Overview on HR, CR & Galvanised Steel Industry

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1. Introduction:

Steel is the mostly widely used material in the world next only to paper and concrete. Steel is one of the most recycled materials and every new steel product contains some recycled steel.

Finished steel products are usually categorised into two categories viz non-flat products and flat products. In the flat product segment, hot-rolled coils/sheets, cold-rolled sheets and coils and galvanised sheets and coils play a unique and very important role in a country's industrial and infrastructure growths.

In 2008-09, the share of HR coils/skelp, HR sheets, CR sheets/ coils and GP/ GC sheets had together a share of over 82 percent in the total gross production of flat products in India, and their share in finished steel amounted to 44.53 percent.

In apparent consumption based on 'Production for Sale' the share of above group of products in flat products was 76.18 percent and 43.29 percent in total finished steel after adjustment for 'Double Counting.'

2. HR Coils

HR coils is regarded as the most important product in the flat steel product segment. World Steel Dynamic (WSD) had once categorised HR coils as a 'Quasi Semi- Finished Steel.' Its downstream products like cold-rolled sheets and coils, galvanised plain (GP) and galvanised corrugated sheets (GC) tinplates, pipes etc play a very critical and important role in the industrial development of a country. The global market price of HR coils is regarded as an indicator of price and market trends of all flat products.

In 2008-09, the gross production of HR coils/skelp was 14.31 mt with a share of 24.21 percent in the gross production of carbon finished steel. The production of HR sheets in 2008-09 was only 592,000 tons which is marginal for the whole HR group of products.

3. Industry Groupwise Consumption of HR Production in India:

The industry groupwise consumption of HR coils/ strips/ sheets in India 2008-09 are shown below :

Industry Groupwise Consumption of HR Products during 2008-09

Industry Group	% of Total Consumption
CR Units	30.8
Tube Makers	27.0
Galvanised / Coated Sheets	8.7
Electrical Manufactures	6.8
Machinery Manufactures	4.2
Auto/ Tractor/ Cycle Industry	4.0
LPG cylinder Industry	3.0
Other Engineering Units	3.5
Others	12.0
TOTAL	**100.00**

N. B. : The above figures are indicative.

4. Major Applications of HR Coils/ Sheets/skelp

Sr No	Grade/ Specifications	Applications
1	IS: 10748/95 Grades I to V	Tube Making
2	IS: 11513/85, Grades, O,D,DD & EDD	Cold reduction, manufacture of GP/GC sheets, auto, white good & general engineering
3	IS: 1079/94, Grades O, D,DD & EDD	General structural application and forming purposes, general engineering
4	IS: 2062/99 Grades A, B, C IS: 5986/ 1992, Fe 330, 360, 410, 510	Fabrication of engineering structurals, manufacture of Hamilton and other poles, flanging applications.
5	Medium Carbon SAE 1030, E-34, E- 38, SAPH- 310, SAPH-370, 440,SK- 46	Strapping of high strength, fabrication of long and cross members for LCV, MCV and HCVs
6	JISC 3113, SAPH-45, SAPH-310, SAPH-370, SAPH-400, BSK-46	Long and cross member of LCVs & MCV, wheel disc, wheel rim and other structural components of passenger cars
7	SAE- 1541	Manufacture of forks & spokes for two wheelers
8	IS: 6240/1999	Domestic auto and LPG cylinders
9	JISG-3116, EN-10120	Export quality LPG cylinders
10	SAE-1012	Manufacture of wheel disc & cold formed sections
11	Medium Carbon Grades: SAE-1040, SAE 1045, SAE-1055	Chains including cycle chains, hair clips, clutch plates, hacksaw plates etc
12	Grade 2062/1999. Grade B with copper, IRSM-41/ HCRS	Manufacture of corrosion resistant engineering products
13	AP15L, Grades A, B, X-42, X-46, X-56, X-60, X-65, X-70 and X-80	Manufacture of tubes & pipes mostly for oil and gas sectors

5. Production of HR coils/skelp/ Sheets in India :

The Gross production (including IPT/ producers' own consumption) in India between 2000-01 and 2008-09 are shown in the Table-1.

Table-1: Gross Production of HR Coils/ Skelp/ Sheets in India 2000-01 to 2008-09 ('000 tons)

Year	Gross Production of			Y-o-Y Change (%)
	HR Coils/ Skelp	HR Sheets	Total	
2000-01	7670	486	8156	-----
2001-02	7208	655	7863	(-) 3.59
2002-03	8735	519	9254	17.96
2003-04	9280	856	10136	9.53
2004-05	9774	1110	10884	7.38
2005-06	11082	610	11692	7.42
2006-07	12989	703	13692	17.11
2007-08	13684	757	14441	5.47
2008-09	14,307	592	14899	3.17

Source: Joint Plant Committee (JPC)
N.B. Gross Production has been used in the table to maintain the comparability of the data. 'Production for Sale' has been introduced by JPC in recent years.

The decline of 3.59 percent in 2001-02 was due to a low growth of the manufacturing sector, low demand and lower market prices. In 2008-09, output has increased by 3.17 percent despite a slow sown in industrial activity during the second half of the year. In 2008-09, India recorded the highest ever gross production of 14.7 mt of HR products.

6. Imports

Imports of HR coils by India are shown in Table-2

Table-2: Imports of HR coils by India; 2001-02 to 2008-09 ('000 tons)

Year	Import	Apparent Consumption (A/C)	Import as % of AC
2000-01	578	6872	8.41
2001-02	362	6261	5.78
2002-03	318	7326	4.34
2003-04	413	7657	5.39
2004-05	817	8597	9.50
2005-06	1527	9523	16.03
2006-07	1572	13041	12.05
2007-08	2948	15256	19.32
2008-09	2214	15499	14.28

Source: Joint Plant Committee (JPC)
N.B.: 1. Apparent consumption figures have been arrived at on the basis of 'Gross Production' to maintain the comparability of the data.
2. Apparent consumption is inclusive of feed materials of HR coils used by CR units.

Imports of HR coils was high since 2004-05 and reached the highest figure of 2.95 mt in 2007-08 s the country's manufacturing growth was robust during the above period. Imports fell by 24.9 percent in 2008-09 due to lower manufacturing activity during the second half of the years a result of industrials slow down.

7. Exports

Exports of HR coils by India between 2001-02 and 2008-09 are presented in Table-3

Table -3: Export of HR Coils by India: 2001-02 to 2008-09 ('000 tons)

Year	Exports	Y-o-Y Growth (%)	Export as % of Production
2001-02	979	----	13.58
2002-03	1393	42.29	15.95
2003-04	1522	9.26	16.40
2004-05	1328	(-) 12.75	13.59
2005-06	1263	(-) 4.90	11.40
2006-07	1580	25.10	12.16
2007-08	1391	(-) 12.00	10.17
2008-09	943	(-) 32.21	6.59

Data Source: Joint Plant Committee (JPC)
N.B. The production figures are Gross Production.

The drop in exports of HR coils in 2004-05 and 2005-06 was due to many leading producers diverting their

production to meet the robust domestic demand and not so high export prices in the global market. The hefty drop of 32.21 percent in 2008-09 over the previous year was the result of massive slow down in the global market particularly from October, 2008.

India recorded its highest export of HR coils at 1.58 mt in 2006-07. In that year, India's major exports were to Belgium-0.58 mt, Spain- 0.80 mt, UAE - 0.05 mt, Italy-0.09 mt, Kenya- 0.05 mt and USA-0.04 mt.

8. Apparent Consumption:

Apparent consumption of HR coils in India between 2001-02 and 2008-09 is shown in Table-4.

Table-4: Apparent consumption of HR coils in India between 2001-02 and 2008-09 ('000 tons)

Year	Apparent Consumption of HR Coils	Y-o-Y Growth (%)
2001-02	6261	—
2002-03	7326	17.01
2003-04	7657	4.52
2004-05	8597	12.28
2005-06	9523	10.77
2006-07	13041	36.94
2007-08	15256	16.98
2008-09	15499	1.59

Data Source: Joint Plant Committee (JPC)
N.B. 1. The above figures include skelp, which is marginal.
2. Apparent consumption figures are based on 'Gross Production' and are inclusive of feed materials used of CR units.

India's highest ever consumption of HR coils was about 15.50 mt in 2008-09 (based on 'Gross production') despite the industrial slow down in the second half of the year.

9. Thin Slab Casting:

Broadly defined thin slab casting technology elements the primary breakdown portion of a hot strip mill. Also, the equipment needed to continuously cast a 2- inch thick slab is much less than a conventional 8-inch or 10- inch thick slab. This makes the thin slab casting relatively inexpensive.

Advantages for EAF steel making which are tied to thin slab casters and a hot strip mill include the following:

- Low capital costs. The elimination of slab handing facilities, re-heating system and the break down mill, can reduce the total capital costs by over 50 percent.
- Relatively few workers are employed.
- High yield.
- Rising output as new technologies are developed to increase the casting speed.
- Modifications of the rolling mill and even thinner sheet in hot strip mill.

The uniform conditions of the slab in a thin slab caster produce a finished coil with uniform exit conditions in term of gauge and temperature. Tolerances, gauge control, crown and wedge at these facilities are among the best in the industry.

The second generation thin slab casters are employing a number of new features like electro-magnetic brake, hydraulic mould oscillation and some type of liquid core slab reduction system to improve the product quality.

Major Thin Slab Casting Processes are:

- SMS Demag's Compact Steel Prodcution (CSP) technology.
- In-line Strip Production (ISP) technology developed by Mannesmann Demag.
- Danieli's flexible thin slab casting technology (FTSR).
- Control process developed by Voest- Alpine of Austria.

India's Ispat Industries Ltd has installed CSP technology at its Dolvi plant in Maharashtra, which provides the following major advantages:

1. About 50 percent space is required as compared to a conventional HS Mill of the same size
2. Overall energy consumption for production of HR coils per ton is only 90,000 K Cal as compared to 350,000 K Cal with cold charged EAF.
3. Only 29 to 30 minutes of process time is required as against 8 hours in a conventional thick slab rolling process.
4. From liquid steel to the hot-rolled coils stage, the yield is 96/97 percent as against 93/94 percent in the conventional process.
5. Since no slab re-heating or roughing reaction is required, the rolling mill cost index is just 100 as compared to 150 for the conventional thick slab rolling process.
6. Labour productivity is very high.
7. Ispat's HS Mill is capable of producing thin strip below 1.00 mm thickness.

10. Cold Rolled Products:

Cold-rolled coils/ strips and sheets are versatile steel products that are used as critical inputs in various sophisticated industries which demand very Stringent Quality Specifications, high level of surface finish and close tolerances in dimension.

Important applications of CR products are found in the manufacture of automotive body/ auto components, petroleum tankers, lube grease barrels, bitumen drums, agricultural and electrical equipment, earth moving equipment, furniture, office equipment, precision tube, bicycle components, fabricated parts of engineering, machinery, railway coaches, locomotives, railway wagons, elevators, containers, trucks and cold formed sections.

11. Industry Groupwise consumption of CR Products:

The industry groupwise consumption of CR products in India is shown below:

Industry Groupwise consumption of CR Products:

Industry Group	% Share in Total Consumption of CR Products
Auto/Tractor/ Cycle	21.00
Drums/ Barrels/ Containers	12.50
Galv/ Coated Sheets	13.70
Oil Sector	11.80
Tube Makers	6.50
Furniture Makers	6.85
Consumer Durables	7.15
Agri Implements	4.50
Other Engg. Units	3.75
Machinery Manufactures	3.25
Electrical Manufactures	2.80
CR Units	3.20
CR Units	3.20
Other	3.00
TOTAL	**100.00**

N.B. the figures are indicative.

12. Major Applications of Cold- Rolled Products:

Gradewise applications (major) of Cold-Rolled Products are shown below:

Specification/ Grades	Applications
Full Hard IS: 513-o un-annealed	Coated Sheets
IS: 5/3-O (SK)/ D (K)	Packing, Precision tubes
IS: 5/3D/ DD/ EDD	House holding applications, Automobiles
IRSM-41	Railway coaches, wagons
IS: 5/3O/D with copper	Corrosion resistant applications
Semi- Processed Electrical Steel	Fractional Horse Power Motors and Electrical Application
HSCR 26/35	Load bearing components for automobiles, rolled formed sections, industry storage systems, drums, barrels etc.

12. Production:

The gross production of CR sheets/ coils in India between 2001-02 and 2008-09 are shown in Table- 5.

The low growth in production during 2007-08 was mainly due to the lesser output at Bokaru Steel Plant which recorded a decline of 99,000 tons in the year as compared to the previous year as its CR mill was shut down for capital repairs for some period. The drop in production in 2008-09 was due to the prevailing industrial recession during the year.

Table-5: Gross Production of CR Sheets/ Coils between 2001-02 and 2008-09 ('000 tons)

Year	Gross Production	Y-o-Y Growth (%)
2001-02	4800	------
2002-03	5055	5.31
2003-04	5597	10.72
2004-05	6151	9.90
2005-06	6791	10.40
2006-07	7447	9.66
2007-08	7451	0.05
2008-09	6802	(-) 8.71

Data Source: Joint Plant Committee
N.B. The above figures include IPT and producers' own consumption

13. Exports:

Export of CR products by India are shown in Table- 6

Table-6: Export CR Products by India: 2001-08 to 2008-09 ('000 tons)

Year	Export	Export as % of Production (Gross)
2001-02	320	6.67
2002-03	574	11.36
2003-04	770	13.76
2004-05	1266	20.58
2005-06	1158	17.05
2006-07	386	5.18
2007-08	510	6.84
2008-09	327	4.81

Data Source: Joint Plant Committee (JPC)
N. B. Production includes IPT and producers' own consumption.

India exported a significant portion of its production in 2004-05 and 2005-06. But in 2006-07 and 2007-08, the producers pegged their exports to meet the robust domestic demand. In 2008-09, exports were low as the global prices came down substantially and the market demand declined considerably October, 2008.

14. Imports:

Imports of CR coils by Indian between 2001-02 and 2008-09 are shown in Table-7.

Table-7: Imports of CR Coils by India: 2001-02 to 2008-09 ('000 tons)

Year	Import	Apparent Consumption (AC)	Imports as % of AC
2001-02	204	4539	4.49
2002-03	303	4783	6.33
2003-04	243	5070	4.79
2004-05	287	5172	5.55
2005-06	485	6118	7.92
2006-07	606	7582	8.01
2007-08	821	7742	10.60
2008-09	702	7166	9.80

Data Source: Joint Plant Committee (JPC)
N.B. Apparent consumption figures are based on gross production including IPT and producers' own consumption

Imports of CR coils has increased considerably since 2005-06. This has happened due to an increased demand of high quality materials in the country fuelled by robust industrial growth in the country. However, there was a big drop of 14.49 percent in import of CR coils during 2008-09 over the previous year due to a drop in market demand during the second half of the year as result of recession in the industry.

15. Apparent Consumption:

Apparent consumption of CR sheets/ coils in India between 2001-02 and 2008-09 are presented in Table-8.

Table-8: Apparent Consumption of Cold-Rolled Sheets/Coils : 2001-02 to 2008-09 ('000 tons)

Year	Apparent Consumption	Y-o-Y Growth (%)
2001-02	4539	------
2002-03	4783	5.38
2003-04	5070	6.00
2004-05	5172	2.01
2005-06	6118	18.29
2006-07	7562	23.60
2007-08	7742	2.38
2008-09	7166	(-) 7.44

Data Source: Joint Plant Committee (JPC)
N.B. 1. The apparent consumption figures are based on gross production.
2. The apparent consumption figures include feed materials of CR coils used by galvanising units.

16. Changing Pattern of Cold Rolled Product Demand:

The demand for cold-rolled products in India is showing an accelerated growth. The requirements of product quality are also changing fast. The change in the usage of cold-rolled steel is evident in two major areas. These are:

a) Galvanised/ Coated Sheets

b)Newer sheets like interstitial free (IF) and brake hardening steels for the automobile sector.

17. Galvanised Steel Products:

GP/GC sheets are value-added products that are sturdy, lightweight, bright in appearance, corrosion resistant and environment friendly.

Galvanised steel is basically zinc coated products and includes a range of hot- dipped and electro-galvanised steel. The function of the zinc layer is mainly three folds. These are:

a) To retain steel intact with full initial strength.

b) To increase the life of any suitable finishing system applied over it.

c) To provide the surface a more pleasing appearance.

18. Advantages of Zinc Coating:

A) It protects steel from corrosive attack in most atmospheres, acting as a continuous and lasting shield between steel and atmosphere as the zinc sheath remains unbroken.

B) It acts as a galvanised protector, sacrificing itself in presence of corrosive elements by continuing to protect the steel even when moderate-sized areas of the bare metal is exposed. This ability of zinc results from the fact that zinc is more electro-chemically active than steel of all the industrial coating materials, zinc alone possesses this dual property.

19. Broad Sectorwise Consumption of Galvanised Steel in India

The broad sectorwise consumption pattern in India is shown below:

Sector	Share in Consumption (%)
Construction	48
Consumer Durables	10
Drums/ Barrels/Container	8
Railway/ Power/ Irrigation	7
CPWD/ PWD/ Other Govt Dept	6
Tube Makers	4
Furniture Makers	5
Engineering Units	5
Automobiles	5
Others	2
Total	**100**

N.B. The figures are indicative

19 (A) Special Quality Galvanised Coated Sheets

♦ Galvanised (GA) Steels

The galvannealed process was developed to satisfy the stringent quality requirement for producing outer and inner panels of outer body at optimum cost. In this process, an inner metallic layer of iron and zinc is formed on the surface of the strip by diffusing iron from the substrate into the zinc coating. The substrate characteristics become

more important in galvannealing than in galvanising than in galvanising. These steels are used by the auto industry because of improved manufacture performance in model which require lighter and stronger grade of steel.

♦ Galvalume or Zincalume:

This consists of 55 percent aluminium, 43.5 percent of zinc and 1.5 percent of silicon by weight. It provides a tough barrier between atmospheric condition and inner core of steel. Protection is offered by the corrosion resistance of the coating itself, it also protects steel from corrosion at cut edges and scratches which is achieved by the sacrificial protection provided by zinc in the coating. Galvalume has a life three times more than that of ordinary galvanised steel.

Advantages of using Galvalume are:

I) Resistance to atmospheric corrosion at cut edges and crack protection.

ii) Yield Advantage: Aluminium makes up 55 percent of Galvalume by weight but comprises 80 percent by volume, so the coating weight is less, giving more square feet per ton of material.

iii) It has good formability, can be bent, rolled formed and drawn without sacrificing coating adhesion.

iv) It is high temperature resistant and can withstand temperature up to 600 F without surface decoration. It has also very good thermal reflectivity.

However, Galvalume can not be used for framework in contact with wet concrete and products embedded in concrete, animal shelters, fertilizers storage etc.

♦ Galfan: It is 95 percent zinc and 5 percent aluminium with outstanding coating adhesion. It is an ideal material for deep drawn 'zero thickness' and bend applications. Galfan is three more corrosion resistant than ordinary galvanised steel.

♦ Galbo Sheets: it is highly corrosion resistant with good formability, durability and paintability used in white goods manufacturing and in production of colour coated sheets.

♦ Galvano Sheets: Tata Steel has developed galvanised plain steel with 'zero spangles' under the brand name 'Galvano'. The product is available in sheet and coil froms and will be useful for the general engineering applications.

20. Production of GP/ GC Sheets in India:

Production figures of galvanised plain (GP) and galvanised corrugated (GC) sheets in India between 2001-02 and 2008-09, are furnished in Table-9.

Table-9: Production of GP/ GC Sheets in India: 2001-02 to 2008-09 ('000 tons)

Year	Production	Y-o-Y Growth (%)
2001-02	2356	-----
2002-03	2790	18.42
2003-04	3130	12.19
2004-05	3672	17.32
2005-06	3782	3.00
2006-07	4321	14.25
2007-08	4381	1.39
2008-09	4581	4.57

Data Source: Joint Plant Committee (JPC)

It may be mentioned that in 2008-09, production of GP/ GC sheets in India has recorded the highest growth among the major flat steel products. The production between 2001-02 and 2008-09 has increased at an average annual rate of 27.78 percent.

21. Imports:

Imports of GP/GC Sheets by India between 2001-02 and 2008-09 are shown in Table- 10.

Table-10: Imports of GP/ GC Sheets by India: 2001-02 to 2008-09 ('000 tons)

Year	Imports	Share of Imports in Apparent Consumption (%)
2001-02	97	5.54
2002-03	92	7.27
2003-04	102	6.02
2004-05	106	5.50
2005-06	134	6.53
2006-07	195	8.13
2007-08	268	10.22
2008-09	288	8.64

Data Source: Joint Plant Committee (JPC)

Due to higher domestic demand, imports of GP/ GC sheets have steadily increased since 2006-07.

22. Exports:

India has been exporting substantial quantities of GP/ GC sheets in the last 5-6 years. Major exports are made to Belgium, USA, Italy, UAE, Singapore, and Iran.

The exports of GP₩GC sheets between 2001-02 and 2008-09 are furnished in Table-11.

Table-11: Exports of GP\GC Sheets by India:2001-20 to 2008-09 ('000 tons)

Year	Exports	% Share of Export in Production
2001-02	695	29.50
2002-03	1610	57.71
2003-04	1458	47.48
2004-05	1846	50.19
2005-06	1244	32.89
2006-07	2173	50.29
2007-08	2026	46.25
2008-09	1530	33.40

Date Source: Joint Plant Committee (JPC)

Since 2002-03, India was exporting between 33 percent to 58 percent of its production. Even in 2008-09, despite a massive global slowdown, the country exported over 33 percent of its production.

23. Apparent Consumption:

Apparent consumption of GP₩GC sheets in India is shown in Table- 12

Table 12 : Apparent consumption of GP\GC sheets in India : 2001-02 to 2008-09 (000'tons)

Year	Apparent Consumption	Y-o-Y Growth (%)
2001-02	1750	----
2002-03	1265	(-) 27.71
2003-04	1691	33.68
2004-05	1926	13.90
2005-06	2051	6.49
2006-07	2400	17.02
2007-08	2617	9.04
2008-09	3332	27.32

Date Source: Joint Plant Committee (JPC)

The drop of 27.71 percent in 2002-03 was due to low domestic demand and the producers exported 57.21 percent of domestic production. Even if 2008-09 was a difficult year for the steel industry, India's apparent consumption of GP/GC sheets at 3.33 mt recorded a growth of over 27 percent as a result of Government's thrust on housing and construction sectors.

24. Colour Coated Sheets:

Colour coating usually refers to the application of liquid pointed coat over the substrate in an automatic, continuous process after pretreatment. The pre-painted colour coated steel is a very high value-added product that combines the best properties of both substrate and organic coating, additionally imparting it an aesthetic finish, high degree of durability and high corrosion resistance.

Colour Coating is done on various substrates to produce growth the most cost effective quality assured products

with top coat compatible with environment.

At present, India 's capacity for producing colour coated sheets is estimated at 0.6 mt and the yearly production level is about 0.5 mt. the domestic demand of colour coated sheets in India is presently estimated by industry experts at 175,000 tons.

The substrates usually used for production of colour coated sheets are:

- Hot-dipped Galvanised Sheet
- Electro-Galvanised Sheet
- Galfan
- Aluminium

25. Producers of Colour Coated Sheets in India:

Originally, there were two producers of colour coated sheets in India. These were : Ispat Industries Ltd and Shree Pre-coated Steels Ltd (SPSL), each with a capacity of 50,000 typ. Presently, Ispat has planned to increase its capacity to 100,000 typ and SPSL to 300,000 typ. SPLSL has recently been acquired by Essar Steel Ltd.

Bhushan Steel & Strips Ltd has commissioned a 120,000

typ capacity colour coated line at Khopoli in Maharashtra.

Tata Steel and BlueScope Steel of Australia have entered into a joint venture (JV) on 50:50 basis and have set up a metallic and colour coating painting facility at Bara near Jamshedpur in Jharkhand. Its capacity is 250,000 typ of premium zinc and aluminium coated steel called Zincalume (Galvalume) and pre-printed zinc and aluminium coated steel branded as COLORBOND whose capacity is 150,000 typ.

Uttam Galva has set up a 80,000 capacity colour coating line at Khopoli in Maharashtra. ArcelorMittal has acquired 5.6 percent stake in Uttam Galva and has issued an offer for acquiring 29.4 percent stakes.

in the Pipeline:

- ISCO's 100,000 typ capacity colour coated line at Tarapore.
- Steel Corporation of Gujarat (now owned by Essar Steel Ltd) colour coated line of 50,000 typ capacity.

26. Average Coat Comparison of HR Coils/ CR Coils for Various Countries

The average production and overhead capacity of HR coils and CR coils in some leading steel producing countries of the world furnished below (as of June ,2009):

It apparent from the above date that is case of HR coils, production and overhead cost was the lowest in the CIS countries. The next three low cost producers were Brazil, U.S. (Mini) and India in that order.

The production and overhead cost of CR coils was the lowest in CIS countries, the second lowest cost producer was US (Mini Steel Plants) while the third and fourth lowest cost producers were Brazil and India respectively.

Conclusion:

HR coils, CR coils, GP/GC sheets are very important products for the industrial development of the country.

A serious economic stimulus measures, involving a total tax give away of Rs 40,000 crore by the Government helped to revive the economy. India's Index of Industrial Production (IIP) rose by 5.82 percent during April- August, 2009 as against 4.91 percent in the same period of previous year.

Manufacturing sector (representing about 80 percent of IIP) went up by 10.9 percent in August, 2009 and 7.4 percent in July, 2009.

During Q1 of 2009-10, ' Production for Sale' of HR coils/ skelp, and GP/GC sheets have gone up by 12.80 percent and 3.84 percent respectively over the same period of previous year, while the same of CR sheets/ coils has declined by 8.16 percent during the above comparative period.

Apparent consumption of HR coils/ skelp and GP/GC sheets in Q2 of 2009-10 have recorded robust increase of 17.02 percent and 17.76 percent respectively over the corresponding period of previous year. However, apparent consumption of CR sheets/ coils has gone down by 7.79 during the above comparative period.

The CR industry is expected to revive its position in the coming months as the demand for the product from auto, consumer durables and galvanising sectors are likely to increase substantially in the future months.

On the whole, the HR/CR/ Galvanising steel industries in the country are now in a take off stage for a better performance in 2009-10 over the previous year.

Products	USA (Integ)	USA (Mini)	Brazil	Western Europe	CIS	India	Japan	S. Korea	China	Global
HR Coils (P&O)	480	384	360	469	345	391	475	420	475	445
CR Coils (P&O)	613	466	480	602	424	500	634	522	579	563

Source: World Steel Dynamics (7-7-2009)
N.B.: 1.The above figures represent cost US$ per ton 2. P&O: Production & Overhead