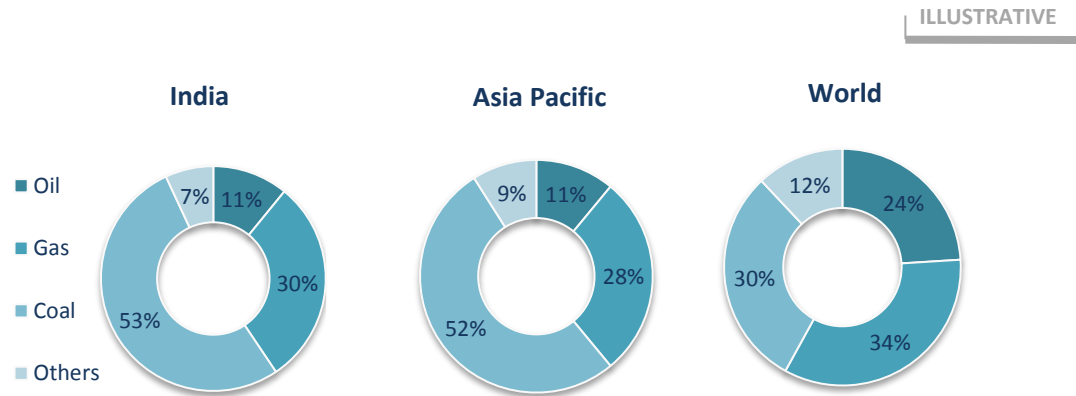


# On Demand Research for Estimating Domestic Coal Demand-Supply Dynamics & Impact of Coal Imports in India

## Demand, demand segmentation and evolving dynamics of coal in India

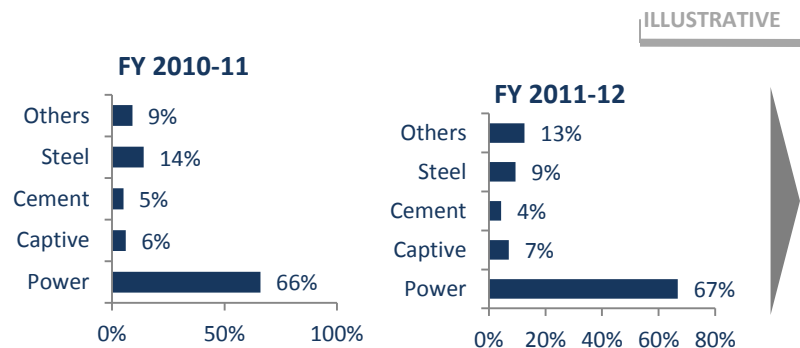
At present, India is dependent primarily on coal to meet its commercial demand of energy. Coal contributes 53 per cent of the commercial energy requirement of the country, which is nearly 23 per cent above the global average of 30 per cent. Even if we factor in the current economic slowdown, the demand of coal is still estimated to rise by 8-9 per cent per annum during the upcoming 12<sup>th</sup> Five-Year-Plan (FYP). Although these figures are slightly less in quantum, as compared to the past FYP, but still are significant enough to demonstrate the northbound trend in coal consumption in the country.

Exhibit 01 : Commercial Energy Sources Comparison: India, Asia-Pacific and World



Source: Statistical Review of World Energy, enincon Analysis

Exhibit 02 : Prime Sector wise coal consumption in India (FY 2010-11 and FY 2011-12)



Source: Statistical Review of World Energy, enincon Analysis

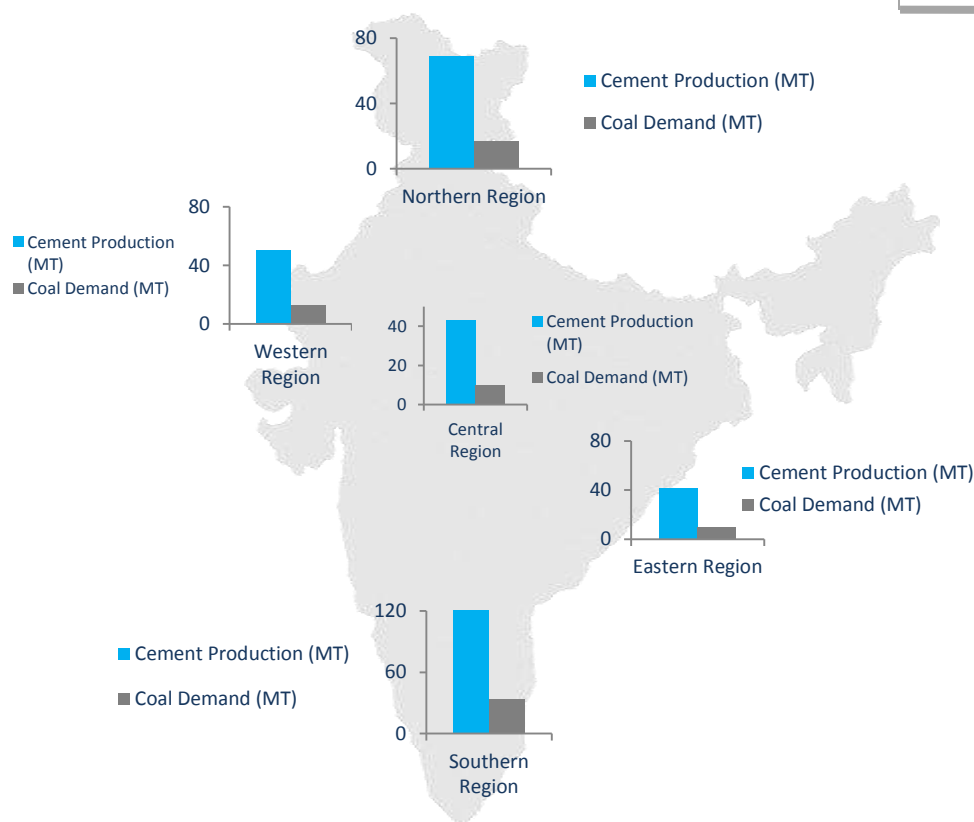
**As per the consumption pattern observed in FY 11 and FY 12, Power sector stands out as the major consumer of coal with consistent rising demand**

As can be seen from Exhibit 2, the demand in the power sector (inclusive of both grid connected and captive sources) remained almost consistent with a rise of one per cent.. However, the cement industry consumed less coal as it is burden with surplus production. . On the other hand, the other segments like brick kilns and process industries’ consumption grew up by four per cent, while steel industry due to economic slowdown registered a sluggish demand of nine per cent as compared to FY 2010-11 levels in FY 2011-12 and was less by about five per cent.

## Coal Requirement in Cement Sector of India: 2012 and 2020

Exhibit 04 : Region wise cement production and coal demand (FY 2012-13)

ILLUSTRATIVE



Source: enincon Perspectives

Southern region dominates the cement production contributing 40 per cent of the total cement produced in the country. Hence, this region accounts to maximum coal demand to produce cement. With Karnataka and Tamil Nadu, as one of the highest cement producing state the coal demand seems ever increasing for this region. Given the expansion plans in the capacity addition for cement production, the demand of in future also is expected to be higher. Southern region being far from domestic coal mines and catering very limited coal resource have to rely more on imported coal.

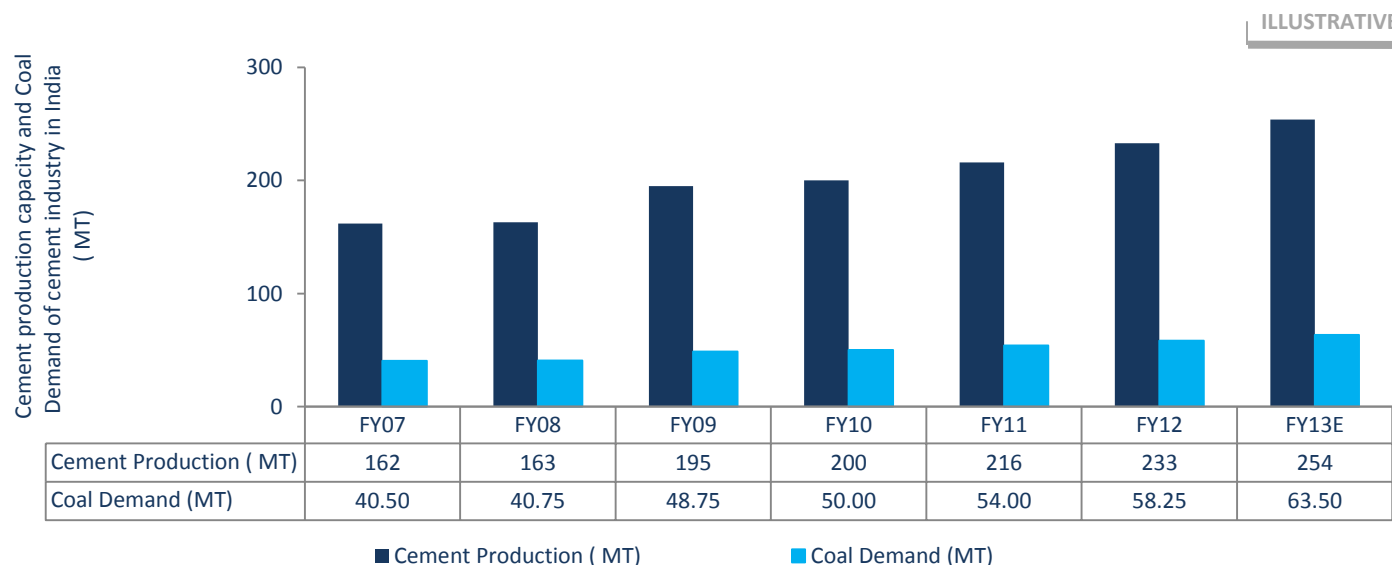
Northern region accounts for 20 per cent of the cement production with Rajasthan being the leading state producing cement and driving the demand of coal in this region. This is only state which produces over 50 MT of cement, thereby taking the coal demand to 15 MT.

The cement industry in India accounts for usage of 5% coal produced in the country. As per thumb rule to produce 100 tonnes of cement the amount of coal required will be one-fourth i.e. 25 tonnes. Hence, undoubtedly to sustain cement production the availability of coal is very important.

The amount of coal which is currently required by cement industry of India (FY13, till October, 2012) is nearly 75 MT; given the cement production is nearly 300 MT. The cement industry is also importing coal at a significant rate, given the domestic coal transportation issue.

Cement industry’s current coal demand in India is close to 65 MT. The trend of coal demand in India vis-à-vis cement production is depicted in Exhibit 7. Out of 65 MT of coal demand by cement industry nearly 90 per cent is met by domestic supplies via coal linkages, captive blocks and trading bodies.

Exhibit 05 : *Region wise cement production and coal demand (FY 2012-13)*



Source: enincon Perspectives

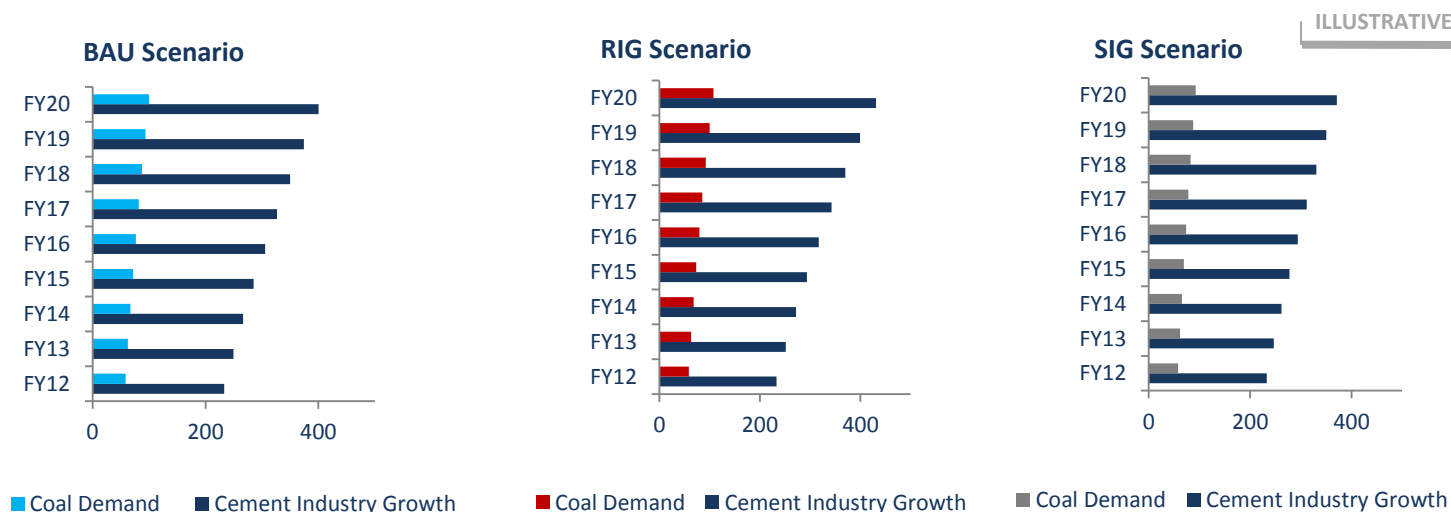
## Coal Requirement in Cement Sector of India: 2012 and 2020

•**Business as usual (BAU):-** To meet the rising demand of the infrastructure sector the cement industry will also grow at a CAGR of 7 per cent. Also, the demand of coal thus in turn by the cement industry will grow at a CAGR of 7 per cent

•**Rapid infra growth scenario (RIG):-** In this scenario it is assumed that the infra growth for India will be at a CAGR of 8 per cent till 2020. Thus, cement industry growth and the coal demand by cement industry will also follow the same CAGR rate of 8 per cent till 2020

•**Slow infra growth scenario (SIG):-** In this scenario it is assumed that the infra growth for India will be at a CAGR of 6 per cent till 2020. Thus, cement industry growth and the coal demand by cement industry will also follow the same CAGR rate of 6 per cent till 2020

Exhibit 06 : Cement industry production growth and coal demand growth by 2020 (in MT)



Source: enincon Perspectives

## Coal in Indian Power Sector

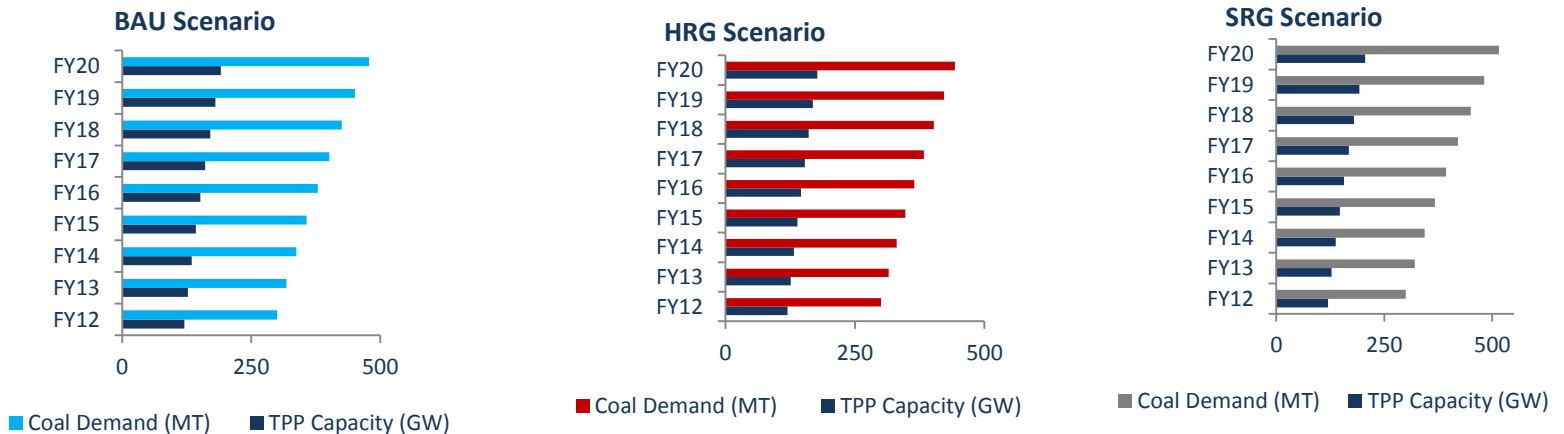
•**Business as usual (BAU):-** The power industry of India, to meet the rising demand of the sector the power generation from coal will grow at a CAGR of 6 per cent in lieu of growing demand in this scenario

•**High renewable and gas scenario (HRG):-** . Power generation from coal based generation will be less in this scenario and will see a CAGR of 5 per cent. This is so because in this scenario it is assumed that more contribution will be from RE and gas based plants.

•**Low renewable and gas scenario (SRG):-** . Power generation from coal based generation will be more in this scenario and will see a CAGR of 7 per cent. This is so because in this scenario it is assumed that less contribution will be from RE and gas based plants.

Exhibit 07 : Power industry production growth and coal demand growth by 2020 (in MT)

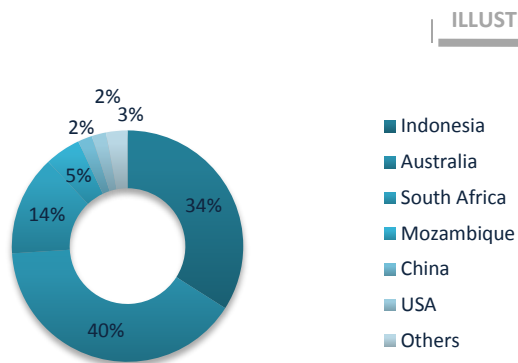
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Source: enincon Perspectives

## Coal Imports Infrastructure in India: Current Constraints and Future

Exhibit 08 : Country wise coal imports of India (From FY01-FY12)

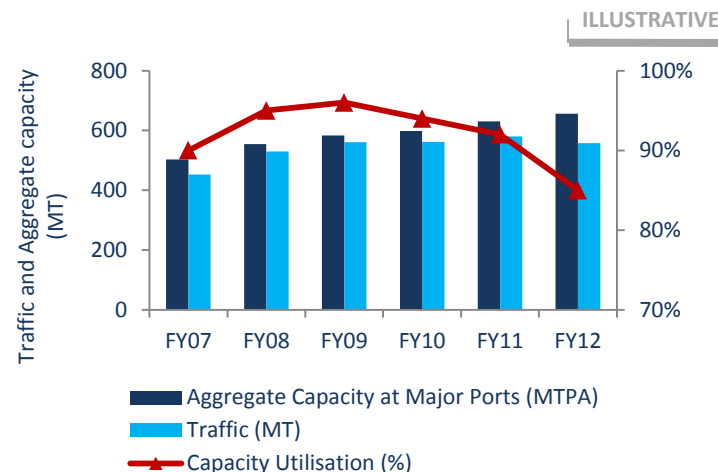


Source: enincon Perspectives

India has imported over 70MTs of coal (coking and thermal) so far in this calendar year. The coal imports highest traffic is seen from months of June and has been consistent till October, 2012. This may be of the reason that domestic mining goes low in the rainy season in India and also the transportation becomes an issue in these months due to rains.

Given the current coal scarcity faced by major consuming industries like power, steel and cement the port infrastructure of India has to be beefed up. In India, at present coal is imported mainly from Australia, Indonesia and South Africa.

Exhibit 09 : Capacity Utilisation at Major Ports of India

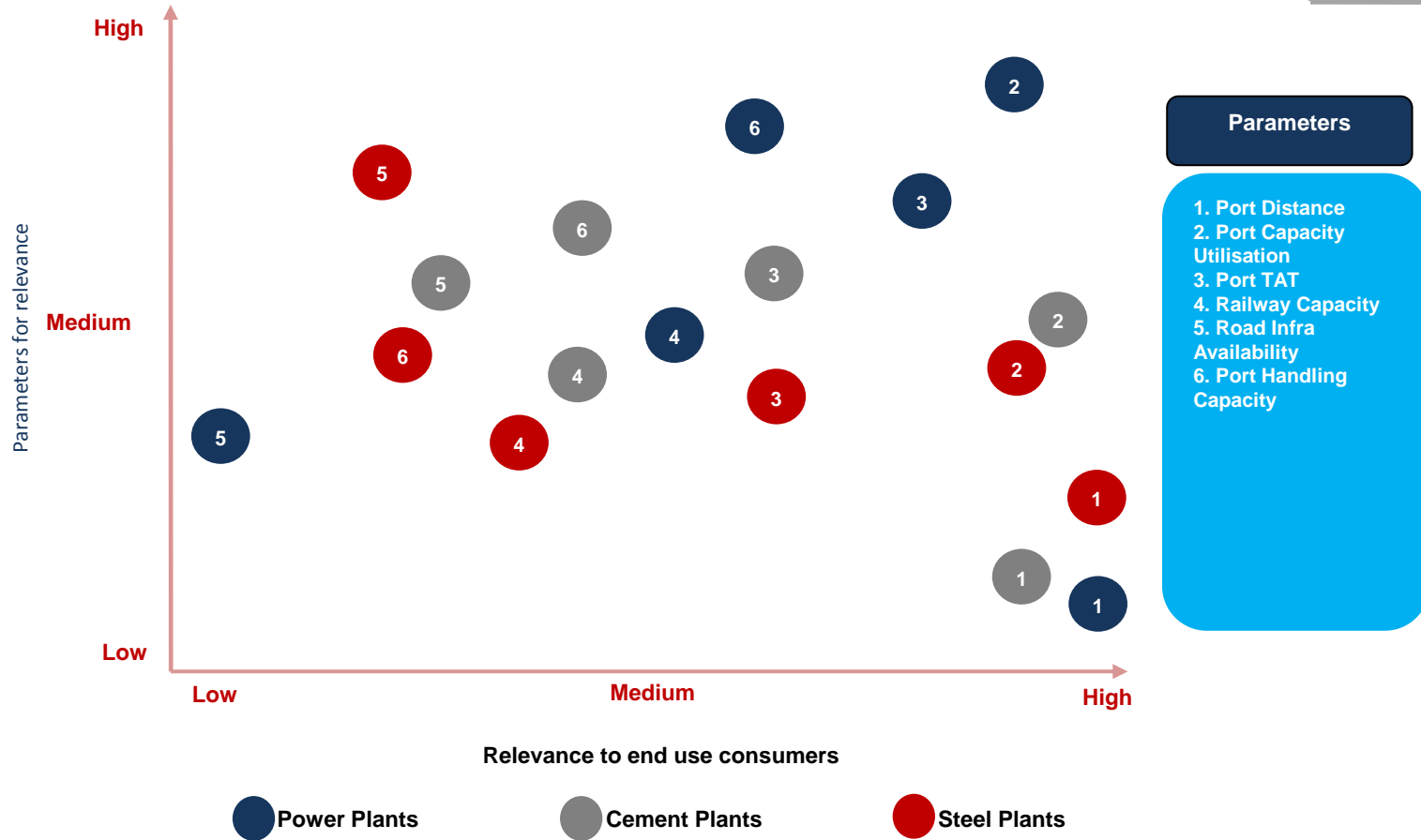


Source: enincon Perspectives

As a result of congestion at the major ports, the traffic at the minor ports has grown at higher pace (14% CAGR as compared to 5% CAGR for major ports) and account for a larger chunk of traffic at 36% in FY11 as compared to 29% in FY07. We believe that minor ports will continue to grow at a robust pace of 11% CAGR over FY12-17E increasing their market share to 43% by FY17. Container and coal has grown at robust pace of 38% and 33% CAGR over the last five years followed by POL and fertilizer at 18% and 13% respectively.

Exhibit 010 : Relevance Matrix for major coal consumers

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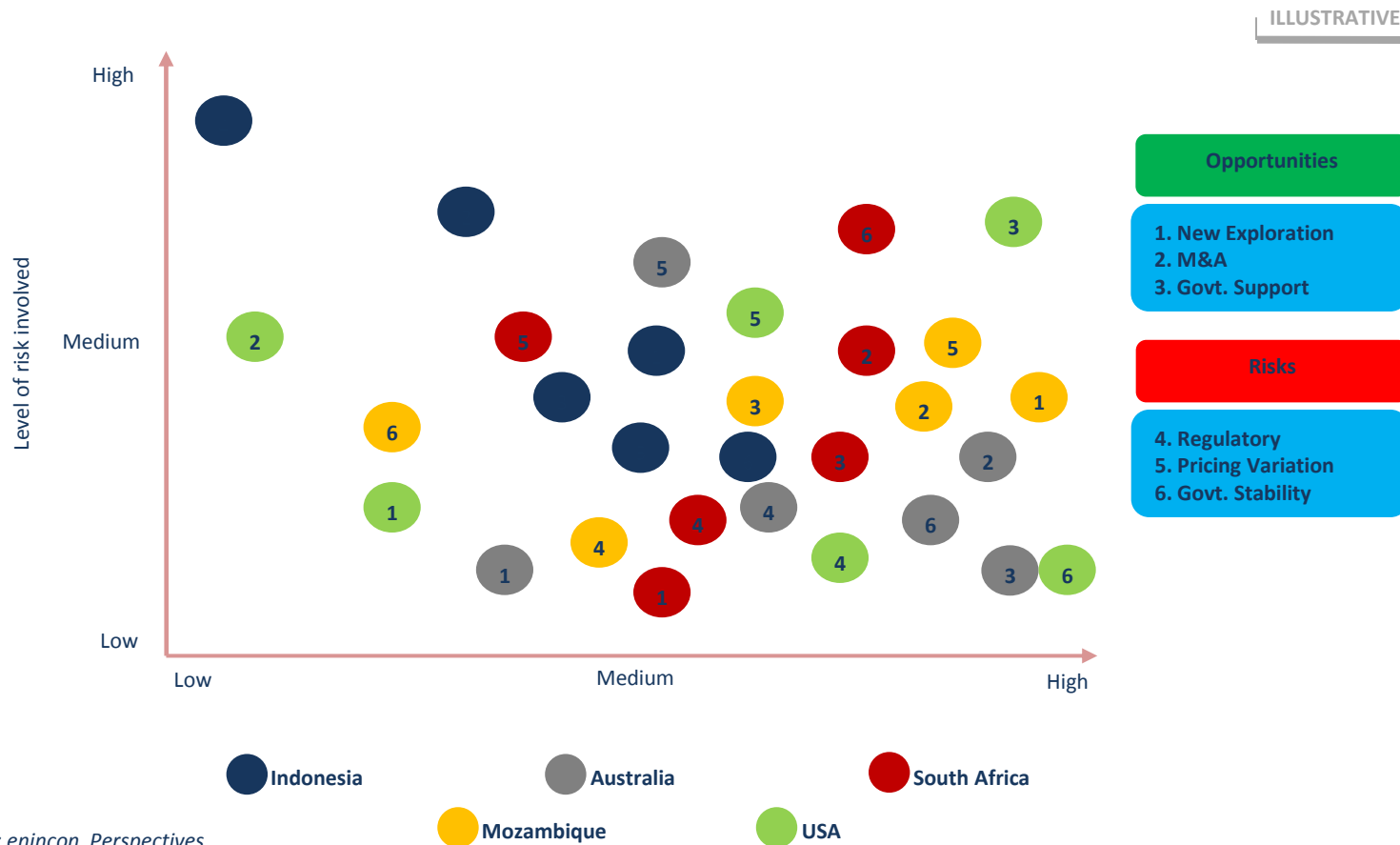
Source: enincon Perspectives



## Emerging Coal Destinations for India: Imports Perspective

The above analysis clearly depicts Mozambique, South Africa and Australia to be preferred destinations for coal imports in future, as they offer least risk involved opportunities for Indian companies looking for coal assets.

Exhibit 11 : Country wise risk-opportunity matrix



Source: enincon Perspectives