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# THE SITUATION IN THE EAST ASIAN STEEL INDUSTRY

*This document is for discussion at the Steel Committee meeting to be held in Paris on 29 May 1998.*

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**SUMMARY**

1. Steel consumption in the six East Asian countries examined in this report (Indonesia, Malaysia, the Philippines, Singapore, Thailand and Chinese Taipei) has risen sharply since the middle of 1980s, in parallel with the development in manufacturing. Combined crude steel consumption increased from 17.21 million tonnes in 1986 to 59.73 million tonnes in 1996, or by 42.52 million tonnes during these ten years.

2. Crude steel production expanded as well, from 8.83 million tonnes in 1986 to 23.27 million tonnes in 1996. The expansion, however, did not match the increased consumption, and the supply-demand gap widened, particularly after the middle of 1980s.

3. The difference between production and consumption has been filled by increased imports. Combined imports to the region increased by 4.5 times during these ten years, rising from 8.56 million tonnes in 1986 to 38.35 million tonnes in 1996.

4. What characterised these imports was a growing dependence on semifinished products (i.e., slabs, blooms and billets). Imports of semifinished products totalled as much as 14.42 million tonnes in 1996. A significant quantity of rolled products has been imported as well; however, the increase occurred at slower rates.

5. These changes have made East Asia far more important in the world steel market than it was ten years ago. In 1996, the six East Asian countries were the largest net importers of steel in the world (31.25 million tonnes), exceeding the United States (21.93 million tonnes).

6. Rapid increases in consumption have promoted investment in the steel industry in the region, particularly during the 1990s. Most of the investment projects will be on stream by the turn of the century, with some already put into operation. Increases in steelmaking capacity for the 1995 to 1999 period is likely to exceed 18 million tonnes [11 million tonnes in the ASEAN5 (Indonesia, Malaysia, the Philippines, Singapore and Thailand), and 7 million tonnes in Chinese Taipei).

7. The economic crisis in East Asia is altering the situation in the regional steel industry significantly, which will have implications for steel markets world-wide; as follows:

- Expected capacity increases, combined with sluggish steel demand, could result in a 14-million-tonne decline in net imports of finished steel products in the six East Asian countries by 1999 (7 million tonnes in both the ASEAN5 and Chinese Taipei). Chinese Taipei could, in fact, become a 5.7-million-tonne net exporter of finished steel products.

- Regional steel manufacturers are more inclined to export to compensate for slowing growth in demand in local markets, taking advantage of an increased international competitiveness resulting from currency depreciation.

- This process, however, may be slow to develop, since the depreciation negatively affects costs by inflating the prices of imported raw materials on which most local mills are highly dependent. In addition, some steelmakers are faced with serious difficulties in securing financing for imports of raw materials.

– Main exporters to the region, such as NIS, central and eastern European, and some neighbouring Asian countries, are likely to redirect their exports to other stronger markets. Competition in world steel markets could thus intensify, putting downward pressures on prices.

**ACTION**

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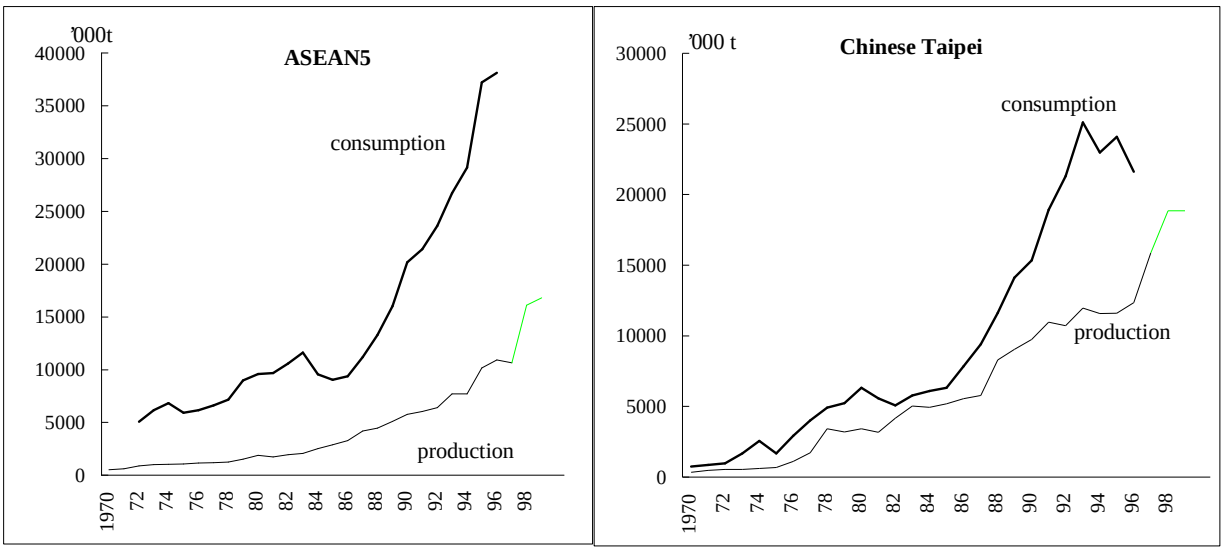
# THE SITUATION IN THE EAST ASIAN STEEL INDUSTRY

## 1. Overview - Increased importance in world steel market

1. This paper examines the situation in steel in six key steel-consuming non-OECD countries in East Asia -- Indonesia, Malaysia, the Philippines, Singapore and Thailand (ASEAN5)[1], and Chinese Taipei.

2. The six East Asian countries experienced rapid economic growth during the last decade, and accordingly, steel consumption and production expanded year by year. Crude steel consumption in the ASEAN5 increased from 9.37 million tonnes in 1986 to 38.12 million tonnes in 1996, while crude steel production increased from 3.28 million tonnes to 10.92 million tonnes in the same period. In Chinese Taipei, crude steel consumption increased from 7.84 million tonnes to 21.61 million tonnes, while production increased from 5.55 million tonnes to 12.35 million tonnes in the same period. The faster growth in consumption resulted in a growing supply-demand gap, which has particularly widened since the middle of the 1980s, when growth in manufacturing started to gain momentum in the region (Chart 1).

**Chart 1. Crude steel consumption and production in ASEAN5 and Chinese Taipei**




*Sources*: IISI, "Steel Statistical Yearbook". Figures for 1998 and 1999 production are the estimate by OECD secretariat.

1. Brunei, Vietnam, Laos and Myanmar, which are also members of ASEAN (Association of Southeast Asian Nations), are not covered in this report.

3. This difference between production and consumption has been met by increased imports. As examined later, the East Asian region has become the largest export destination in the world during the last decade.

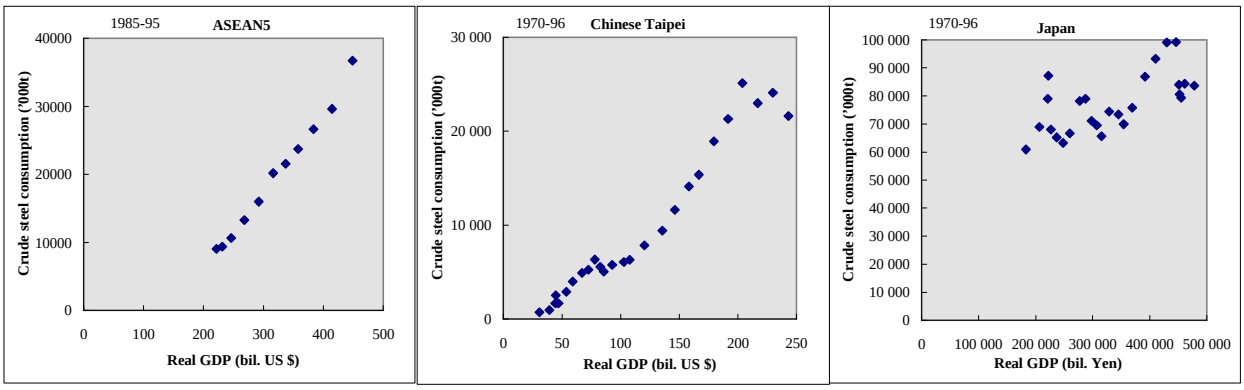
4. On the premise that there would be continuous growth in steel consumption in the future, a number of capacity expansion plans were drawn up. Although quite a few projects have been put on hold in the face of the economic slowdown that was triggered by the currency crisis in Thailand last July, capacity increases that are proceeding will have a significant effect on the world steel market. Consumption in Chinese Taipei, particularly, already shows a sign of having peaked, while a steep rise in production is expected in the coming years.

## 2. Past trend of development

### *2.1. Increase in steel consumption*

5. Steel consumption in East Asia has shown a constant rise, along with its rapid economic growth. Chart 2 shows a correlation between apparent crude steel consumption and real GDP. Except for the recent slowdown in steel consumption in Chinese Taipei, a close correlation can be observed in the six East Asian countries. In general, such a correlation is weakened in the course of economic growth, reflecting the growing importance of less steel-intensive sectors to the GDP, as shown by the case of Japan.

**Chart 2. Real GDP and crude steel consumption**




*Sources*: GDP: OECD; Consumption: IISI

6. In fact, steel consumption has expanded faster than GDP in the East Asian region through most of the last decade. In the ASEAN5, steel consumption expanded, with an average annual growth rate of 21.1 per cent from 1986 to 1990, and 14.2 per cent from 1991 to 1995, while GDP growth was 8.2 per cent and 7.4 per cent, respectively. In Chinese Taipei, the rise in consumption was 18.3 per cent from 1986 to 1990, but slowed down to 6.2 per cent from 1991 to 1995, compared to the rise of 8.5 per cent and 6.4 per cent in GDP growth in the corresponding period (Table 1).

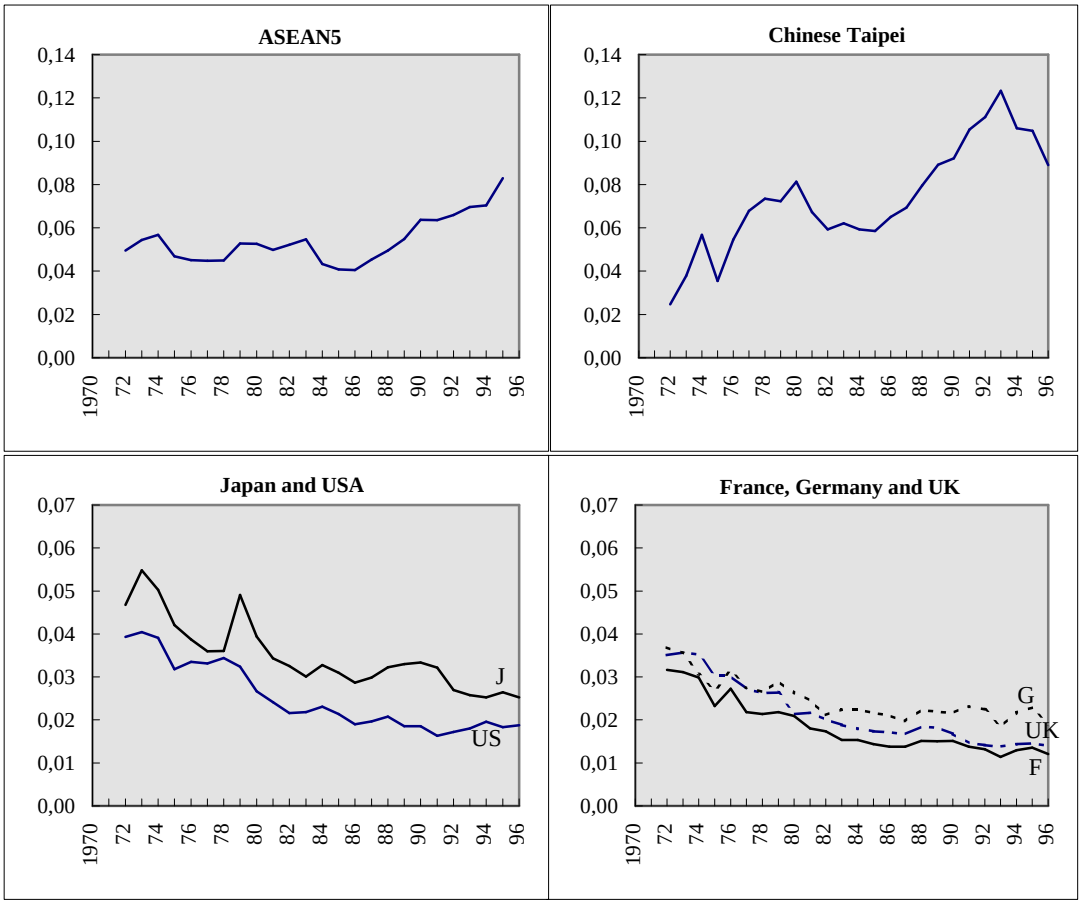
**Table 1. Average annual growth rate of real GDP and apparent crude steel consumption**

| | | | | 1981-85 | 1986-90 | 1991-95 |
|---|---|---|---|---|---|---|
| ASEAN 5 | Real GDP | % | (A) | 3.3 | 8.2 | 7.4 |
| | Consumption | % | (B) | -1.7 | 21.1 | 14.2 |
| | Elasticity | | (B/A) | -0.50 | 2.59 | 1.91 |
| Chinese Taipei | Real GDP | % | (A) | 6.9 | 8.5 | 6.4 |
| | Consumption | % | (B) | 3.2 | 18.3 | 6.2 |
| | Elasticity | | (B/A) | 0.47 | 2.16 | 0.97 |

*Sources:* GDP: IMF, OECD; Consumption: IISI

7. Steel intensity (steel consumption per unit of GDP) is understood to start declining at a certain point of economic maturity. In Chart 3 the ASEAN5 and Chinese Taipei show an increasing trend, while in Japan, the United States and major EU countries, steel intensity has been declining, or has flattened out. It should be also noted that the intensity is much higher in the ASEAN5 and Chinese Taipei than in most developed countries. The recent decline in Chinese Taipei may suggest that the country has come to a point of change. Several more years, however, may be required to affirm the change.

**Chart 3. Steel intensity of GDP (kg crude steel consumption per US$)**




*Sources*: GDP: OECD, *"National Accounts"*, Steel consumption: IISI, *"Steel Statistical Yearbook"*

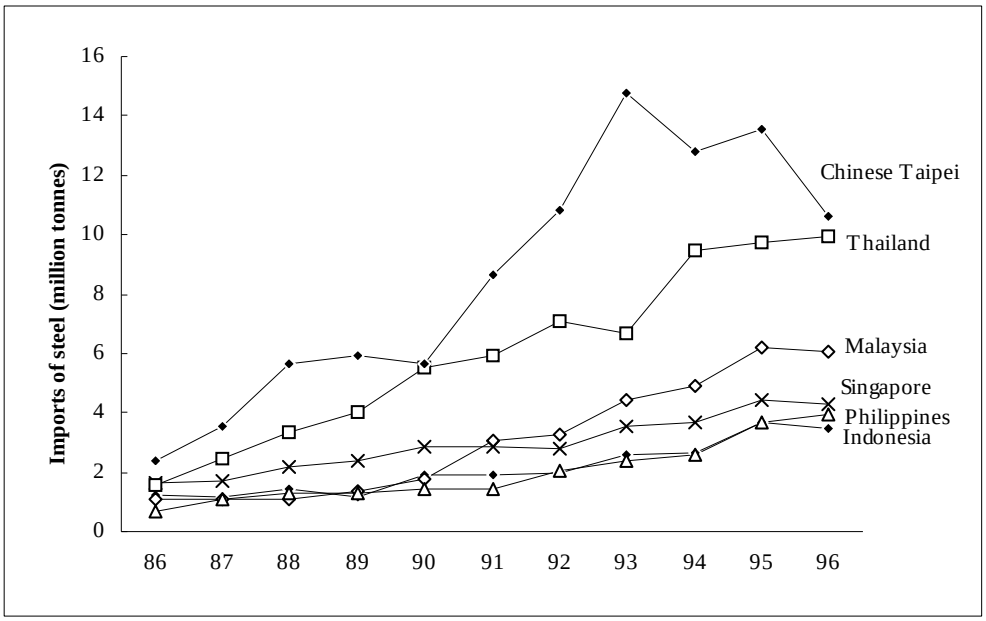
8. These relationships and trends imply that despite the rapid expansion in consumption during the last decade, the East Asian steel market is not as mature as the most developed countries, and that there is room for further growth, once the East Asian economies regain momentum.

### *2.2 Development in steel trade*

*Rapid increase in imports*

9. Since the growth in steel consumption has been faster than the growth in production, the steel imports of East Asia have increased dramatically. Although the increase was common to all East Asian countries, it was particularly high in the case of Chinese Taipei, Thailand and Malaysia (Chart 4). The combined imports of the six countries increased by 4.5 times during 1986 and 1996, rising from 8.56 million tonnes in 1986 to 38.35 million tonnes in 1996.

**Chart 4. Trend of steel imports (semifinished and finished products)**




*Source:* IISI, *"Steel Statistical Yearbook"*

10. As shown in Table 2[2], the most notable change during 1991 and 1996, when the region was still enjoying dynamic economic growth, was a rapid increase of semifinished steel imports. In the case of the ASEAN5 they reached 8.5 million tonnes, or 31 per cent of the total imports; in Chinese Taipei they amounted to nearly 6 million tonnes, accounting for more than half of the total imports in 1996. The increased imports of the material resulted from an imbalance between upstream and downstream capacity in the region. In the case of rolled products, the increase was more moderate; however, it should be noted that significant quantities of these products have been imported into the region throughout the period (with the exception of cold-rolled flat products into Chinese Taipei).

2. There are slight differences in the figures on Chart 4 and Table 2, due to differences in the sources.

**Table 2. Imports by product**

| | | Total steel products [1] | | Semi products | | Long products | | HR flat products | | CR flat products | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | '000 t | % | '000 t | % | '000 t | % | '000 t | % | '000 t | % |
| ASEAN5 | 1991 | 14 974 | 100.0 | 2 543 | 17.0 | 3 117 | 20.8 | 4 847 | 32.4 | 2 307 | 15.4 |
| | 1992 | 16 975 | 100.0 | 3 197 | 18.8 | 3 677 | 21.7 | 5 242 | 30.9 | 2 316 | 13.6 |
| | 1993 | 19 331 | 100.0 | 4 158 | 21.5 | 4 079 | 21.1 | 5 729 | 29.6 | 2 876 | 14.9 |
| | 1994 | 22 994 | 100.0 | 6 883 | 29.9 | 4 702 | 20.4 | 5 299 | 23.0 | 3 135 | 13.6 |
| | 1995 | 27 344 | 100.0 | 7 932 | 29.0 | 5 598 | 20.5 | 7 047 | 25.8 | 2 964 | 10.8 |
| | 1996 | 27 456 | 100.0 | 8 508 | 31.0 | 5 767 | 21.0 | 6 675 | 24.3 | 3 328 | 12.1 |
| Chinese Taipei | 1991 | 8 623 | 100.0 | 3 837 | 44.5 | 1 588 | 18.4 | 1 532 | 17.8 | 577 | 6.7 |
| | 1992 | 10 797 | 100.0 | 5 443 | 50.4 | 2 494 | 23.1 | 1 243 | 11.5 | 627 | 5.8 |
| | 1993 | 14 699 | 100.0 | 7 508 | 51.1 | 3 039 | 20.7 | 2 093 | 14.2 | 678 | 4.6 |
| | 1994 | 12 756 | 100.0 | 7 680 | 60.2 | 1 854 | 14.5 | 1 605 | 12.6 | 577 | 4.5 |
| | 1995 | 13 389 | 100.0 | 7 430 | 55.5 | 1 831 | 13.7 | 2 366 | 17.7 | 724 | 5.4 |
| | 1996 | 10 561 | 100.0 | 5 912 | 56.0 | 1 214 | 11.5 | 2 244 | 21.2 | 384 | 3.6 |

1. Includes coated sheets, pipes and tubes.

*Source*: SEAISI, *"Steel Statistical Yearbook"*.

11. The largest import sources for iron and steel products (i.e., pig iron, reduced iron and ferroalloys, semifinished and finished steel products) to both the ASEAN5 (in 1995), and Chinese Taipei (in 1996), were the NIS/ CEE area, followed by Japan, China and Brazil (Table 3).

**Table 3. Import origin of East Asian region**

**ASEAN 5 (1995)**

| Origin | '000 tonnes | % |
|---|---|---|
| NIS and CEE | 7 347 | 24.3 |
| Japan | 6 526 | 21.6 |
| China | 2 752 | 9.1 |
| Brazil | 2 035 | 6.7 |
| Korea | 1 956 | 6.5 |
| EU15 | 1 687 | 5.6 |
| ASEAN | 1 368 | 4.5 |
| Others | 6 561 | 21.7 |
| **Total** | **30 231** | **100.0** |

**Chinese Taipei (1996)**

| Origin | '000 tonnes | % |
|---|---|---|
| NIS and CEE | 4 013 | 33.4 |
| Japan | 2 238 | 18.6 |
| China | 1 378 | 11.5 |
| Brazil | 872 | 7.3 |
| EU15 | 827 | 6.9 |
| Others | 2 694 | 22.4 |
| **Total** | **12 021** | **100.0** |

*Note*: Including pig iron, reduced iron and ferroalloys.
CEE: Central and eastern European countries.

*Source:* Customs statistics

*Advances in exports*

12. Exports of the ASEAN5 and Chinese Taipei increased gradually in line with the rise in steel production. The combined volume of exports increased by 2.9 times during 1986 to 1996, rising from 2.45 million tonnes to 7.10 million tonnes (Table 4).

**Table 4. Exports of steel products (including semifinished products)**

Unit: '000 tonnes

| | 1986 | 1996 | 96/86 % |
|---|---|---|---|
| **ASEAN 5** | **1 011** | **3 338** | **330.2** |
| Indonesia | 225 | 627 | 278.7 |
| Malaysia | 147 | 897 | 610.2 |
| Philippines | 1 | 64 | 6 400.0 |
| Singapore | 411 | 933 | 227.0 |
| Thailand | 227 | 817 | 359.9 |
| **Chinese Taipei** | **1 443** | **3 765** | **260.9** |
| **Total 6 countries** | **2 454** | **7 103** | **289.4** |

*Source*: IISI, *"Steel Statistical Yearbook"*

*Trade balance*

13. Both the ASEAN5 and Chinese Taipei are net importers in almost all products. The imbalance is most prominent in semifinished products, while in long products, hot-rolled and cold-rolled flat products a certain amount is exported. Chinese Taipei stands out from other countries in the region in that it is a net exporter of cold-rolled flat products. (Table 5).

**Table 5. Trade balance by main products (1996)**

Unit: '000 tonnes

| | Semifinished products [1] | | | Long products [2] | | | Hot-rolled flat products [3] | | | Cold-rolled flat products [4] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Imports | Exports | Net imports | Imports | Exports | Net imports | Imports | Exports | Net imports | Imports | Exports | Net imports |
| **ASEAN 5** | **8 508** | **29** | **8 479** | **5 767** | **1 022** | **4 745** | **6 675** | **699** | **5 976** | **3 328** | **329** | **2 999** |
| Indonesia | 1 376 | 3 | 1 373 | 453 | 108 | 345 | 540 | 244 | 296 | 556 | 135 | 421 |
| Malaysia | 911 | 23 | 888 | 1 165 | 249 | 916 | 2 290 | 24 | 2 266 | 700 | 120 | 580 |
| Philippines | 1 951 | 0 | 1 951 | 738 | 18 | 720 | 633 | 0 | 633 | 322 | 33 | 289 |
| Singapore | 275 | 3 | 272 | 1 996 | 366 | 1 630 | 1 118 | 217 | 901 | 58 | 16 | 42 |
| Thailand | 3 995 | 0 | 3 995 | 1 415 | 281 | 1 134 | 2 094 | 214 | 1 880 | 1 692 | 25 | 1 667 |
| **Chinese Taipei** | **5 912** | **13** | **5 899** | **1 214** | **548** | **666** | **2 244** | **986** | **1 258** | **384** | **1 420** | **-1 036** |
| **Total 6 countries** | **14 420** | **42** | **14 378** | **6 981** | **1 570** | **5 411** | **8 919** | **1 685** | **7 234** | **3 712** | **1 749** | **1 963** |

1. Including ingots.
2. The total sum of sections, bars, wire rods, rails and sheet piles.
3. Plates, sheets and strips.
4. A minus in net imports means net exports.

*Source*: SEAISI, *"Steel Statistical Yearbook"*.

*Significance of trade to consumption*

14. The six East Asian countries are heavily dependent on imports. In the ASEAN5, in particular, imports of steel products exceed production. Net imports of finished products accounted for almost half of apparent consumption in the ASEAN5, while in Chinese Taipei the rate was only 5.6 percent in 1996[3]. The rate of exports to production remained at about 20 per cent for both the ASEAN5 and Chinese Taipei. Singapore was active in both imports and exports, and its exports exceeded production (Table 6).

**Table 6. Production, trade and consumption of steel products (1996)**

Unit: '000 tonnes

| | Production [1] | Imports [2] | Exports [2] | Apparent consumption | Exports/ production | Net imports/ consumption |
|---|---|---|---|---|---|---|
| | A | B | C | D=A+B-C | C/A % | (B-C)/D % |
| **ASEAN5** | **16 118** | **18 947** | **2 936** | **32 128** | **18.2** | **49.8** |
| Indonesia | 5 460 | 2 027 | 522 | 6 964 | 9.6 | 21.6 |
| Malaysia | 3 451 | 5 084 | 636 | 7 898 | 18.4 | 56.3 |
| Philippines | 2 615 | 1 976 | 61 | 4 529 | 2.3 | 42.3 |
| Singapore | 747 | 3 961 | 916 | 3 793 | 122.6 | 80.3 |
| Thailand | 3 845 | 5 899 | 801 | 8 944 | 20.8 | 57.0 |
| **Chinese Taipei** | **17 001** | **4 649** | **3 640** | **18 011** | **21.4** | **5.6** |
| **Total 6 countries** | **33 119** | **23 596** | **6 576** | **50 139** | **19.9** | **33.9** |

1. Production of hot-rolled steel products (include. what is further processed into cold-rolled and coated products).
2. Not including semifinished products.

*Source*: SEAISI, "*Steel Statistical Yearbook*"

*Growing importance in world steel trade*

15. As a result of the continuous growth in imports, the East Asian region has become one of the largest net importers of steel products during the last decade (Table 7). Net imports of the ASEAN5 increased from 5.15 million tonnes in 1986 to 24.42 million tonnes in 1996, or by 4.7 times in this period. As a region, the ASEAN area was the largest net steel importer in 1996. Equally dramatic change occurred in the former Soviet Union's position. During the last decade, it has changed from a marginal importer to the largest net exporter.

3. If semifinished products were taken into account, these figures should become much higher.

**Table 7. Changes in world trade in steel (including semifinished products, in net volumes)**

**Exporters and importers in 1986**

| Net exporters | | Net importers | |
|---|---|---|---|
| Japan | 25 417 | United States | 18 011 |
| EU15 | 22 865 | China | 17 225 |
| Germany | 5 786 | ASEAN 5 | 5 154 |
| France | 2 970 | Thailand | 1 373 |
| Brazil | 5 573 | Singapore | 1 214 |
| CEE | 5 347 | Indonesia | 968 |
| Czechoslovakia | 3 086 | Malaysia | 919 |
| Korea | 3 354 | India | 2 401 |
| | | Chinese Taipei | 953 |
| | | Former USSR | 795 |

**Exporters and importers in 1996**

| Net exporters | | Net importers | |
|---|---|---|---|
| Former USSR | 34 490 | ASEAN 5 | 24 418 |
| Russia | 23 248 | Thailand | 9 144 |
| Ukraine | 9 998 | Malaysia | 5 185 |
| EU 15 | 17 963 | Philippines | 3 897 |
| Germany | 5 044 | Singapore | 3 354 |
| United Kingdom | 3 081 | Indonesia | 2 838 |
| France | 1 982 | United States | 21 927 |
| Japan | 13 306 | China | 9 265 |
| CEE | 10 752 | Chinese Taipei | 6 831 |
| Slovak Republic | 3 084 | Korea | 688 |
| Poland | 2 427 | India | 683 |
| Czech Republic | 2 154 | | |
| Brazil | 9 879 | | |

*Source*: IISI, *"Steel Statistical Yearbook"*

## 3. Capacity expansion

16. The promising future of regional steel consumption resulted in new investment in the steel industry. The move accelerated particularly after 1990; most of the projects designed during the boom period will be on stream by the turn of the century, with some already put into operation. The investment has included several projects in flat-rolling, as well as upstream production. A number of joint-venture companies were established to carry out these projects.

17. Steelmaking capacity is expected to expand by more than 11 million tonnes in the ASEAN5 and 7 million tonnes in Chinese Taipei during 1995 to 1999, an increase of 82.3 per cent and 63.8 per cent, respectively. In most cases, upcoming steelmaking facilities, highly dependent on the less costly electric arc furnace route, will be accompanied by downstream facilities. The capacity of hot-rolled flat products is expected to rise from 6.95 million tonnes to 13.95 million tonnes in the ASEAN5, and from 6.71 million tonnes to 12.27 million tonnes in Chinese Taipei, during the same period (Table 8).

18. The gap between steelmaking and hot-rolling capacity, peculiar to most developing areas, is likely to widen in the course of the development, despite the heavy investment in steelmaking facilities. This seems to imply a continued dependence on imported semifinished materials.

**Table 8. Capacity changes between 1995 and 1999**

**ASEAN 5**

| | Capacity ('000 tonnes) | | | | | Increase 1995-99 | |
|---|---|---|---|---|---|---|---|
| | **1995** | **1996** | **1997** | **1998** | **1999** | **'000 t.** | **% change** |
| **Steelmaking** | **13 497** | **14 697** | **17 247** | **23 647** | **24 607** | **11 110** | **82.3** |
| Basic oxygen furnace | 160 | 0 | 0 | 1 350 | 1 350 | 1 190 | 743.8 |
| Electric arc furnace | 13 337 | 14 697 | 17 247 | 22 297 | 23 257 | 9 920 | 74.4 |
| **Hot rolling** | **19 505** | **23 215** | **25 935** | **33 215** | **34 075** | **14 570** | **74.7** |
| Long products | 12 555 | 15 365 | 16 585 | 19 265 | 20 125 | 7 570 | 60.3 |
| Flat products | 6 950 | 7 850 | 9 350 | 13 950 | 13 950 | 7 000 | 100.7 |
| **Cold rolling** | **2 818** | **3 068** | **4 318** | **6 588** | **7 613** | **4 795** | **170.2** |

**Chinese Taipei**

| | Capacity ('000 tonnes) | | | | | Increase 1995-99 | |
|---|---|---|---|---|---|---|---|
| | **1995** | **1996** | **1997** | **1998** | **1999** | **'000 t.** | **% change** |
| **Steelmaking** | **11 521** | **14 921** | **15 621** | **18 871** | **18 871** | **7 350** | **63.8** |
| Basic oxygen furnace | 5 654 | 8 054 | 8 054 | 8 054 | 8 054 | 2 400 | 42.4 |
| Electric arc furnace | 5 867 | 6 867 | 7 567 | 10 817 | 10 817 | 4 950 | 84 4 |
| **Hot rolling** | **20 711** | **21 311** | **27 711** | **29 671** | **29 671** | **8 960** | **43.3** |
| Long products | 14 000 | 14 600 | 16 400 | 17 400 | 17 400 | 3 400 | 24.3 |
| Flat products | 6 711 | 6 711 | 11 311 | 12 271 | 12 271 | 5 560 | 82.8 |
| **Cold rolling** | **4 090** | **4 390** | **5 465** | **5 665** | **5 735** | **1 645** | **40.2** |

*Sources*: OECD Secretariat; Metal Bulletin: *"Iron and Steel Works of the World"*

## 4. The impact of the economic slowdown

19. Since the economic crisis in East Asia is coinciding with the start-up of newly built facilities, it is likely that the gap between capacity and consumption at the global level may widen.

### *a) Increasing self-sufficiency and declining net imports*

20. Table 9 provides a simulation of structural changes from 1991 to 1999, assuming that both steel consumption and the capacity utilisation rate stay at the same level in 1999 as in 1996. Production and capacity are measured in terms of hot-rolled products (long products, plates and sheets, etc.), which includes material converted into cold-rolled products, coated products and pipes and tubes, as well as the

final hot-rolled products, while net imports are measured in terms of finished products, comprising hot-rolled, cold-rolled and coated products, and pipes and tubes.[4]

21. The simulation indicates that self-sufficiency (production/consumption) would grow from 41.8 per cent in 1991 to 73.5 per cent in 1999 in the ASEAN5, and from 80.0 per cent to 131.7 per cent during the same period in Chinese Taipei, which means that Chinese Taipei would become a net exporter of finished steel products by 1999.[5] Net imports of finished steel products would decline accordingly; from 16.0 million tonnes in 1996 to 8.5 million tonnes in the ASEAN5, while net exports from Chinese Taipei would exceed 5.0 million tonnes in 1999[6].

**Table 9. Simulation of the structural changes in the supply and demand of finished steel products**

**ASEAN5**

| | | 1991 | 1995 | 1996 | 1999 |
|---|---|---|---|---|---|
| Consumption | A | 18 200 | 32 500 | 32 100 | *32 100* |
| Production | B | 7 600 | 14 200 | 16 100 | *23 600* |
| Imports (net) | A-B | 10 500 | 18 200 | 16 000 | *8 500* |
| Capacity | C | | 19 500 | 23 200 | 34 100 |
| Self sufficiency | B/A % | 41.8 | 43.7 | 50.2 | *73.5* |
| Capacity utilisation | B/C % | | 72.8 | 69.4 | *69.4* |

**Chinese Taipei**

| | | 1991 | 1995 | 1996 | 1999 |
|---|---|---|---|---|---|
| Consumption | A | 16 000 | 19 600 | 18 000 | *18 000* |
| Production | B | 12 800 | 17 100 | 17 000 | *23 700* |
| Imports (net) | A-B | 3 300 | 2 400 | 1 000 | *-5 700* |
| Capacity | C | | 20 700 | 21 300 | 29 700 |
| Self sufficiency | B/A % | 80.0 | 87.2 | 94.4 | *131.7* |
| Capacity utilisation | B/C % | | 82.6 | 79.8 | *79.8* |

*Sources*: Consumption, production, imports: SEAISI, *"Steel Statistical Yearbook"*
Capacity: OECD Secretariat

4. This method is taken in order to avoid duplication in calculating the level of the production; however, it should be noted that, due to the complexity of the steelmaking process, a precise comparison between capacity, production and consumption is not possible.

5. This does not necessarily mean that the country becomes a net exporter of steel products (including semifinished products), taking into account its dependence on imported semifinished products.

6. In the longer term, a new integrated steel mill which is currently under construction in Chinese Taipei will bring a substantial change in regional supply and demand patterns, when it comes on stream at the beginning of the next century.

### *b) Change in traded items*

22. As noted earlier, the ASEAN5 and Chinese Taipei are generally large importers of semifinished, long products, hot-rolled and cold-rolled flat products. If there are no significant changes in steel consumption by the turn of the century, the upcoming capacity expansion will inevitably affect the structure of traded items. As shown earlier, the region would continue to be dependent on imported semifinished products despite steelmaking capacity increases of more than 18 million tonnes. Concerning long products, the capacity increase of 7.57 million tonnes in the ASEAN5 and 3.40 million tonnes in Chinese Taipei from 1995 to 1999 would narrow the gap between supply and demand and, under certain circumstances, the six countries might even become net exporters. In the case of hot-rolled flat products, the change is less predictable since it is necessary to know the portion of further treated materials. However, a certain amount of imports is likely to be replaced by domestic production as a result of the capacity increase of 7.00 million tonnes in the ASEAN5 and 5.56 million tonnes in Chinese Taipei during the period.

### *c) Intensified competition in world steel markets*

23. In the face of the shrinking domestic market and declining sales, East Asian steel manufacturers are likely to be inclined to explore export opportunities. The depreciation of the local currencies against the dollar will enhance their international competitiveness.

24. However, this could be slow to develop, since the currency depreciation will also have certain negative effects on the competitiveness of East Asian steel mills by inflating the price of imported raw materials, on which most regional mills are highly dependent. Moreover, some reports indicate that the financial crisis is making it difficult for some local steel mills to open letters of credit to finance the purchase of raw materials.

25. In addition, it is likely that major exporters to the region, such as NIS, central and eastern European and some neighbouring Asian countries, will shift their exports from the East Asian market to other stronger markets.

26. Thus the effects of the economic crisis are not likely to be limited to East Asia. They may affect markets elsewhere and consequently lead to intensified competition in world steel markets. Signs of this are already occurring in some areas. The Chinese and Indian press have reported that low-priced imports from the Asia-Pacific area were having effects on their home markets, while reports of increased exports to Europe and North America from the area are beginning to appear. The intensified competition, to the extent it develops, is likely to put downward pressures on steel prices.

## Annex Table 1. Major facilities coming on stream by 1999 (including those that started up in 1997)

### ASEAN5

**1. Construction of steelmaking and accompanying downstream facilities**

| Company | Country | Start-up | Steelmaking | | Hot rolling | | Notes |
|---|---|---|---|---|---|---|---|
| | | | | capacity | | capacity | |
| Nakornthai Strip Mill | T | 1997 | EAF | 1 500 | HSM | 1 500 | 1/ |
| Amsteel Mills | M | 1998 | EAF | 750 | Bar | 450 | 2/ |
| Gunawan Iron and Steel | M | 1998 | BOF | 1 350 | - | - | 3/ |
| Megasteel | M | 1998 | EAF | 2 000 | HSM | 2 000 | |
| Bacnotan Steel Industries | P | 1998 | EAF | 300 | Bar | 300 | 4/ |
| Siam Strip Mill | T | 1998 | EAF | 1 700 | HSM | 1 700 | 5/ |
| PT Jakarta Kyoei Steel Wks | I | 1999 | EAF | 360 | Section | 360 | |
| Anshin Steel | M | 1999 | EAF | 600 | Bar/ WR | 500 | |

1/ Commissioned in November 1997.
2/ Added to the existing facilities (both EAF and bar mill).
3/ The construction of an integrated steel mill.
4/ Philippine-Japan JV.
5/ Partly held by Itochu (Japan).

**2. Construction of hot-rolling facilities (without upstream facilities)**

| Company | Country | Start-up | Facilities | | Notes |
|---|---|---|---|---|---|
| | | | | capacity | |
| Bangkok Iron & Steel | T | 1997 | Bar | 300 | Added to the existing mill. |
| SteelAsia Manufacturing | P | 1997 | Bar | 320 | Philippine-Singapore JV. |
| | | 1998 | Bar | 500 | |

**3. Construction of cold-rolling facilities**

| Company | Country | Start-up | Facilities | | Notes |
|---|---|---|---|---|---|
| | | | | capacity | |
| Thai Cold Rolled Steel Sheet | T | 1997 | CSM | 1 000 | Thai-Japan JV. HSM and galvanizing facilities are under operation at the same site. Commissioned in June 1997. |
| PT Essar Dianjaya | I | 1997 | CSM | 200 | Essar of India holds 90 %. Commissioned in March 1997. |
| BHP Steel (Thailand) | T | 1998 | CSM | 300 | Thai-Australia JV. |
| Siam United Steel | T | 1998 | CSM | 1 000 | Thai-Japan-Korea JV. |

*Notes*: Capacities are in nominal terms, not strictly compatible with effective capacities.
*Countries*: I: Indonesia, M: Malaysia, P: Philippines, T: Thailand
*Abbreviations*: EAF: electric arc furnace, BOF: basic oxygen furnace, WR: wire rod mill, HSM: hot strip mill, CSM: cold strip mill, JV: joint venture

## Annex Table 1. Major facilities coming on stream by 1999 (including those that started up in 1997) (continued)

### Chinese Taipei

**1. Construction of steelmaking and accompanying downstream facilities**

| Company | Start-up | Steelmaking | capacity | Hot rolling | capacity | Notes |
|---|---|---|---|---|---|---|
| Lung Ching | 1997 | EAF | 350 | WR | 350 | |
| Yieh Hsing | 1997 | EAF | 350 | WR | 350 | |
| Kuei Yi Industrial | 1998 | EAF | 3 250 | H-section | 600 | Held 30% by China Steel |
| | | | | WR | 400 | Corporation (CSC). Could |
| | | | | HSM | 960 | be delayed. |

**2. Construction of hot-rolling facilities (without upstream facilities)**

| Company | Start-up | Facilities | capacity | Notes |
|---|---|---|---|---|
| Chia I Industrial | 1997 | WR | 500 | |
| Feng An Metal Industries | 1997 | WR | 500 | An Feng Steel group. |
| Yieh Loong Enterprise | 1997 | HSM | 2 400 | Yieh Loong group is also carrying out the construction of a 7.5m tpy integrated mill. |

**3. Construction of cold-rolling facilities**

| Company | Start-up | Facilities | capacity | Notes |
|---|---|---|---|---|
| An Feng Steel | 1997 | CSM | 1 000 | To be operated by its subsidiary of Jenn An Steel. |
| Yieh United | 1997 | CSM | 75 | Added to the two existing mills. |
| Ornatube Enterprise | 1998 | CSM | 200 | Added to the existing mill. |
| Chang Mien Industries | 1999 | CSM | 70 | Added to the existing mill. |

*Notes*: Capacities are in nominal terms, not strictly compatible with effective capacities.

*Countries*: I: Indonesia, M: Malaysia, P: Philippines, T: Thailand

*Abbreviations*: EAF: electric arc furnace, BOF: basic oxygen furnace, WR: wire rod mill, HSM: hot strip mill, CSM: cold strip mill, JV: joint venture.

## Annex Table 2: Delayed projects

**Thailand**

| Company/ project | Facilities | Annual capacity | Original start-up | Notes |
|---|---|---|---|---|
| Thai Special Steel Industry (TSSI) | BF | 3 800 | mid-99 | Reportedly cancelled. |
| | BOF | 2 300 | | |
| MR. B.C. Mondal | DR | 1 800 | na | |
| NTS Group | DR | 1 500 | na | |
| | CSM | 1 000 | | |
| | CGL | 800 | | |
| United Iron & Steel | DR | 750 | na | Not likely to be proceeded with. |
| Sahaviriya Steel Industries | DR | 1 800 | na | To be suspended until the economy improves. The HSM, CSM (through JV) and EGL (through JV) are already in operation. |
| | EAF | 2 000 | na | |
| LPN Plate Mill | HSM (2nd) | 1 200 | na | First HSM is scheduled to start-up in 1998. |
| | CSM | 900 | 98 | Concentrating on the construction of HSM. |
| Nippon Denro Ispat (NDIL) | CSM | 600 | na | |
| Siam Steel Pipe (SSP) | Section/ bar | 500 | 97 | |
| Thai-German Products | Section | 700 | na | |

**Indonesia**

| Company/ project | Facilities | Annual capacity | Original start-up | Notes |
|---|---|---|---|---|
| KS-Posco | EAF | 1 000 | nov-99 | To be postponed for six months due to the failure to arrange financing. |
| | CC- thin slab | 1 000 | | |
| | HSM | 1 000 | | |

*Note*: These projects are excluded from the calculation of capacity increases, on account of their uncertainty.

*Abbreviations:* BF: blast furnace, DR: direct reduction unit, BOF: basic oxygen furnace, CC: continuous casting machine, HSM: hot strip mill, CSM: cold strip mill, CGL: continuous galvanising line, EGL: electro-galvanising line.