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Discussion-Opinion-Editorial™

The Calculation for 2-2.5% Contribution of Minerals Sector to Indian GDP is Underestimated and Plain Wrong; the Actual Figure can be Close to 10%

The GDP contribution by the minerals and Oil & Gas sector is largely either underestimated or wrongly estimated. Under estimation comes from the definition of the final consumer. For example, the value of the coal sold at the power plant mouth is much different from the value of power, derived from the coal, bought by the final consumer. Even the GDP calculated at the mine mouth will be different from the value at the power plant mouth. In some cases, it is wrongly estimated, e.g. combining petroleum and natural gas import cost adjustments to minerals produced in the country bring down the Mineral GDP by a negative, Mineral GDP produced minus Oil and Gas import bill.

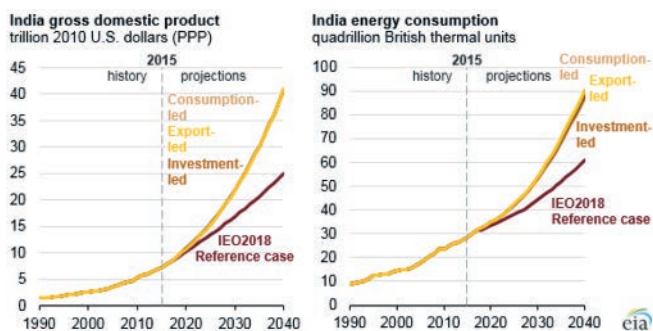
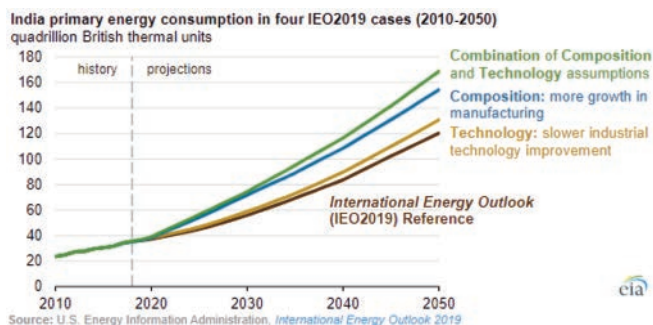
The formula for GDP calculation in India is: $GDP = C + I + G + (X - M)$. C is consumer spending, I is business investment, G is government spending, and (X-M) is net exports. So if, exports are less than imports it will reduce the sector GDP. India's oil and gas (and other minerals) import bill is overwhelmingly higher than its oil and minerals export amount. So it reduces the minerals sector contribution by a significant margin. Separating minerals from the oil and gas will more than double the contribution of mineral GDP for the country. Including stones, aggregates and sands will easily treble the contribution.

What implications it has: in fact, many. GDP of a sector is also a direct indicator of the attention the sector receives from the government. Again, it also distorts. For example, if the GDP of minerals is 7% to the national economy and the import bill is minus 5% of the national economy, the contribution of Mineral GDP will be considered as 7 minus 5 or 2%, as the way RBI calculates.

It is interesting to see the national Mineral GDP is hostage to the overwhelming import bills of oil and Gas sector. In fact, with oil and gas sector's import bill generally being more than 5 times that of the export value, it is cutting into the calculation of contribution by the minerals sector by more than 50%. In addition, not properly calculating or even not calculating at all, the contribution of minor minerals, sand and stones, and aggregates has been hurting the sector immeasurably. The visible result of such omissions is that the sector while being the backbone of the national economy by being the largest contributor, particularly of the rural economy is expectantly looking for attention from the state and central governments, now for more than 5 decades. It has impacted industry, research and academics unfathomably highly. Without intervention it will not change the story as can be seen from the likely import growth of oil and gas in the years to come.



IEA analysis explores India's projected energy consumption



The basis of GDP Calculation by Expenditure Method

GDP can be calculated as the sum of its different components ($\sum A_i$). Any variation of one of its components has an effect on the growth of the GDP. The contribution of the component A_i to the growth of the GDP between t and $t-1$ is equal to the growth of component A_i weighted by its weight in GDP at period $t-1$.

GDP growth may be broken down into the sum of contributions from its various components: household, general government and non-profit institutions serving households consumption expenditure, investments, changes in inventories and trade balance.

In simple cases, aggregates in current prices for example, the contribution of a component to an aggregate (the GDP for example) is equal to the product of that component's growth rate by its weight in the aggregate on the previous period.

GDP Calculation by World Bank

GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.

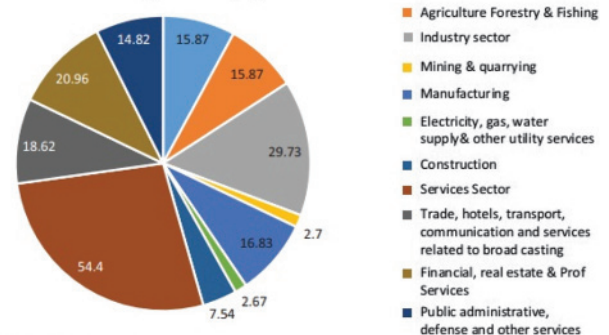
Measuring GDP by International Monetary Fund (IMF)

GDP measures the monetary value of final goods and services – that is, those that are bought by the final user – produced in a country in a given period of time (say a quarter or a year). It counts all of the output generated within the borders of a country. GDP is composed of goods and services produced for sale in the market and also includes some nonmarket production, such as defense or education services provided by the government.

Mining GDP Calculation by Reserve Bank of India (RBI)

RBI collects data from the source agencies like the major minerals that are the Indian Bureau of Mines (IBM), Coal India Ltd. (CIL) and its subsidiaries, and Oil and Natural Gas Corporation (ONGC). The information on minor minerals is obtained from the State Geological Departments. The information on the material inputs is available from the Office of Coal Controller, IBM, ONGC and Oil India Limited. An Enterprise Survey conducted in 1992 is the new source on minor minerals.

Sector-wise contribution of GDP (2018-19)
Percentage share (%)



Source: Statistics times.com.

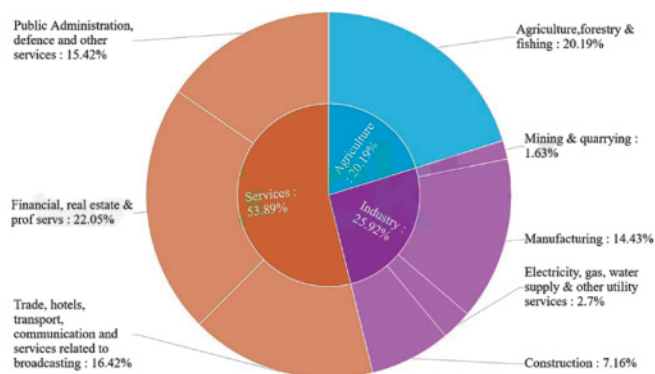
Note: The diagram shows that sector-wise contribution in GDP of India for the year 2018-19.

What is the GDP Formula?

There are two primary methods or formulas by which GDP can be determined:

1. Expenditure Approach

The expenditure approach is the most commonly used GDP



formula, which is based on the money spent by various groups that participate in the economy.

$$GDP = C + G + I + NX$$

C = consumption or all private consumer spending within a country's economy, including, durable goods (items with a lifespan greater than three years), non-durable goods (food & clothing), and services.

G = total government expenditures, including salaries of government employees, road construction/repair, public schools, and military expenditure.

I = sum of a country's investments spent on capital equipment, inventories, and housing.

NX = net exports or a country's total exports less total imports.

2. Income Approach

This GDP formula takes the total income generated by the goods and services produced.

$$GDP = \text{Total National Income} + \text{Sales Taxes} + \text{Depreciation} + \text{Net Foreign Factor Income}$$

Total National Income – the sum of all wages, rent, interest, and profits.

Sales Taxes – consumer taxes imposed by the government on the sales of goods and services.

Depreciation – cost allocated to a tangible asset over its useful life.

Net Foreign Factor Income – the difference between the total income that a country's citizens and companies generate in foreign countries, versus the total income foreign citizens and companies generate in the domestic country.

What are the Types of GDP?

GDP can be measured in several different ways. The most common methods include:

- Nominal GDP – the total value of all goods and services produced at current market prices. This includes all the changes in market prices during the current year due to inflation or deflation.
- Real GDP – the sum of all goods and services produced at constant prices. The prices used in determining the Gross

Domestic Product are based on a certain base year or the previous year. This provides a more accurate account of economic growth, as it is already an inflation-adjusted measurement, meaning the effects of inflation are taken out.

- Actual GDP – real-time measurement of all outputs at any interval or any given time. It demonstrates the existing state of business of the economy.
- Potential GDP – ideal economic condition with 100% employment across all sectors, steady currency, and stable product prices.

Why is GDP Important to Economists and Investors?

Gross Domestic Product represents the economic production and growth of a nation and is one of the primary indicators used to determine the overall well-being of a country's economy and standard of living. One way to determine how well a country's economy is flourishing is by its GDP growth rate. This rate reflects the increase or decrease in the percentage of economic output in monthly, quarterly, or yearly periods.

Gross Domestic Product enables economic policymakers to assess whether the economy is weakening or progressing, if it needs improvements or restrictions, and if threats of recession or inflation are imminent. From these assessments, government agencies can determine if expansionary, monetary policies are needed to address economic issues.

Investors place importance on GDP growth rates to decide how the economy is changing so that they can make adjustments to their asset allocation. However, when there is an economic slump, businesses experience low profits, which means lower stock prices and consumers tend to cut spending. Investors are also on the lookout for potential investments, locally and abroad, basing their judgment on countries' growth rate comparisons.

What are Some Drawbacks of calculating Mineral GDP?

Gross Domestic Product does not reflect the black market, which may be a large part of the economy in certain countries. Even for India there is a rampant black market of sand and stone mining. In the absence of regulation, they will continue to remain as black money and what will be without the counting of GDP. The sand and stone market is akin to the underground economy, includes illegal economic activities, such as the sale of drugs, prostitution, and some lawful transactions that do not comply with tax obligations. In these cases, GDP is not an accurate measure of some components that play a large role in the economic state of a country.

Income generated in a country by an overseas company that is transferred back to foreign investors is not considered. This is a minus in the calculation. This overstates a country's economic output.

Expenditure Approach for Recalculation

The expenditure approach can be the GDP formula, which is based on the money spent by various groups that participate in the economy.

$$\text{GDP} = \text{C} + \text{G} + \text{I} + \text{NX}$$

C = consumption of all kinds of raw materials in value in the mine. Cost of water, electricity, all types of asset, lubricants, spares, operation including, durable goods (items with a lifespan greater than three years), non-durable goods (food & clothing), and services.

G = total cost including salaries of employees, road construction/repair, public facilities, schools, and CSR expenditure.

I = sum of the mine's investments spent on capital equipment, inventories, and housing.

NX = net exports or a country's total exports less total imports.

GDP Formula

$$\text{Expenditure Approach} = \text{C} + \text{I} + \text{G} + \text{NX}$$

Income Approach = Total Nation income + Sales Tax + Depreciation + Net Foreign Factor income

Value Added Approach = Gross value of output – Value of intermediate consumption.

Oil and Gas GDP: A Serious Relook is Now Necessary

India's petroleum product exports are at over \$86 billion in April-February of FY23. India imported crude oil and petroleum products worth a whopping \$193.47 billion during the same period, data from the Ministry of Petroleum & Natural Gas (MoPNG). So the net GDP contribution of Oil and Gas Sector is minus \$107.43 billion. India exported petroleum products worth \$86.21 billion during the first 11 months of the current financial year ending March 2023, which accounts for more than 21 per cent of India's total commodity exports. As this is a critical sector it should be treated separately and should not be treated similarly for example, with textiles, ITES and other sectors. Combining with minerals it diminishes the importance of oil and gas sector as its proportion of contribution to the measurement gets diluted. And at the same time, it brings down the value of the contribution of the minerals.

A Primary Calculation of Actual Mineral GDP

- Considering the mineral sector contributing around 2.5% of the Gross Domestic Product (GDP), the contribution comes to 2.5% of 3.18 trillion dollars or 80 billion dollars. If one adds the deduction made for net import of oil and gas products which is at 107.43 billion the GDP contribution of minerals sector (without oil and Gas) is currently at 187.43 billion dollars.
- Now consider the omitted part of stone, sand and

aggregate value. Considering about 10% of the GDP is derived from public and private infrastructure spending and about 20% of the GDP is contributed by stone, sand and aggregate sector in value, the contribution of this sector will be $20\% \times 10\% \times 3180$ or 63.6 billion dollars.

- So the actual mineral contribution to GDP should be somewhere close to 187.43+63.6 billion dollars or 251 billion dollars. When calculated the percentage contribution of mineral sector GDP contribution becomes 7.9% or 8%.
- What we not still considered: Considering the huge tax evasion by many mining companies that can be linked to under-invoicing, under-reporting, weight manipulation and over-invoicing, pilferage etc – some leading to money laundering – the total value can be easily 10-20% of the total GDP. So all including the contribution to GDP by the mineral sector can be 8.8-9.6% of the country's GDP, a near four times jump from the pittance of 2.5%.

Why the Government should have a serious re-look

Following are the reasons:

- A true total GDP calculation signals formalization of the economy where the role of black money shall continue to decrease. It also provides the true picture of the state of economy. It encourages formal banking, investment and responsibility with benefits.
- Mineral sector shall continue to remain vital in the days to come, and its utility and conservation are both vital. The actual GDP shall highlight the importance of the sector. Undervalued GDP is good for the malpractitioners as they are encouraged to circumvent.
- More formalization by knowing the sources of GDP will help economic activities, particularly in the rural sectors.
- It will encourage the sector to retain talent, to make responsible investment, more institutionalization – encouraging other players to join.
- It will help encourage safety, health, welfare and local sustainability as the formalization will provide more data about the people to the government.
- From the above calculation it also clear that about 3-5% of the GDP to the country can be added if legality, transparency and logic is followed.
- Finally, GDP enables policymakers and central banks to judge whether the economy is contracting or expanding and promptly take necessary action. It also allows policymakers, economists, and businesses to analyze the impact of variables such as monetary and fiscal policy, economic shocks, and tax and spending plans.

Reference

- <https://www.mospi.gov.in/133-gross-domestic-product>