

Recent trends in production and import of coal in India

M.R. Anand
D.N Prasad¹



¹Dr. M.R Anand is Economic Adviser and D.N Prasad is Adviser (Projects) in Ministry of Coal, Government of India.
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Background: The rise in import of coal by India in recent years has been a major source of concern, especially in light of the widening of the current account deficit during 2012-13ⁱ. Not only has coal become a major import item, but the increase in its imports is increasingly being viewed as a source of vulnerability of the Indian economy. This paper examines the recent trends in import of coal from 2001 to 2012 and the factors underlying the rise in import of coalⁱⁱ.

2. Global profile: The total production of coal in 2011 was 7783 Mte and the overall export of coal was about 1041 Mte which is significant in absolute terms (Table1).

Sl No.	Producers	Mte	% share	Net Exporters	Mte	Net Importers	Mte
1	China PRC	3576	45.9	Indonesia	309	China PRC	177
2	USA	1004	12.9	Australia	285	Japan	175
3	India	586	7.5	Russia	99	Korea	129
4	Australia	414	5.3	USA	85	India	101
5	Indonesia	376	4.8	Columbia	76	Taipei	66
6	Russia	334	4.3	South Africa	70	Germany	41
	Total world	7783	100		1041		1002

Source: IEA, Key World Energy Statistics, 2012

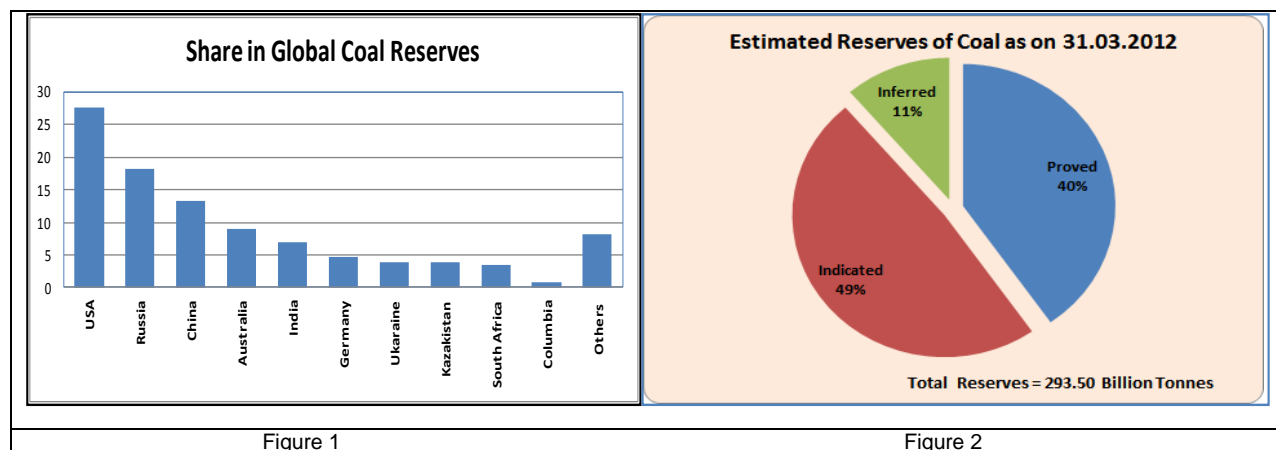
However in percentage terms, exports account for only about 13.3 % of the global production. India figures prominently at number three position among global producers, of coal. While it accounts for over 7.5 % of world production in 2011, it was the 4th largest net importer of coal accounting for about 10 % of global imports of coal.

Coal Reserves: As per the World Energy Council, India Accounts for about 7.0 % of Global Reserves². Of the total reserves of 293 Bte as on 31.03.12 in India, proved reserves were 40 percent and inferred and indicated reserves were 49 % and 11 % respectively. About 88 % of the reserves (260 BT) is estimated to comprise of non coking coal with the balance being of medium, prime and blendable coking grade coal. In other words, in terms of natural endowment, India's has significant reserves of non coking coal but the reserves of coking coal are very limited.

A point often made is that despite these reserves, there has been an increase in the import of coal by India in the recent years. Converting the stock of reserves into a flow

² Source: CCO, Coal Directory of India, pp 2.5.

of production however involves investment with its gestation lags and issues relating to implementation of mining projects.



Domestic production: The production of coal in the country has grown from a little over 341 Mte in 2002-03 to over 557.5 mte in 2012-13. The growth in production of coal in the 10th plan was 5.6 % and in the 11th Plan was 4.6 %. There was a sharp slowdown in growth of production after 2009-10 which has resulted in a widening of the demand-supply gap.

Coal Demand and supply gap for 2012-13 measured in terms of the imports during 2012-13 as per provisional figures from DGCI&S is estimated to be 137.56 Mte. For the year 2013-14, the demand for coal has been estimated to be 769.69 Mte whereas

the supply target has been placed at 614.55. Thus the demand supply gap as per these estimates (made at the time of Annual Plan formulation) works out to be 769.69 – 614.55 Mte = 154.4 Mte³. Assuming the demand and supply are as per targets, this gap would need to be met through imports.

Table 2 Growth rate in production of coal		
Year	Production	Growth %
10 th Plan		
2002-03	341.3	
2003-04	361.2	5.9
2004-05	382.6	5.9
2005-06	407.0	6.4
2006-07	430.8	5.8
11 th Plan		
2007-08	457.1	6.1
2008-09	492.8	7.8
2009-10	532.0	8.0
2010-11	532.7	0.1
2011-12	540.0	1.4
12 th Plan		
2012-13	557.5	3.3
Source: CCO		
2013-14 (Target)	604.6	8.4

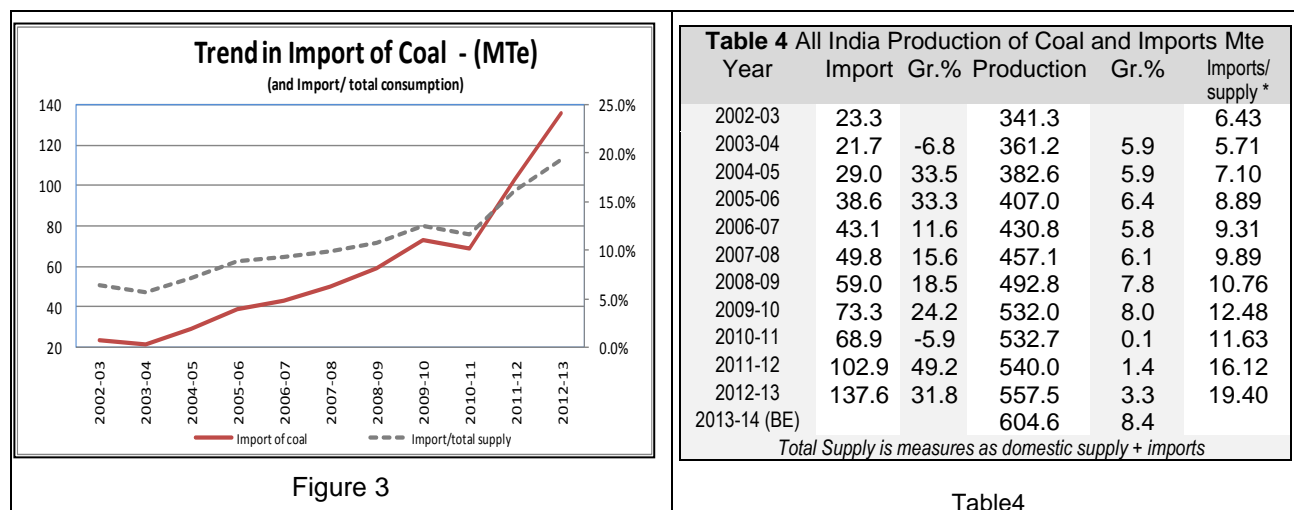
³ The figures are not adjusted for difference in calorific value between domestic and imported coal

12th Plan projection: The ex-ante gap between all India Coal Demand and indigenous supply has been assessed at 185 Mte for 2016-17 which would need to be met through imports by the consuming sectors. As per the 12th Plan document, overall coal demand is expected to reach 980.5 Mte against which domestic production is expected to reach 795 Mte (table 3). This is based on an optimistic scenario of a growth rate of about 8 % which is contingent on requisite environment and other clearances and the development of infrastructure required for coal movement

S No	Item	Tenth Plan	11 th Plan - TY 2011-12		12 th Plan (Terminal year)
		2006-07	Initial	Latest	2016-17
1	Coal demand	474.2	731.1	640.0	980.5
2	Coal Production	430.8	680.7	540.0	795.0
3	Imports	43.1	51.0	90.0	185
4	Imports / demand (%)	9.0	7.0	14.1	18.9
5	Lignite	31.3	55.0	41.6	69

Source: 12th Five year plan document

Trend in Import: The recent trend point to increasing dependence on imports as import of raw coal have increased from 23.3 Mte in 2002-03 to over 137.5 Mte in 2012-13. The import of raw coal and its relation to total consumption of coal given in figure () also shows that there was a sharp jump after 2010-11. The total imports as a proportion of total consumption (or supply of coal) in the economy increased from about 6.43 % to close to 19.5 % in 2012-13 (figure 3 and table4).



Macro dimension: In relation to the total imports into the economy, the share of import of coal appears modest at 3.6 % in 2011-12 and 3.1 % in 2012-13. When compared to 2002-03 when it was only 2 % and 2.6 % in 2007-08, it is evident that the share of Coal imports in the total basket has gone up (table5).

While the impact of additional coal imports may well be positive in terms of availability of coal to downstream units (including the power sector), large scale import of fossil fuels, including

Table 5. Imports into India Commodity (Share in value)				
	2002-03	2007-08	2011-12	2012-13
I. Bulk Imports <i>of which</i>	39.6	44.8	43.9	46.7
<i>Petroleum, Crude and Products</i>	28.7	31.7	31.7	34.4
<i>Metalliferous Ores, Metal Scrap etc.</i>	1.7	3.1	2.7	3.0
<i>Of which Iron and Steel</i>	1.5	3.5	2.5	2.2
II. Non-Bulk Imports <i>of which</i>	60.4	55.2	56.1	53.3
II.A Capital Goods	22.0	27.9	20.3	18.6
II.B Mainly Export Related Items	16.8	8.3	10.6	9.5
II.C Others	21.7	19.0	25.2	25.0
<i>Gold and Silver</i>	7.0	7.1	12.5	11.3
<i>Coal, Coke and Briquettes, etc.</i>	2.0	2.6	3.6	3.1
<i>Others</i>	7.5	4.6	4.7	5.9
III. Total Imports/All Commodities	100.0	100.0	100.0	100.0
<i>Source: Computed from DGCI&S data</i>				

coal, has an adverse impact on the trade deficit (and the current account). If the CAD were low and easily financed, the rise in import of coal may not be a matter of concern. However, where the CAD is persistent and widening, as has been recently, a sharp rise in import of critical fuels can add to macroeconomic vulnerability of the economyⁱⁱⁱ.

High degree of dependence on imports is a matter of concern at the micro level for the end use sectors. Coal being a bulk commodity, apart from variation in international prices, its landed cost is also impacted by various factors that include, variations in, exchange rates, charter costs and bunker Prices. Changes in the regulatory regime in the exporting countries may also impact the price of coal as seen in a decision by Indonesia to impose a limit on export of certain grades of coal^{iv}.

Non-coking and coking coal imports: India has traditionally been importing coking grade coal due to inadequate reserves of the required grade. However, an important feature of the trend in imports is the sharp rise in the share of non-coking coal from about 40 % in 2003-04 to over 76 % in 2012-13.

Year	Coking Coal	Non-Coking	Total Coal
2003-04	13.0	8.7	21.7
2004-05	16.9	12.0	29.0
2005-06	16.9	21.7	38.6
2006-07	17.9	25.2	43.1
2007-08	22.0	27.8	49.8
2008-09	21.1	37.9	59.0
2009-10	24.7	48.6	73.3
2010-11	19.5	49.4	68.9
2011-12	31.8	71.1	102.9
2012-13	32.6	105.0	137.6

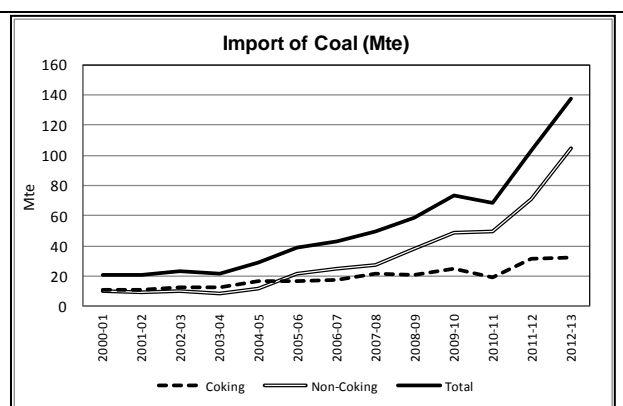


Figure 4

Source : CCO: Coal Directory of India: 2011-12

Breakup between import of coking and non coking coal can be viewed in terms of the quantity and value. Table 7 shows that coking coal accounts for a quarter of total import in quantity. But in value terms, it accounts for over 43 % of total imports. Non coking coal, on the other hand, accounted for over 76 % of import in quantity and about 57 % in value terms. Nevertheless, the fact remains that the jump in imports in non coking coal in recent years had been the main reason for the overall spurt in import of coal.

Item	Qty (Mte)	Value Rs Billion	Qty %	Value %
Coking coal	32.6	349	23.7	43.0
Non Coking	105.0	462	76.3	57.0
Total	137.6	810	100.0	100.0

Source of Imports: In terms of sourcing of imports, Australia remains a major source accounting for over 75% of the coking grade coal while Indonesia accounts for over 80 % of non coking coal. The other major sources are South Africa and USA.

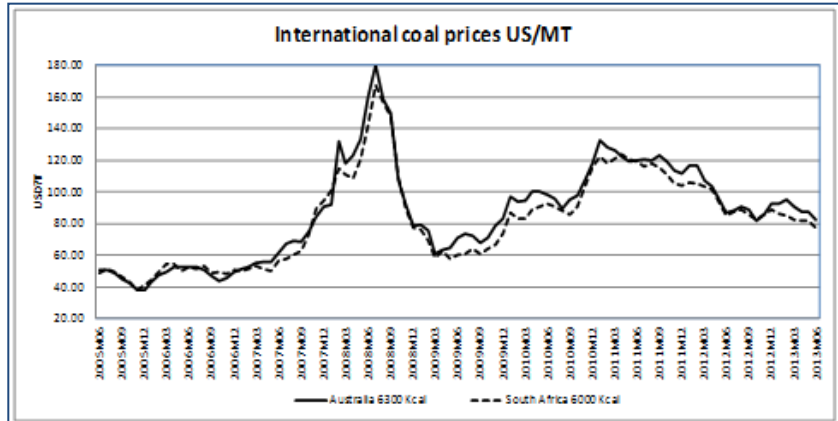
Country	Coking		Non Coking Coal		Total Coal	
	Qty	Value	Qty	Value	Qty	Value
AUSTRALIA	24.5	265.1	2.5	17.2	27	282.3
INDONESIA	0.3	3.3	80	318.4	80.3	321.7
SOUTH AFRICA	1.5	9.1	16.2	89.3	17.6	98.4
U S A	3.3	36.9	2.8	15.7	6.1	52.7
CANADA	0.9	9.9	0.1	0.7	1	10.6
NEW ZEALAND	1	10.4	0	0.0	1	10.5
MOZAMBIQUE	0.9	9.7	0	0.1	0.9	9.8
Others	0.2	4.1	3.4	20.0	3.7	24.2
Total	32.56	348.6	105	461.5	137.56	810.1
Percentage shares						
AUSTRALIA	75.2	76.1	2.4	3.7	19.6	34.9
INDONESIA	0.9	0.9	76.2	69.0	58.4	39.7
SOUTH AFRICA	4.6	2.6	15.4	19.3	12.8	12.1
U S A	10.1	10.6	2.7	3.4	4.4	6.5
CANADA	2.8	2.8	0.1	0.2	0.7	1.3
NEW ZEALAND	3.1	3.0	0.0	0.0	0.7	1.3
MOZAMBIQUE	2.8	2.8	0.0	0.0	0.7	1.2
Others	0.5	1.2	3.2	4.3	2.7	3.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

Import policy for Coal: Coal is under OGL and users are free to import coal directly according to

requirement. While coal has been allowed for import even from 1993-94 when it was put in OGL, it begun to figure in a significant way in the import basket in recent years due to the growing gap between domestic demand and supply. The question is whether this is a lagged impact of certain developments on the supply side.

International price trends:

Data drawn on monthly price trends from the Pink sheet published by the World Bank^v suggest that that in general, the price of coal has been trending downwards since the



beginning of 2011. Though there was a brief upsurge – end 2012, March to July 2013 has witnessed declines for all varieties. Even though there has been a slight uptick from August 2013, the causal factors leading to the general decline in international coal prices which include slow global growth (in particular, China), and the discovery of shale oil / gas (in the US), may continue. These trends may be expected to keep international coal prices relatively subdued.

Quality-Price-equation with imported coal: Imported coal, in general, has lower ash content generally not exceeding 15 % as compared to indigenous coal which has more ash content. Similarly, in terms of GCV also, imported coal has higher GCV ringing from 6500 to 3400 Kcal;/Kg as against indigenous coal mostly ranging from 5200 to 3400 Kcal / Kg.

At the same time, domestic coal is cheaper than imported coal of a corresponding variety. For example, as per the available information the Argus and PT indo index price for Indonesian coal of GCV 6500 Kcal / Kg was around 79 USD / tonne inn July 2013 and the shipping freight of Supramax vessels from Indonesia to East cost ports of India was around 11.5 USD /tonne considering the rate of insurance to around 1 US D / tonne and assuming an exchange of about Rs 60 US \$ the CIF price of imported coal of GCV 6500 Kcal / Kg from Indonesia in the East coast ports to India would around Rs 5490 /

tonne. Presently, the Indian Coal at the pit head for GCV of 6500 is around 3890 / tonne.

In case the trend for global growth remains subdued, it may be possible that the international price of coal may also follow the same trend, as pointed earlier. However, given the rising costs related to land acquisition, R&R and the cost of mining operations, it is likely that Indian companies will find their costs rising. Therefore, the possibility of the gap between domestic prices, (after taking into account the domestic cost of production and international prices) becoming narrower cannot be ruled out in the medium term and seems to be the more likely scenerio. In other words, coal companies in India need to be prepared for a scenario when the price equation could possibly reverse.

Demand supply balance by end use: Production of coal for commercial sale is mainly in the nationalized sector. The production targets, on the overall, are finalized as a part of the 5 year plans and the annual plans. The demand for coal is worked out by a Working group constituted by the Planning Commission at the time of the formulation of the 5 year plans and the annual plans. The likely or projected demand, sector wise is aggregated which yields an estimate for the aggregate demand for coal. This estimate is finalized by the Planning Commission in consultation with the various agencies including the Ministries of Coal, Power, Steel, CEA, industry associations etc. The indigenous supply targets are worked out based on the likely production and increment during the ensuing year by major producers of coal like the CIL and the SCCL. The likely imports are in effect, a residual, that is, projected demand minus the projected supply.

A gap, between demand and supply may vary across different end use sectors (both in percentage terms and in absolute terms, due to differences in the grade of coal used as also sector specific conditions. Some sectors like the power sector have the advantage entering into long term Fuel supply agreements for supply of non-coking coal at notified prices. In other words, there could be substantial unsatisfied demand even at the prevailing domestic prices^{vi}.

Once the year is over, what is observed, in terms of data, is only the consumption figure made available by various sectors^{vii} (and their aggregate) and figures of supply of coal from different coal companies and imports. The actual data on the coal supplied and imports are aggregated which gives the magnitude of actual coal consumption in the economy. The breakup of consumption of coal from domestic sources and from imports, sector wise is collected by the statistical agency from the concerned industry associations and other related agencies. The picture *with* regard to actual coal consumption and its break up in terms of indigenous supply and imports for 2002-13 is given below.

An important point that needs to be taken note of is that the following tables⁴ provide actual figures of consumption and imports. While there is greater certitude about the changes that these figures reflect^{viii}, as already stated, consumption figures, (indigenous supply plus imports) cannot be equated to demand, since there could well be unsatisfied demand including buyers who may well be willing to pay the notified price for indigenous coal, or even higher, but unable to get coal either due to lack of assured supply or for logistical reasons.

Table 9

Coal consumption and indigenous Supply balance and imports – 2002-03 (actual)									
Item	Coking coal (CC)	Non Coking coal (NCC)							TOTAL
	Steel	Power			Cement	Sponge Iron	Others	Total (NCC)	Coal
Mte		Utilities	CPP	Total					
Consumption	30.6	255.5	19.6	275.0	16.4	6.2	35.2	332.8	363.4
Indigenous supply	17.7	252.2	17.0	269.2	12.7	6.2	34.4	322.4	340.1
Imports	13.0	3.3	2.5	5.8	3.7	0.0	0.8	10.3	23.3
Share of each sector in consumption, indigenous supply and imports (%)									
Consumption	8.4	70.3	5.4	75.7	4.5	1.7	9.7	91.6	100.0
Indigenous supply	5.2	74.2	5.0	79.2	3.7	1.8	10.1	94.8	100.0
Imports	55.6	14.1	10.9	25.0	15.8	0.0	3.6	44.4	100.0
Share of indigenous supply and imports in total consumption (%)									
Consumption	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Indigenous supply	57.7	98.7	87.0	97.9	77.6	100.0	97.6	96.9	93.6
Imports	42.3	1.3	13.0	2.1	22.4	0.0	2.4	3.1	6.4

⁴ Table 9 and Table 10 are Computed from Annual Plan MOC

It is seen that in 2002-03 which was the first year of the 10 th plan, over 94 per cent of the coal consumption was met through domestic sources. In 2012-13 this came down to just about 80 per cent (Table 9) . The decline in the share of indigenous coal during this period in total consumption is across board for most sectors^{ix}.

In the case of coking coal the ratio of domestic to imported coal which was 58:42 changed to 33:67). For the power sector this ratio changed from 98:2 to 88:12 and in the case of Cement the ratio changed from 78:22 to 59:41. For the omnibus category 'Others' also the ratio changed from 97.6 : 2.4 to 69.5 : 30.5. The only sector where indigenous coal continues to account for 100 per cent is Sponge iron.

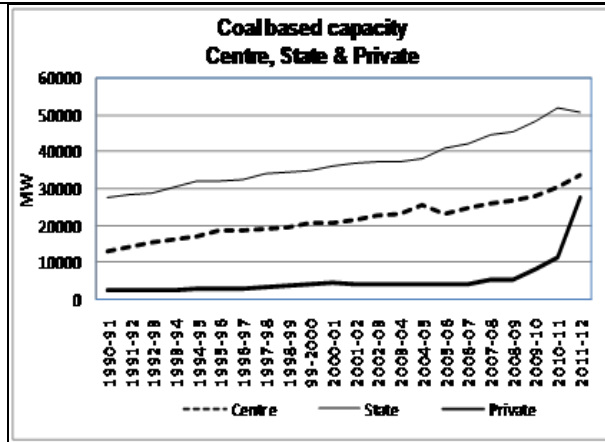
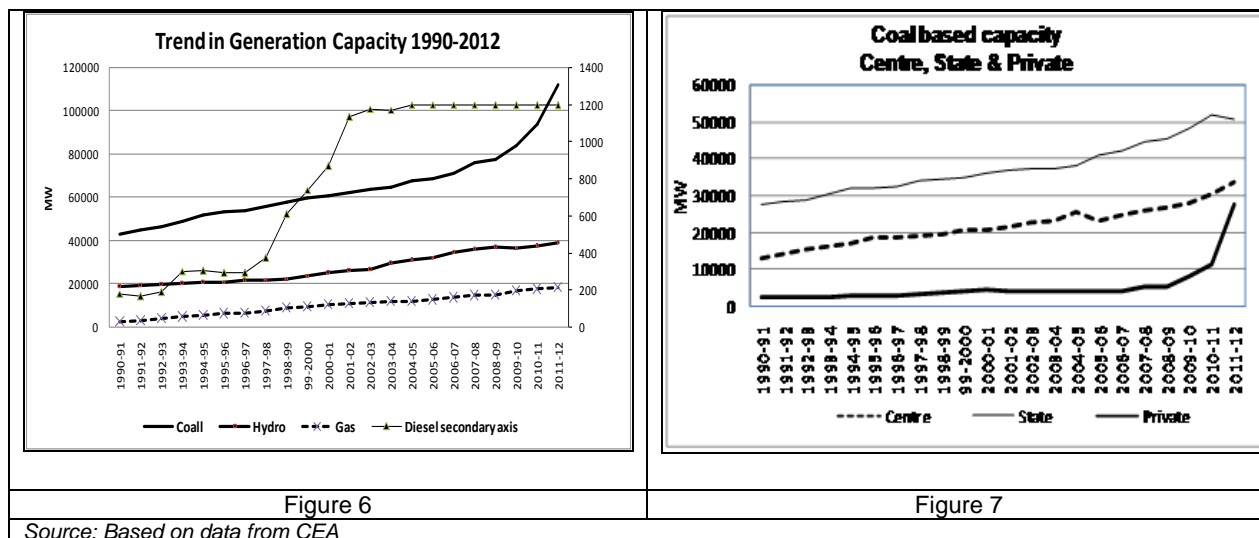
As regards increase in the share of imports in total consumption, the power sector which accounted for only 25 % of the imports came to account for over 45 % of the import of coal in 2012-13 in terms of quantity (Table 10). Therefore, the buildup of capacity at the sector level, deserves greater scrutiny, especially for the power sector.

Table 10

Coal consumption and Supply balance and imports – 2012-13 (actual)									
Item	Coking coal (CC)	Non Coking coal (NCC)						TOTAL	
	Steel	Power			Cement	Sponge Iron	Others	Total (NCC)	Coal
Mte		Utilities	CPP	Total					
Consumption	48.4	461.5	45.3	506.9	22.8	20.8	108.9	659.4	707.8
Indigenous supply	15.9	399	45.3	444.3	13.6	20.8	75.7	554.4	570.2
Imports	32.6	62.6	0	62.6	9.3	0	33.2	105	137.6
Share of each sector in consumption, indigenous supply and imports (%)									
Consumption	6.8	65.2	6.4	71.6	3.2	2.9	15.4	93.2	100.0
Indigenous supply	2.8	70.0	7.9	77.9	2.4	3.6	13.3	97.2	100.0
Imports	23.7	45.5	0.0	45.5	6.8	0.0	24.1	76.3	100.0
Share of indigenous supply and imports in total consumption (%)									
Consumption	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Indigenous supply	32.9	86.5	100.0	87.7	59.6	100.0	69.5	84.1	80.6
Imports	67.4	13.6	0.0	12.3	40.8	0.0	30.5	15.9	19.4

Reasons for change in the Demand supply balance: Additions to power generation capacity showed a steady upward trend through the 1990s till about 2004-05. Though diesel based generation showed a sharp spurt from 1996-97 to about 2001-02, its share being relatively small, hardly shows up except on a secondary axis. As for Coal based capacity, there was a noticeable upturn in 2004-05 that became more pronounced

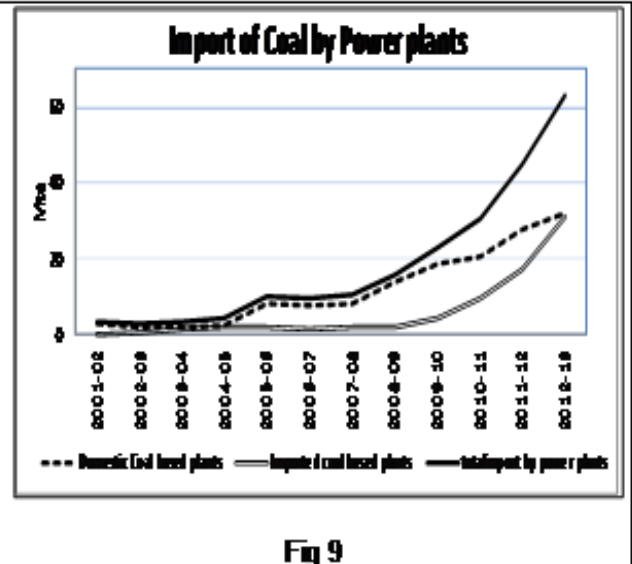
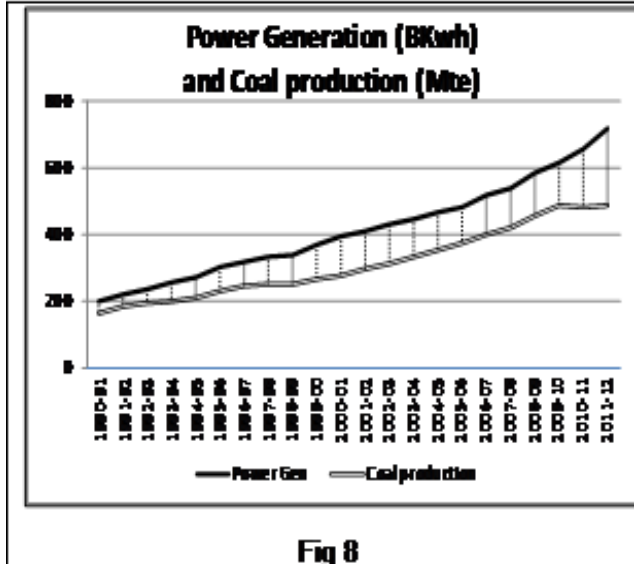
especially in 2006-07 (Figure). Between 2007-08 and 2011-12 a total of 27,000 MW was added to the installed coal based capacity in the utility segment. Of this 71 % was in the private sector, 20 % in the Central Sector and only 8 % in the State sector.



Source: Based on data from CEA

During the 10th and the 11th Plan, one of the strategies adopted for increasing the power generation capacity was through the entry of the private sector especially through the setting up of Ultra Mega Power Projects (UMPP) route, especially in the coastal districts. Some of these projects were based on imported coal^x. Further, in view of the shortage in domestic coal, power capacities (boilers) came to be designed for blending of imported coal with domestic coal^{xi}. In that sense, a certain amount of demand for imported coal was built into the energy / power sector strategy adopted.

Power sector demand and slow down in coal production: While the power generation capacity got built up, unfortunately, domestic production of coal stagnated especially after 2009-10 as the figure shows^{xii}. In other words, there were twin pressures to import. First, on account of a new set of plants, essentially designed to use imported coal and second, and perhaps, more importantly, there was a slowdown in domestic production of coal due to which plants designed to operate on domestic coal also chose to, or had to, use imported coal through the blending route.



As may be seen, from the trend in coal production, there was growth in production of coal during the 10th Plan by about 5.6 % CARG. Against this the year wise growth in the 11th Plan was 6.1 % in 2007-08, 7.8 % in 2008-09 and 8.0 % in 2009-10. Thereafter, growth in coal production collapsed to almost nil in 2010-11 and recovered, albeit marginally to 1.4 % in 2011-12. The 11th Plan production target in the terminal year 2011-12 was revised from 680 Mte to 630 Mte in the Mid Term Appraisal and then to just 554 Mte in the Annual Plan 2011-12. In this context, it may be worth enumerating the factors that led to the slowdown in production of coal the non-materialization of capacities in the coal sector especially during the 11th Plan.

Three major factors have acted as constraints over the growth in coal production. First, the moratorium due to the enforcement of CEPI norms and the introduction of the concept of ‘Go’ and ‘No-go’ areas for projects in this sector (among others), not only resulted in considerable uncertainty for projects already in the pipe line implementation in the coal sector but also slowed down the production of coal from PSU companies, (as also captive blocks).

Second, major problem has been the lack of adequate coal evacuation capacity. Coal is a bulk commodity and requires rail link for evacuation. It is also well known that coal cannot be stocked beyond a point safely. The non implementation of critical rail links to some of the major coal fields has been a major constraint on coal production.

Third, the coal sector has been faced by increasing difficulty in acquisition of land and related R&R issues, delays in obtaining statutory clearances on account of a number of new requirements introduced by the Ministry of Environment in terms of seeking NOC under the Forest Rights Act, 2006, need for submitting DGPS maps, need for seeking stage 1 forest clearance before seeing environment clearance (EC) in the case of a project involving diversion of forest land adversely affected the projected production.

As already mentioned, capacity built in the past is a major driver of growth in production in subsequent years. A slowdown in the capacity creation has a lagged effect on production. The growth rate in 2012-13 thus remained at only 3.3 % in 2012-13 (the first year of the 12th Plan).

While the coal sector faced the above constraints, new power capacity addition went unabated thereby increasing the gap between the envisaged production and demand. Not surprisingly, the import of coal rose sharply particularly in 2010-11 to 2012-13.

Supply-demand mismatch and some policy issues: The mismatch between the pace of expansion in the power sector capacity and decisions to set up import based plants, and the pace of according clearances for additional coal production capacity raises an important policy issue.

First, there are considerations relating to energy security which are rooted in non economic factors. Bridging the demand supply gap through imports and reducing the dependence on imported coal are not identical. While the first only concerns bridging the demand supply gap in a market sense, the second is rooted on considerations of energy security. For a large economy such as India, maintaining energy self reliance and security is a strategic need in its own right, even though, there may be an economic argument for keeping open access to imported coal on the margin. Even for the end users, there are a range of risks that arise from dependence of imported fossil fuel which is also a bulk commodity.

Secondly, at the macroeconomic level also it is clear that domestic production needs to be enhanced to the maximum possible extent in order to reduce or minimize the current account deficit.

Thirdly, at the sector level, the energy and mining sectors including mining for fossil fuels like coal involves large sunk costs and investment in related infrastructure. The production resulting from investment takes place with a considerable lag. Therefore, the consequences of choices made in the energy sector become manifest only much later. The very fact that coal based power generation capacities outstripped domestic coal production capacity and were set up on the assumption of easy imports, goes to show that at least some assumptions about the continued easy availability of imported coal, or its macroeconomic consequences have not proved well founded ^{xiii}, but the impact came in after a considerable lag.

Overall policy coordination across sectors and coherence in terms of action are the essence of the Planning function. In a regime where capacities were determined through inter-sectoral consistency models and implementation rested largely in the public sector, dovetailing the pace of expansion in one sector to that of another may have been relatively easy, though it can be argued that the Indian experience (till the 1980s) shows that there were mismatches and shortages even then. The recent developments enumerated in this paper suggest is that even in an economy where the private sector is assigned a larger role, overseeing and ensuring inter-sectoral consistency remains a critical function of the State.

The narrowing of the domestic demand supply gap will require now a mix of strategies that not only address the short to medium term imperatives, but also technological, institutional and human resource related issues. It is also critical that the market incentives of various players are well aligned such that the market outcomes are also the ones that meet the requirements of the overall economy.

Some possible ways of reducing dependence on imported coal: Against the above backdrop, it is clear that there is a pressing need to deal with the structural problems underlying the coal sector. As already stated, given the gestation lags in the sector, the ability to rapidly ramp up production in the very short run may well be limited. Nevertheless, given the immediacy of the problem of rising imports this paper limits itself to spelling out, some steps that could be taken in the very short run to deal with the issue of rising imports over the course of the next one year or so.

A short run measure that could be examined is of running down the existing inventory of coal (coal stock). Naturally this can only be a onetime measure. Another immediate step is of following up on the Government announced measure to allow increase in production by 25 % from existing mines without compromising environmental and safety aspects. This is already being implemented. In the very short run this is one measure that needs to be fully implemented in right earnest to the extent possible with detailed, mine wise plan for expansion worked out in the shortest possible time. The main advantage here is that expanding the production from existing mines may be less demanding in terms of additional investment, design and procedural requirements and even manpower. As the mines are already in operation the environmental impact and issues relating to land acquisition would be relatively less daunting.

In the same vein, all cost plus mines that are either operational and can expand capacity or can be made operational in the short run should be allowed and made to do so through a special dispensation of a sale of coal through the e-auction process. The currently used bench mark of achieving 12% internal rate of return conventionally used to judge public sector projects needs to be revisited in this regard, especially as the alternative is to forgo an equivalent quantity of domestic coal and as a consequence other downstream output in various sectors or to import coal. Therefore, the issue confronting some of the public sector companies that are having mines where the cost of production is relatively high vis-à-vis the notified price needs an urgent resolution.

Another measure that could be taken is of considering allowing captive mines and mines allowed to be operated in the Private sector to mine coal for merchant sale. In

economic terms, captive production is an inefficient use of resources. At the same time, any step taken in this direction will need to be within the legal framework. Keeping in view the overriding national economic priority of maintaining macroeconomic balances and energy security, such a measure could be considered.

A fourth measure, and a very critical measure that has to be take is of speeding up the implementation of critical rail links for such coal mine projects that are in a position to step up production but are unable to do so in the absence of infrastructure for evacuation of coal. The details of mining projects that lack adequate connectivity and coal evacuation facility are well known and the need is to address the same which would allow for stepping up of production from mines that are in a position to do so.

An important justification for the presence of the public sector in coal mining is to ensure energy security. Therefore, the possibility of raising the weightage for physical achievement of targets in the MOU of public sector coal companies while maintaining a threshold level of profitability could be examined so that large public sector companies have an inbuilt incentive to increase production.

Beyond the foregoing measures, only a sharp step up in the pace of investment and removing uncertainties relating to the institutional structure presently being faced by the coal mining sector in the coal sector can improve the growth in production of coal. It needs to be borne in mind that the coal mining sector had a long legacy of poor and unscientific mining by the private sector which brought in the public sector in the first place. The lessons from the past need to borne in mind while devising an appropriate regulatory framework for the coal sector. At the same time, in order to bring a scalar jump in production, the time may be ripe for permitting *direct entry* of the private sector into commercial mining and sale of coal by making appropriate legislative changes, rather than through indirect methods. This could be done even while retaining the preeminent position for the public sector which can continue to play a counterbalancing role and of ensuring energy security.

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domestic coal.

End notes

ⁱ The sharp depreciation in the rupee that occurred during 2012-13 into 2013-14 has been a further source of concern as it raised the cost of imported coal.

ⁱⁱ The scope of the paper is limited to analyzing the trends at the aggregate and at the sector level and making a few suggestions. Production constraints and domestic factors relating to environment, forest and other clearances etc have not been discussed as such.

ⁱⁱⁱ The need to keep import of energy / fuels to the minimum was clearly recognized in the 12th Five Year Plan document in the introductory paragraph of the chapter on ‘Energy’. To quote,

“High reliance on imported energy is costly given the prevailing energy prices which are not likely to soften; it also impinges adversely on energy security. Meeting the energy needs of achieving 8 per cent - 9 per cent economic growth while also meeting energy requirements of the population at affordable prices therefore presents a major challenge. It calls for sustained efforts at increasing energy efficiency to contain the growth in demand for energy while increasing domestic production much as possible to keep import dependence at a reasonable level”

^{iv} A study by Pwg in 2012 for the Indian Chambers of Commerce has listed various risks in import of coal. These include, variation in international prices. According to the study, the FOB price of coal forms about 60-80% of landed cost of coal. Coal Prices in Global coal market has seen significant variation over past five years with standard deviation of about 30% for various coal indices. (RB Index, NEWC Index, ICI Index) As per the study, variation in Charter costs and Bunker Prices can have significant impact on transportation and landed cost. Furthermore, the net cost to the importer depends on prevailing exchange rate though the volatility on that count can be minimized by hedging Changes in regulatory regime in exporting countries are yet another risk factor. For example, In Indonesia imposed a limit on coal traded internationally.

^v Most regular data series for coal are priced – subscriber based. These include Platt and Mc Closkey which are widely used in the industry. For analytical purposes, data is also made available in the World Bank, Pink Sheets which are based on multiple sources (including Mc Closkey). The World Bank provides data on a monthly basis only for 3 varieties Australia, South Africa and Columbia.

^{vi} While the largest producer of coal (CIL) can vary its notified prices, the domestic market for coal is not a competitive market and the prices that are notified may not be market clearing ones. The possibility of there being consumers who can neither get domestic coal nor are in a position to import cannot be ruled out.

^{vii} Data on coal consumption is collected by respective industry associations

viii Another important point to note is that figures of total consumption, which is domestic supply plus import are not adjusted for differences in calorific value of coal, particularly difference between domestic and imported coal. If that were done using commonly used factor of 0.6 for imported coal equivalent calorific value, then total domestic equivalent consumption may be higher than what has been presented.

^{ix} The change in relative importance of imported coal across sectors is also reflected in the emergence of new ports of unloading of coal. While this paper has not gone into port wise analysis of coal handled, it has a bearing on related logistics in terms of coal movement as well as location of the end use plants.

^x 12th Five Year Plan, Chapter 14, 14.27, pp 138

^{xi} Blending of coal requires redesign of boilers and may involve additional costs for taking into account the ash content, volatile matter, moisture, fixed carbon, gross calorific value and grindability index of two coals. This aspect has been studied in detail in a report commissioned by Central Electricity Authority.

^{xii} The constraints on coal production have been spelt out in various responses of the Ministry of Coal to the Parliament.

^{xiii} In the context of setting up of UMPP projects in Private sector, the 12th Five year plan document observes that “Unfortunately, some of these projects are plagued with uncertainties regarding fuel supply because they were based on imported coal and changes in government policies in countries where the coal mines were located have raised the cost of coal whereas the power tariff is based on a competitive bid which does not contain a provision for passing on such increases. The decision by Indonesia to restrict export of non coking coal of medium to lower grades has been a case in point in this regard
