 2015, while CRC and HDG steel manufacturing is scheduled for 2016.
- *Wuhan Iron & Steel (Wugang)* launched the construction of its Fangchenggang steelworks project in May 2012. The RMB 63.99 billion project involves the installation of two 5 200 cubic metre blast furnaces (8.4 million tpy capacity in total), three 300-mt BOFs (9.2 million tpy in total), as well as plate mill, hot strip mill and a cold strip mill. The company has decided to commission its cold strip mill ahead of its iron, steel and hot strip mill, and started its first commercial production and rolled out the first coil from the pickling and cold rolling mill on 28 June 2015.
- *Shandong Iron and Steel Group* formally started construction of its Rizhao project in June 2013. The RMB 56.75 billion steel plant will have two 5 100 cubic metre blast furnaces (8.1 million tpy capacity) and two 200-mt and two 250-mt BOFs (8.5 million tpy in total) in order to produce high-end flat products for the home appliance, automotive, machinery, and offshore engineering sectors. The new Rizhao works will be located close to the privately-owned *Rizhao Iron & Steel* as well as Rizhao port, a major raw materials hub. Production is scheduled to start in 2016-2017.

### *India*

India recently became the third largest steel producer in the world. As an economy with a large population and rich iron ore and coal resources, India has significant potential for steel consumption and production growth. Between 2010 and 2014, its apparent crude steel consumption increased from 69.1 mmt to 81.7 mmt, in other words by 18.2% during the period. Convergence of the country's very low per-capita consumption towards the higher levels found in more developed economies would result in significantly higher steel consumption. "Make in India", a program launched by the Government of India in 2014 to transform the country into a global manufacturing hub could contribute to the development of mining and metallurgical industries.

On 5 February 2013, the Indian government published a draft National Steel Policy in order to reflect changes in the domestic and global economic situation since the last Steel Policy of 2005. The current Steel Policy aims at transforming India's steel industry into a global leader, in terms of production, consumption, quality and efficiency while achieving environmental and social sustainability. Based on forecasts for steel consumption, India's authorities expect that steelmaking capacity may have to increase to 300 million tpy by 2025-26 in order to meet future demand. As a result of several investment projects, India may become the world's second largest steel manufacturer in the medium term. In fact, significant amounts of new production capacity are scheduled to come on stream in the next few years.

Although EAF is still the major steelmaking process in India, BOF's share is likely to increase gradually, supported by new investment projects that are iron ore/coking coal-intensive. However, capacity expansions (particularly greenfield projects) have proceeded slowly in recent years due to obstacles associated with land acquisition and difficulties in obtaining the required environmental and forest permits. The main contribution will come from brownfield expansions. Steelmaking capacity in India is expected to increase from 108.0 million tpy to 138.8 million tpy between 2014 and 2017 (at an average annual rate of 9.5%). The upstream (crude) projects that are underway in the country include:

- To boost its steelmaking capacity, state-owned *Steel Authority of India Ltd (SAIL)* blew-in a new blast furnace (4 060 cubic metre) and installed a BOF (1.5 million tpy) in 2013-2014 at its Rourkela Steel Plant (RSP) in Odisha state. In addition, the company commissioned the largest blast furnace in India (4 160 cubic metres) and installed a BOF shop (2.5 million tpy) in 2014 at its IISCO Steel Plant in West Bengal state. Moreover, the company will install a new blast furnace (4 060 cubic metres) and a new BOF shop (4.0 million tpy) and decommission its OH furnaces at its Bhilai plant in Chhattisgarh state.
- *Jindal Steel & Power Ltd (JSPL)* will increase its crude steelmaking capacity through the following brownfield projects: the company will install two BOFs (3.8 million tpy in total) as part of the 6 million tpy build-up of its integrated steelworks at Angul plant in Odisha state. In addition, the company will install a 4 109 cubic metre blast furnace (2.7 million tpy) and a BOF shop (3.2 million tpy).
- *Tata Steel* began construction of the greenfield Kalinganagar works in Odisha state in January 2011 and expects to commission the first phase of its integrated mill by 2016 with a 4 330 cubic metre blast furnace and a BOF (3.0 million tpy). The cost of the Kalinganagar project is now estimated at INR 400 billion. In the second phase of the project, the company will increase its capacity at the Kalinganagar plant to 6 million tpy. The company also aims to further expand production capacity at its Jamshedpur works to nearly 11 million tpy from 9.7 million tpy currently.

#### *The Association of Southeast Asian Nations (ASEAN)*

The Association of Southeast Asian Nations (ASEAN) is now one of the fastest growing steel-consuming markets in the world. Over the last few years, there has been a major expansion of steel consumption, supported by a rapidly developing automotive sector, robust construction activity, and various infrastructure projects. Between 2010 and 2014, apparent crude steel consumption in ASEAN-6 increased from 57.1 mmt to 76.8 mmt, in other words by 34.5% during the period. The share of flat products in ASEAN consumption has been rising gradually in the past several years, suggesting that the industrial structure of ASEAN economies is becoming more sophisticated. The region's steel demand is likely to benefit from a rapidly growing working-age population, positive economic growth prospects and rising urbanisation.

In May 2011, **Indonesia** launched a 15-year economic development plan, called the Master Plan for Acceleration and Expansion of Indonesia's Economic Development. In the Plan, the Sumatra Economic Corridor will function as a "Centre for Production and Processing of Natural Resources and the Nation's Energy Reserves". *PT Krakatau POSCO* blew-in its 3 million tpy steelworks in December 2013 in the corridor, which was the first large-scale blast furnace in South East Asia. **Viet Nam**'s Master Plan aims at developing the domestic steel industry, ensuring stability and sustainability of industrial development, and minimising the imbalance in manufacturing between pig iron, steel billet and finished products, as well as between long and flat steel products. According to the Ministry of Industry and Trade, capacity is targeted to reach 40 million tpy of steel billets by 2025. The **Philippines**' Roadmap, which was launched in October 2013, has set a long-term target of increasing steel production to 20 mmt by 2030.

Strong steel demand growth has attracted many foreign investors to the ASEAN region. Although the ASEAN region has traditionally been a large net importer of steel, a steel mill construction boom has recently been taking place in the region. Investment in new steel plants by Chinese steelmakers is also taking place in the region. In ASEAN, DRI and scrap have been the major feedstock for steel production because production takes place primarily in EAF-based facilities. However, BOF's share in the region's steel production is expected to increase gradually due to many BF/BOF investment projects. Steelmaking capacity in ASEAN-6 is expected to increase from 44.9 million tpy to 57.0 million tpy between 2014 and 2017 (at an average annual rate of 8.3%). Below is a brief summary of the major projects taking place in ASEAN:

- Chinese Taipei's *Formosa Plastics Group* started its integrated steel mill project in Ha Tinh province, **Viet Nam** in December 2012. The invested amount for the Phase I is about USD 10 billion. *Formosa Ha Tinh Steel Corporation* project will be carried out in two stages. Under Phase I, the company will construct two 4 350 cubic metre blast furnaces (3.2 million tpy each) and three 300-mt BOFs (7 million tpy). The steel plant will be equipped with a hot strip mill (5.4 million tpy), which will be the first HR mill in Viet Nam. Between Phase I+1 and Phase II+2, the group plans to construct another four BFs, which will take its melting capacity to 21.85 million tpy.
- *Gunung Steel Group* will install a new 1.2 million tpy steelmaking plant at Gunung Raja Paksi in **Indonesia**. The meltshop will be equipped with a 120-mt EAF and a slab caster. The project is aimed at substituting slab imports to feed the company's HRC production.
- *POSCO SS-Vina*, the Korean steelmaker's long products subsidiary in **Viet Nam** commissioned a 1 million tpy long steel plant in the Phu My 2 industrial zone in southern Ba Ria-Vung Tau province in 2015. The new plant is equipped with a 120-mt electric arc furnace, a caster to produce beam blanks and billets, and two rolling mills.

Table 7. Non-OECD crude steelmaking capacity

							In million tonnes		
	2005	2007	2010	2012	2014	2017	Annual growth rate (% per annum)		
							2012/10	2014/12	2017/14
<b>Non-OECD Europe</b>	<b>7.6</b>	<b>7.6</b>	<b>8.3</b>	<b>8.3</b>	<b>8.3</b>	<b>8.3</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
Bulgaria	3.2	3.2	3.2	3.2	3.2	3.2	0.0	0.0	0.0
Romania	8.4	9.0	9.0	6.2	6.2	6.2	-15.8	0.0	0.0
<b>CIS</b>	<b>125.2</b>	<b>134.7</b>	<b>144.5</b>	<b>144.4</b>	<b>146.7</b>	<b>150.8</b>	<b>-0.1</b>	<b>0.8</b>	<b>0.9</b>
Russia	71.0	77.0	83.5	84.2	89.0	93.1	0.4	2.9	1.5
Ukraine	44.0	45.5	47.5	45.5	42.5	42.5	-2.1	-3.3	0.0
Kazakhstan	5.0	6.0	7.0	8.2	8.2	8.2	8.2	0.0	0.0
<b>Latin America</b>	<b>51.5</b>	<b>56.6</b>	<b>64.3</b>	<b>67.3</b>	<b>68.1</b>	<b>72.7</b>	<b>2.3</b>	<b>0.5</b>	<b>2.3</b>
Argentina	5.4	6.1	6.7	6.7	6.7	7.3	0.0	0.0	3.3
Brazil	36.4	39.0	45.0	47.5	48.0	50.0	2.8	0.5	1.4
Colombia	1.1	1.6	2.2	2.2	2.2	2.2	0.0	0.0	0.0
Peru	1.0	1.1	1.3	1.5	1.5	1.5	8.0	0.0	0.0
Venezuela	5.0	6.1	6.1	6.2	6.2	7.8	0.8	0.0	8.3
<b>Africa</b>	<b>27.7</b>	<b>29.8</b>	<b>31.3</b>	<b>30.8</b>	<b>33.9</b>	<b>35.9</b>	<b>-0.8</b>	<b>5.0</b>	<b>2.0</b>
Algeria	1.0	1.8	1.8	1.8	3.0	3.0	0.0	33.3	0.0
Egypt	8.0	8.0	9.3	9.3	11.2	13.2	0.0	9.9	6.0
Libya	1.3	1.6	1.6	1.6	1.6	1.6	0.0	0.0	0.0
Nigeria	2.7	2.7	2.9	2.9	2.9	2.9	0.0	0.0	0.0
South Africa	12.1	13.0	12.0	10.3	10.3	10.3	-7.1	0.0	0.0
<b>Middle East</b>	<b>19.7</b>	<b>22.2</b>	<b>32.8</b>	<b>42.7</b>	<b>57.6</b>	<b>75.7</b>	<b>15.1</b>	<b>17.5</b>	<b>10.5</b>
Iran	12.0	12.0	17.0	23.0	27.0	38.8	17.6	8.7	14.6
Oman	0.0	0.0	0.5	0.5	3.1	4.3	0.0	255.0	13.1
Qatar	1.5	1.5	2.0	2.0	3.1	2.5	0.0	27.5	-6.5
Saudi Arabia	5.0	7.4	7.6	8.6	12.5	17.2	6.6	22.8	12.6
United Arab Emirates	0.2	0.2	2.0	3.0	3.7	3.7	24.5	11.9	0.0
<b>Asia</b>	<b>529.1</b>	<b>707.6</b>	<b>952.6</b>	<b>1,135.9</b>	<b>1,337.6</b>	<b>1,409.1</b>	<b>9.6</b>	<b>8.9</b>	<b>1.8</b>
China	423.8	588.5	800.3	959.9	1,140.0	1,167.7	10.0	9.4	0.8
Other Asia	105.4	119.1	152.3	176.0	197.6	241.3	7.8	6.1	7.4
Chinese Taipei	20.0	20.0	26.5	26.5	28.5	28.5	0.0	3.8	0.0
India	52.0	60.0	78.0	96.5	108.0	138.8	11.9	6.0	9.5
Indonesia	5.9	5.9	6.7	6.7	9.7	11.4	0.0	22.6	5.9
Malaysia	9.0	9.0	9.4	10.0	10.7	10.7	2.9	3.5	0.0
Pakistan	2.0	4.0	5.5	5.5	5.6	5.9	0.0	1.1	1.7
Philippines	1.6	1.8	2.0	2.0	2.0	3.4	0.0	0.0	23.3
Thailand	6.5	6.5	8.4	9.4	9.9	9.9	6.0	2.8	0.0
Vietnam	1.0	2.0	5.8	9.4	12.0	20.7	31.0	13.6	24.4
<b>Non-OECD TOTAL</b>	<b>760.8</b>	<b>958.4</b>	<b>1,233.8</b>	<b>1,429.4</b>	<b>1,652.1</b>	<b>1,752.5</b>	<b>7.9</b>	<b>7.8</b>	<b>2.0</b>

Notes: CIS denotes the Commonwealth of Independent States.

## NOTES

- <sup>1</sup> Only projects in the investment project database that are “underway” are used to generate the point estimates of future capacity presented here. Projects that are “planned”, but not underway yet, are not included in the forecasts, but are used to generate the “high” capacity scenarios shown in the tables throughout this report.
- <sup>2</sup> ASEAN-6 in this document refers to Indonesia, Malaysia, the Philippines, Thailand, Singapore and Viet Nam.
- <sup>3</sup> Israel is excluded from the non-OECD Middle East aggregate due to its status as a Member of the OECD.