Scrap Supply in the Global Steel Industry: A Better Path

OECD Steel Committee

Thomas Danjczek
Steel Manufacturers Association

Alan Price
American Scrap Coalition

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The Rise of Scrap

• From 2000 to 2008, world steel production in electric arc furnaces rose by 41.6%
• Over the same period, world trade in steel scrap rose by 60.3%
  – However, the tradable world scrap supply has essentially plateaued since 2004
• Some countries wrongly assume that it is always “cheaper” to make steel from scrap than from iron ore
  – In fact, the prices of globally traded steel scrap and iron ore are closely linked
Scrap Trade Since 2000

World Scrap Trade, 2000 - 2009

Source: World Steel Association

Scrap Balances, 2008
(Million Metric Tons)

<table>
<thead>
<tr>
<th>Region</th>
<th>Supply</th>
<th>Consumption</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia</td>
<td>154.5</td>
<td>175.4</td>
<td>-20.9</td>
</tr>
<tr>
<td>European Union</td>
<td>106.2</td>
<td>111.3</td>
<td>-5.1</td>
</tr>
<tr>
<td>NAFTA</td>
<td>92.5</td>
<td>81.6</td>
<td>10.9</td>
</tr>
<tr>
<td>CIS</td>
<td>50.2</td>
<td>50.7</td>
<td>-0.5</td>
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<tr>
<td>Latin America</td>
<td>14.8</td>
<td>14.8</td>
<td>0.0</td>
</tr>
<tr>
<td>Other Europe</td>
<td>9.8</td>
<td>26.8</td>
<td>-17.0</td>
</tr>
<tr>
<td>Other World</td>
<td>13.5</td>
<td>12.7</td>
<td>0.8</td>
</tr>
<tr>
<td>World</td>
<td>441.5</td>
<td>473.3</td>
<td>-31.8</td>
</tr>
</tbody>
</table>

Source: World Steel Association
Scrap Exporters and Importers

- Leading scrap exporters in 2009 (net exports)
  - United States (19.4 million metric tons)
  - Japan (9.3 million tons)
  - EU (8.8 million tons)
- Leading scrap importers (net imports)
  - Turkey (15.6 million tons)
  - China (13.7 million tons)
  - Korea (7.3 million tons)
- Some countries depend on scrap imports for more than 30% of their total steel production
  - Turkey
  - Belarus
  - Egypt
  - Malaysia
  - Thailand

EAF Capacity Expansion and Scrap Supply

- Generally, it is more cost efficient and less polluting to consume scrap where it is generated
- China is openly discussing increasing scrap consumption
- Some countries that are heavily dependent on imported scrap, like Turkey, nonetheless are expanding EAF capacity dramatically
  - Turkey plans to increase EAF capacity by 8.8 million tons by 2015
- Absent greater supply, increases of this magnitude will simply put more pressure on scrap prices
- Options include
  - Bringing capacity expansion in line with scrap supplies
  - Switch to alternative iron units
  - Increase domestic recycling to grow domestic scrap supply
  - Restrict exports of steel scrap
Restrictions on Scrap Exports

- As many as 20 countries have imposed restrictions on scrap exports
- Countries restricting exports include
  - Russia
  - Ukraine
  - China
- Forms of export restrictions include
  - Export bans
  - Export quotas
  - Export taxes

Impact of Export Restrictions

- Reduced global supply of scrap, including actual shortages
  - This can especially affect developing countries, which tend not to have either the sources of scrap or the recycling systems present in more developed countries
- Increased exports from non-restricting countries like the United States and Canada
- Higher global prices
  - Including higher prices in major scrap exporters
- Lower domestic prices in countries imposing export restrictions
  - This in turn gives their producers a cost advantage in international competition
Justifications for Export Restrictions

- Production of the material from scrap consumes less energy than production from raw materials
- Production of raw materials has detrimental environmental effects (pollution, etc.)
- Export restrictions ensure that adequate supplies of scrap are available for would-be users of scrap
- Countries have the right to dispose of their resources in the manner they see fit
- Supplies of scrap are necessary to ensure production of downstream products for national security purposes

Implications

- If these justifications are accepted, every scrap producer could legitimately limit exports of steel scrap
- This would wreak havoc on the global steel industry
- Countries that are heavily dependent on scrap imports would be particularly affected
A Better Path

• A better alternative for all concerned is to increase the domestic availability of scrap
• Domestic access to steel scrap requires the creation of a comprehensive system for recycling scrap
  – The United States, with the most advanced steel recycling network in the world, recycles over 83 percent of the steel it produces
• Components of a recycling network include
  – Sources of scrap
  – Scrap processors
  – Scrap end-users
  – Market mechanisms for pricing and delivering scrap
• Countries like Turkey and China that are dependent upon imports of scrap may consider whether it is wise to increase EAF capacity before the availability of scrap increases as well

Final Thoughts

• Ultimately, the world needs greater total supply of scrap
  – Scrap supply from traditional sources (U.S., EU, Japan) are approaching its practical limit
• Expanded recycling networks for steel are good for
  – Domestic producers
  – The global steel industry
  – The environment
• Countries that are scrap deficient, such as China and Turkey, should balance EAF capacity expansion against their ability to expand local scrap supply or to build alternative iron facilities