

Catastrophic Failure of Public Trust in Mining

Case Study of Goa

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Minerals are a commons, held by state governments in public trust for the people, especially for future generations. With mining, states dispose of minerals for money, and have so far lost more than half their value. As this study shows, over the last eight years of iron ore mining in Goa, each family of four in the state has lost the equivalent of Rs 13.51 lakh, while the average Goan private household's assets are estimated to be Rs 10.44 lakh. This is catastrophic.

1 Introduction and Background

Under Article 294 of the Indian Constitution, sub-soil minerals are owned by individual states, not the centre, the mining leaseholder, or the landowner. There are some exceptions, but usually ownership vests with a representative entity such as a district council or a regional council. Technically, the provision carries forward the situation that existed earlier. For example, in Goa, the state owned all mineral resources under Portuguese law. Offshore minerals (chiefly oil and gas) are owned by the centre under Article 295. For simplicity of analysis, we assume that states own all their minerals.

Natural resources are a commons. The government holds them in trust for the public, especially for future generations. They are *uttaradhikari*, an inheritance of assets akin to ancestral jewellery, and have to be passed on. This obligation also flows from the Intergenerational Equity principle (Basu 2014). In the Fomento Resorts and Hotels case (2009: 3 scc 571), the Supreme Court held,

We reiterate that natural resources including forests, water bodies, rivers, sea shores, etc. are held by the State as a trustee on behalf of the people and especially the future generations.

The heart of the public trust doctrine is that it imposes limits and obligations upon government agencies and their administrators on behalf of all the people and especially future generations. For example, renewable and non-renewable resources, associated uses, ecological values or objects in which the public has a special interest (that is, public lands, waters, etc) are held subject to the duty of the state not to impair such resources, uses or values, even if private interests are involved.

In the Meerut Development Authority case (2009: 6 scc 171), the Supreme Court said,

Whenever the Government or the authorities get less than the full value of the asset, the country is being cheated; there is a simple transfer of wealth from the citizens as a whole to whoever gets the assets 'at a discount.'

As a commons, the public owns equal shares in natural resources. Any loss is effectively a poll tax, a per-head tax, a tax in equal amounts on every citizen. Per-head taxes are highly regressive—the poorest are taxed the same amount as the richest. Further, as these are inherited assets to be passed on, a loss cheats our children of their inheritance. So what are these assets?

Mining affects three significant public trust assets.

(1) Real Option to Mine: Mining is a one-time income-generating opportunity. The opportunity is part of our inheritance. We have the option to mine as previous generations did not utilise the opportunity. If we do not mine, the next generation

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inherits the option to mine. In economic terms, this is a “real option” that has significant value. The option to mine never expires, and its strike price is zero. Therefore, its value is the one-time income generated from mining (Kolb and Overdahl 2003: Ch 4). This value must be captured by the state so that future generations can inherit it, instead of the opportunity to mine, which we utilise.

Employment and income-generation arguments for mining are demands by a few to make capital out of the public mining option. No consideration is given to the state capturing the value of the option for the benefit of future generations, likely a total loss. Arguably, the state is also obliged to maximise the benefits from this opportunity. This is usually through the creation of multi-use infrastructure, downstream and ancillary businesses and the creation of mining competencies.

(2) Social Cost of Mining: Mining externalities, or the social, health, and environmental costs of mining, impair other natural resources. Importantly, the effects are not distributed equally. Air pollution may have global effects. Corruption and civil unrest can cover significant areas. The impact on health may be more localised. Often, the poor bear the greatest burden.

Ideally, each social cost would be identified and appropriate compensation designed, if feasible. Existing compensation for externalities is limited. For example, the barge tax in Goa is intended to compensate for damage caused to *khazan* bunds. The district mineral fund contributions are of this nature. However, there is no comprehensive valuation of mining externalities available.

(3) Economic Value of the Mineral: The actual mineral itself has value, which must be captured in full. The economic value of minerals is the sale price minus social costs minus all extraction and processing expenses. We can write it as revenues–social costs–private costs).

The state’s duty is to avoid impairing the value of the above assets. No mining ensures the mineral resources pass on to the next generation unimpaired. If the state does mine, it must capture the full value of the natural resources and avoid losses. Only then can future generations inherit unimpaired assets. If the state cannot avoid a loss while mining, its duty as trustee is to not mine. Since mining has taken place, we evaluate whether the state has fulfilled its duty as a public trustee.

An earlier paper had used World Bank data to determine whether Goa had avoided losses over a five-year period (Basu 2014). In this paper, we use public financial data to estimate whether states have avoided losses in the last decade of mining. We look at two iron ore majors, Sesa Goa (merged to form Sesa Sterlite, now renamed Vedanta) and the National Mineral Development Corporation (NMDC). We present independent earlier data on hydrocarbons. Over the last 10 years, these minerals accounted for 80% of India’s production—coal (28.5%), oil (26.8%), natural gas (10.2%) and iron ore (14.3%), all adding up to 79.7%.¹ Finally, we examine the position for the state of Goa. We then examine the implications, reasons, the recent Mines and Minerals (Development and Regulation)

(MMDR) Amendment Act and coal amendments, and some remedial actions that could be taken.

2 Methodology

We define “capturable value” (cv, economic rent, rent, or mineral depletion) as revenues minus private cost. The cv includes two values for two of the assets—the social cost and the economic value of the mineral.² We have not valued the real option to mine. It is likely to be greater than the sum of employee expenses and return on capital (value addition), and lower than the private cost. States must ensure future generations inherit the cv and the option value.

The authority to legislate on minerals is shared by the centre and the states. Mining is largely controlled by the MMDR Act, 1957. Mineral owners, the states, dispose their sub-soil minerals under a mining lease. Their compensation is royalty, and more recently, the auction premium. West Bengal imposes cesses on coal-bearing lands. The centre captures value through export duty, corporate income tax on mining companies, and through other tools such as differential railway tariffs. The remaining mineral value is largely captured by the mining leaseholder through windfall profits. The states or the centre capture windfall profits to the extent of their ownership in mining companies. We cannot estimate off-the-books items such as underpricing of the mineral or inflated expenses. The state as owner, the centre, and the mining leaseholder compete to capture a part of the cv.³ We call their shares state capture, centre capture, and windfall profit.

2.1 Public Property Lost and Loss Rate

“Public property lost” is defined as the cv minus state capture. As the option value is not part of the cv, this underestimates the loss. We define the loss rate (LR) to measure the effectiveness of the government when disposing of natural resources. The loss rate is public property lost divided by the cv. Avoiding losses requires a loss rate of 0%. The capture rate (CR) is a secondary metric. The capture rate is state capture divided by the cv (loss rate + capture rate = 100%).

Under the Indian public finance system, the states receive significant financial support from the centre through finance commission recommendations and the Planning Commission (which has become the NITI Aayog). The basis for allocating funds to states has no linkage to the taxes and other sums the centre captures from each state. Therefore, the argument that the state capture should include inflows from mining to the centre has no merit.

Nevertheless, we calculate three additional metrics. The state public sector undertaking capture rate (scr) is a metric that measures the CR in the hypothetical situation where the state owns the mining leaseholder. The government capture rate (GCR) looks at the total amounts captured by the centre and the states as a proportion of the cv. The “government take’ is the government’s share of economic profits counting almost income sources: bonuses, royalties, profit oil, taxes, government working interest, etc” (Johnston 2006: 75). Internationally, government take is frequently used. We calculate it for comparison.

We use the 2013–14 accounts of the NMDC to demonstrate our calculations. Table 1 compares financial statements with calculations for the capture rate.

Table 1: NMDC Financials Recast for Capture Rate

Financial Statements		Recast for Capture Rate		
Revenues	11,926	Revenues	11,926	
Non-tax expenses	2,406	Non-tax expenses	2,406	
Royalty	960	Income tax on earned profit	372	
Export duty, etc	648	Earned profit (20% return on assets)	714	
Less: total expenses	4,015	Less: total private cost	3,492	
PBT	7,911	Capturable value (CV), of which	8,434	100%
Income tax	3,356	– Royalty	960	11%
Profit after tax	5,203	– Export duty, etc	648	8%
		– Income tax on windfall profit	2,336	28%
		– Windfall profit, of which	4,489	53%
		– Centre (80%)	3,591	43%
		– Public float (20%)	898	11%
		Public property lost (CV – royalty)	7,474	89%
Metric	Numerator	Denominator	Result	
Loss rate	7,474	8,434	88.6%	
Capture rate	960	8,434	11.4%	
Government capture rate	960 + 648 + 2,336 + 3,591	8,434	89.4%	
State PSU capture rate	960 + 4,489	8,434	64.6%	
Government take	372 + (714 x 80%) + 960 + 648 + 2,336 + 3,591	372 + 714 + 8,434	89.1%	

Source: NMDC Annual Report 2013–14.

We first estimate the amount captured by the NMDC through unearned profit. Since the NMDC has multiple business segments, we use the segment reporting tables in the notes to the consolidated accounts. Revenues from the iron ore segment (Rs 11,926 crore); earnings before interest and tax (EBIT) (Rs 7,911 crore);⁴ assets (Rs 4,433 crore); and liabilities (Rs 863 crore) are available here. Interest is zero, hence EBIT = profit before tax (PBT). We use the figures for tax (Rs 3,341 crore) and PBT (Rs 9,761 crore) from the consolidated profit and loss (P&L) statement to estimate the NMDC's effective corporate tax rate (34%), and use it to estimate tax (Rs 2,708 crore) and profit after tax (PAT) (Rs 5,203 crore) for the iron ore segment. This includes both earned profit and windfall profit (and tax thereon).

We have set the reasonable after tax return on capital at an attractive 20%. By comparison, the weighted average cost of capital (WACC) is often assumed to be in the range of 9%–12%.⁵ We applied this rate on the segment net assets (segment assets minus liabilities) to estimate earned profit (Rs 714 crore). Any profit over and above this 20% return on capital would be regarded as windfall profit (Rs 4,489 crore), which should ideally have been captured in full by the state. We divide the tax on the iron ore segment proportionately into tax on earned profit (Rs 372 crore) and tax on unearned profit (Rs 2,336 crore).⁶

The state captures value through royalty (Rs 960 crore). This is available in the P&L statement. The centre captures value through export duty (note 2.27 on selling expense) (Rs 648 crore), and through corporate income tax on unearned profit.

The total cv (Rs 8,434 crore) is the sum of royalty (Rs 960 crore), export duty (Rs 648 crore), tax on windfall profit (Rs 2,336 crore), and windfall PAT (Rs 4,489 crore). The public property lost was Rs 7,474 crore. The LR was 88.6% (and the CR 11.4%). In other words, the states where the NMDC conducted its iron ore mining operations lost 88.6% of their assets.

The centre captured 7.7% through export duty, and 27.7% through tax on windfall profit, totalling 35.4%. The shareholders of the NMDC captured the remaining 53.2% of the cv. As it happens, the NMDC is a PSU, with the centre owning 80% of its shares. So an additional 42.6% is captured by the centre, bringing its share up to 78.0% and the government capture rate to 89.4%. The state PSU capture rate would be 64.6% (royalty + windfall profit). The government take is 89.1%.

2.2 Comparing Metrics

Assuming private mining, loss rate is public property lost/cv, or

$$\frac{\{\text{cv} - \text{state capture}\}}{\{\text{State capture} + \text{centre capture} + \text{windfall profit}\}}$$

Capture rate is state capture/cv, or

$$\frac{\{\text{State capture}\}}{\{\text{State capture} + \text{centre capture} + \text{windfall profit}\}}$$

State PSU capture rate is

$$\frac{\{\text{State capture} + \text{windfall profit}\}}{\{\text{State capture} + \text{centre capture} + \text{windfall profit}\}}$$

Government capture rate is

$$\frac{\{\text{State capture} + \text{centre capture}\}}{\{\text{State capture} + \text{centre capture} + \text{windfall profit}\}}$$

Government take is

$$\frac{\{\text{State capture} + \text{centre capture} + (\text{government share of earned profit} + \text{its tax})\}}{\{\text{State capture} + \text{centre capture} + \text{windfall profit} + (\text{earned profit} + \text{tax on earned profit})\}}$$

To avoid loss, the loss rate is the appropriate metric. The goal is 0% (and 100% for the CR). It can be calculated for the sale of any asset. This makes it very suitable for comparing performance and learning from variations. Despite widespread use, the government take is a poor metric. There is no adjustment for earned return on capital and the associated income tax on earned profit. Capital intensity and risk varies widely across mines—deep offshore mining is much more capital intensive and risky compared to surface iron ore mining. We would expect a lower government take where capital intensity or risk is higher.

Unlike the universal capture rate norm of 100%, target values for the government take must be set individually by adjusting for earned profit and associated taxes.⁷ However, there is a close relationship between the GT and the GCR. In situations where the capital intensity and risk is low and the cv high, the GCR will be very close to the GT. Further, when earned profit achieves target (CR ≤ 100%), and the normal income tax rate is equal or lower to the mining income tax rate, the GT will be lower than the GCR.⁸ This is important as international data shows that entire countries achieve a government take in excess of 90% in the risky and capital-intensive

oil and gas sector (Barma et al 2011: 162), implying that the GCR approaches 100%. If the federal government owns the minerals, it implies a loss rate in single digits.

In its report on coal block allocations, the Comptroller and Auditor General (CAG) had calculated windfall gains using historical accounting data (CAG 2012). However, while the absolute amounts were provided, the loss rate was not estimated. A loss rate of 1% is an efficiency issue. A loss rate more than 90% is a structural issue.

3 Results

(a) Sesa Goa and National Mineral Development Corporation Results: Sesa Goa is the only public company that mines in Goa. It is the largest producer and exporter of iron ore from the state (30% by volume), and it is thus representative. An overwhelming majority (74% by volume) of Sesa's mining operations were in Goa. Mining accounts for 82% of Sesa's revenues, the rest coming from pig iron and metallurgical coke. Exports are 94% of mining revenues. Further, since it is well integrated, we can get an understanding of its complete cost structure right through exports. Last, it has few related-party transactions.

The NMDC is a PSU of the central government. More than 99% of the NMDC's revenues are from iron ore mining, with mines in several states, primarily Andhra Pradesh and Chhattisgarh. NMDC sales are largely domestic (85%).

Table 2 summarises the results for Sesa Goa and the NMDC.

Table 2: Sesa Goa and NMDC Results

	Sesa Goa 2004–05–2011–12 (Eight Years)		NMDC 2004–05–2013–14 (10 Years)	
	Rs Crore	Percentage to CV	Rs Crore	Percentage to CV
Revenues	33,282	177	74,576	131
Non-tax expenses	12,334	66	12,706	22
Income tax on earned profit	640	3	1,729	3
Earned profit (20% return on assets)	1,513	8	3,390	6
Less: Total private cost	14,488	77	17,825	31
Capturable value (CV), of which	18,794	100	56,751	100
– Royalty	889	5	4,503	8
– Export duty, etc	2,841	15	2,194	4
– Income tax on windfall profit	4,231	23	16,824	30
– Windfall profit, of which	10,833	58	33,231	59
– Centre	0	0	26,585	47
– Public float	10,833	58	6,646	12
Public property lost (CV–royalty)	17,905	95	52,248	92
	Sesa Goa		NMDC	
Metric				
Loss rate	95.3%		92.1%	
Capture rate	4.7%		7.9%	
Government capture rate	42.4%		88.3%	
State PSU capture rate	62.4%		66.5%	
Government take	41.1%		83.8%	
(Rs crore)				
Public property lost	17,905		52,248	
Employee expense	978		4,070	
Mining dependent expense	4,829		4,817	
Earned profit	1,513		3,390	
Total private cost	14,488		17,825	

Source: Sesa Goa and NMDC annual reports.

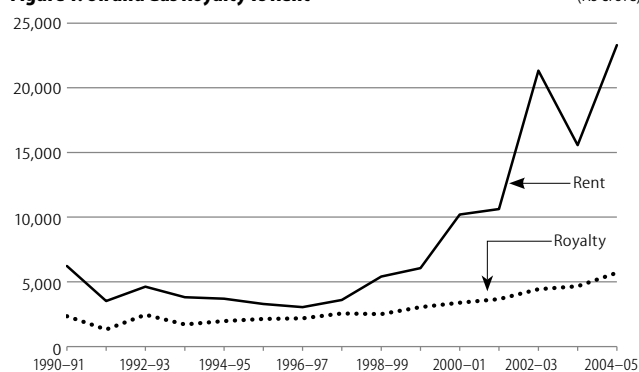
The picture is remarkably similar across Sesa and the NMDC. Loss rates are more than 90%. And these may be underestimates. Sesa Goa was mentioned in the Shah Commission Report 3 in relation to under-invoicing. Similarly, the CAG (2012) report on production and sale of iron ore by the NMDC estimates a loss of Rs 1,574.11 crore over 2007–11 due to “infirmities in price fixation.”

Windfall profit is nearly 60% of the value, much greater than all the taxes put together. Since the central government owns 80% of the NMDC, it is the primary beneficiary of the windfall profit, explaining the higher GCR and GT. As central taxes capture a large part of the value, the state PSU CR does not reach 70%.

Privatisation of mining is often on the basis that the public sector is inefficient or corrupt. The comparison reveals that the NMDC has better operating metrics—similar asset intensity, and better margins.

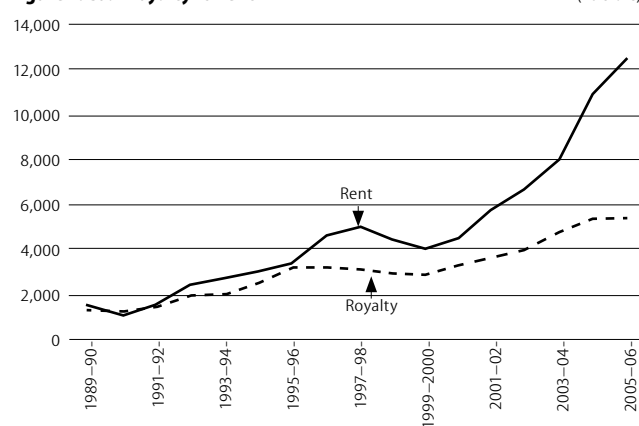
(b) Hydrocarbons: A recent doctoral thesis (Saksena 2009) uses a similar methodology to calculate royalty and the cv for fossil fuels (Figure 1). However, not enough data is available to calculate other metrics. For oil and gas, financials for 15 years—1990–2005 of the Oil and Natural Gas Corporation (ONGC) and Oil India Ltd (OIL) were used.

Figure 1: Oil and Gas Royalty vs Rent (Rs crore)



A similar analysis was carried out for Coal India Ltd (CIL) and its subsidiaries for a 17-year period—1989–2006 (Figure 2). As can be seen, the loss rate in the early years was low. By the end of the period, the loss rate was clearly more than 50%.

Figure 2: Coal Royalty vs Rent (Rs crore)



(c) **Goa State:** To estimate values for Goa, we used the per-tonne figures from the Sesa Goa analysis and applied it to the state's iron ore exports as reported by the Goa Mineral Ore Exporters Association (GMOEA) in its annual selected statistics. As domestic sales are ignored, the cv is underestimated. As all mining is in private hands, the royalty (actually revenue receipts of the mines department), is the amount captured by the state of Goa.

Figure 3: Goa Iron Ore

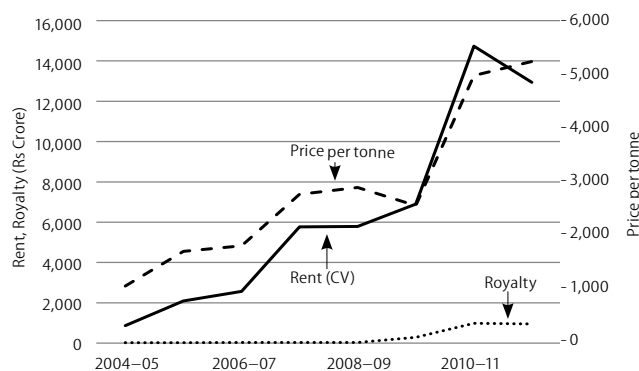


Figure 3 clearly demonstrates that royalty fails to adjust to price increases.

This is a catastrophe. The cv of the mineral resources that were extracted was Rs 51,655 crore, 28% of the gross state domestic product (GSDP) over the period (Table 3). Of this amount, the state managed to lose Rs 49,268 crore, an incredible 95.4%. An earlier study used World Bank data, covered the first five years of this period, and arrived at a loss rate of 99.1% (Basu 2014). A few comparisons are useful:

(i) The loss (Rs 49,268 crore) was far in excess of the outstanding government debt (Rs 6,872 crore) and the cumulative fiscal

Table 3: State of Goa, 2004–05—2011–12

	Units	Total
Value of the ore extracted		
CV (mineral depletion)	Rs crore	51,655
Royalty (mines department revenue receipts)	Rs crore	2,387
Public property lost	Rs crore	49,268
Loss rate	%	95.4%
Goa GSDP at current prices	Rs crore	187,297
Mineral depletion (CV)/GSDP	%	28%
Goa state finances and mining		
Goa GSDP at current prices	Rs crore	187,297
GSDP from mining	Rs crore	27,448
Mining as a percentage of GSDP	%	15%
Government revenue receipts	Rs crore	27,402
Royalty (mines department revenue receipts)	Rs crore	2,387
Mining as percentage of total revenue	%	9%
Mineral depletion (CV)	Rs crore	51,655
Public property lost	Rs crore	49,268
Government total expenditure	Rs crore	32,008
Fiscal deficit	Rs crore	5,386
Government outstanding debt	Rs crore	6,872
Public property lost	Rs crore	49,268
Employee expense	Rs crore	2,412
Mining dependent expense	Rs crore	11,962
Earned profit	Rs crore	3,795
Total private cost	Rs crore	36,092

Source: Sesa Goa, GMOEA and Goa state data.

deficit (Rs 5,386 crore). It is much greater than the government expenditure over this period (Rs 32,008 crore).

(2) Goa has a small population—14,58,686 as per the 2011 Census. The loss per person works out to Rs 3.38 lakh over eight years. Everyone lost Rs 42,219 per year, Rs 3,518 per month, or Rs 116 per day. And for eight years. The 2014 poverty line is set at Rs 47 per person per day in cities and Rs 32 per day in rural areas (Singh 2014).

(3) For a household of four, this is a loss of inherited assets of Rs 13.51 lakh. The National Sample Survey Office (NSSO) (2014) estimates average value of household (private) assets in Goa at Rs 10.44 lakh.

Looking forward, the amounts at stake are enormous. The value of the iron ore still remaining in the ground in Goa is conservatively worth Rs 17 lakh per man, woman, and child, or Rs 68 lakh for a household of four. Clearly, the value of the commons dominates all else.

Despite multiple representations and the Bharatiya Janata Party (BJP) election manifesto, the BJP government in Goa has renewed all leases on the existing system, that is, at a 95% loss rate. The alternative of auctioning them off was abandoned due to the possibility of the mining mafia entering Goa. Mining under a PSU was similarly beset with vague difficulties. Many renewals were on the day the MMDR Amendment Ordinance was promulgated.⁹

The chief minister of Goa stated in the legislative assembly in August 2014 that corruption is rife in the state mining department (IANS 2014). It is difficult to imagine that the corruption is restricted to the bureaucracy. Have mining leaseholders captured the state along with windfall profits?

(d) Implications: The problem is grave. It spans minerals and states. We the people are being cheated systematically. The avoid loss standard has been ignored. We are living off our inheritance. Our true income is much lower, as also our savings rate. Windfall profit is also probably overstating returns to capital. Looking through an intergenerational equity lens, we have squandered the inheritance of future generations. Our national accounts are misleading us.

It is no surprise that inequality is rising. This is a massive flow of wealth from the poor masses to a few rich persons. This is the opposite of the socialism set out in the preamble to the Constitution of India. Trickle down seems to mean “gush up first, then trickle back down.” In many mineral-rich yet poor countries this represents not just a transfer of wealth from the poor to the rich, or from future generations to the present, but also a transfer from poor nations to global mining multinationals (Barma et al 2011; Humphreys et al 2007); hidden neocolonialism.

Given the large sums involved, it raises significant moral, ethical, and human rights issues. Article 17 of the Universal Declaration of Human Rights states, “(1) Everyone has the right to own property alone as well as in association with others. (2) No one shall be arbitrarily deprived of his property.” It would seem that the people of Goa (and other states) have a viable human rights complaint.

4 How Did This Happen?

Historically, the origins of the MMDR Act lie in a time when prospecting meant trips into dense jungles, mining was manual, risk capital and expertise were scarce, and minerals were needed for industrialisation. The concern was to have enough minerals available for growth and development. Minerals were serendipitous. Finding new mineral deposits were a bonanza for a poor developing country. Consequently, the objects of the MMDR Act were the development and regulation of mines and minerals. The key objective when setting royalty rates was to ensure that mining was an attractive industry for investment in prospecting. The basis for royalty setting was a worldwide comparison, leading to an inevitable race to the bottom.

Flowing from this, the central mines ministry does not recognise the need to avoid loss for the people—not in its Vision and Mission, Strategy Plan, Results Framework Document, National Mineral Policy of 2008, various reports on royalty rates, or in the five-year and annual plans. It is simply not a requirement. Similarly, loss avoidance has not been an objective in either the previous or the current mineral policy of Goa.

From a structural perspective, while states own sub-soil minerals, the centre controls most aspects of mining through the MMDR Act. The chief tools available to states in the case of private mining are (i) royalty rates, and (ii) amounts from auctions (after the MMDR Amendment Ordinance 2015). Both are outside their control. The MMDR Act specifies that royalty rates can be enhanced only once every three years, and set by the centre. And auctions will take place twice a century with the structure decided by the centre.

From a political economy perspective, private mining creates an unnecessary layer of agency issues. The leaseholder is interested in capturing as much of the value of the mineral as possible. Given the sums of money involved, it is in their interest to capture the political system and the government as well. This makes it highly unlikely that the public will avoid a loss, despite assurances from theoretical modelling.

The central government, as we have already seen, has no interest in loss rates. This leaves the states with the most to lose and weaker governance. Predictably, we find extremely loose controls over mining, and perhaps active connivance to hand over mineral resources to favoured cronies (Humphreys et al 2007; Barma et al 2011 have useful discussions).

Our cognition is wrong. In prospect theory terms, mining has been framed as a windfall gain. In reality, it is an astronomical loss that we would strenuously avoid. Mining is framed as windfall income due to two factors. First, government accounts treat royalty as income (technically a revenue receipt). Even Supreme Court judgments encourage an income approach—“maximise revenues.” Second, the states are not required to publicly disclose and value their mineral assets. Any loss or undervaluation of assets is well hidden. It certainly does not appear in any budget or other public finance documents.

Hence, royalty is income that magically appears from nowhere—a classic windfall. And a steep increase in royalty is

treated much like winning the first prize in a lottery. We give ourselves freedom to blow up windfalls, unexpected income. And we never like to look too closely where windfalls are coming from—in case we find something unpleasant. Like an ethical issue.

Our mental accounting instinctively treats money from sale of assets differently even from earned income. Assets represent savings, and we know that a lot more income is required to replace an asset. Inherited assets have an even higher standard of care. They must be preserved at all costs and passed forward. This is the opposite extreme of windfalls. By not examining where our mineral windfall comes from, we ignore our obligation to future generations. Our minds have been hacked.

We have the familiar tragedy of the commons. On one side, we have those who directly benefit from mining, who are highly motivated. Against them is the larger populace, who do not even realise their loss. They incorrectly reason that more mining means more windfall income. In reality, more mining means more self-inflicted losses.

This may also explain some other puzzles. Why are even senior bureaucrats not aware that states own minerals? Why is not the loss rate part of the public discourse? Or why is an a priori analysis of mining far more common than looking at actual outcomes? Why are minerals rarely treated as part of the commons? Why are the distributional effects of mining on wealth not considered?

5 MMDR and the Coal Act Amendments

There have been some recent amendments to the MMDR and Coal Acts. They seem to meet the transparency and competition requirements of the 2G Presidential Reference judgment. However, it fails to avoid losses—this is not an objective under the amendments either. There are a variety of reasons.

The basis of auctioning is important. Coal was auctioned with bidding on a rupees per tonne basis with no linkage to market price. The current auctions are taking place at a low period in the price cycle. Most of economic rent arises during commodity booms. This will lead to high loss rates when it matters. A link to the market price is essential.

The auctions are for mineral leases of 50 years. Geological studies are typically carried out for up to 20 years of reserves, with the result that later years will be valued essentially at zero. Also, private discount rates will be much higher than social discount rates as private parties face the risk of the government changing royalty rates, export duties, or numerous other factors that affect their business. As risk increases with

EPW Index

An author-title index for EPW has been prepared for the years from 1968 to 2012. The PDFs of the Index have been uploaded, year-wise, on the EPW website. Visitors can download the Index for all the years from the site. (The Index for a few years is yet to be prepared and will be uploaded when ready.)

EPW would like to acknowledge the help of the staff of the library of the Indira Gandhi Institute of Development Research, Mumbai, in preparing the index under a project supported by the RD Tata Trust.

time, having a long lease term will lead to a very high discount rate. Lastly, as the Reliance Industries KG-D6 controversy has shown, even with a good auction structure, losses are difficult to avoid where private interests are involved.

In some coal auctions, the price is capped or use-specified. The reason given is that the eventual price of power is lower. The estimated tariff benefit is Rs 69,311 crore so far (Sethi 2015). This is a transfer of wealth from the commons. Who benefits? Power consumers—industries, the rich, and the powerful. Highly regressive. In some cases, the power consumers are not in the same state that owns the coal. Like the liquified petroleum gas (LPG) subsidy, power subsidies should be given directly and transparently. Should the centre compensate the people and future generations in the states for this forced loss?

The new Subsections 8A(3), (5), (6) and 10A (2) (b) from the MMDR Ordinance and Amendment Act, which cover major non-fuel and non-atomic minerals, result in the grant of leases, renewals, or extensions of mining leases without an auction. Large swathes of mining are covered by these subsections. Given that the present MMDR Act results in a poor loss rate, the granting, extension, or renewal of leases through the law is tantamount to a transfer of mineral assets to leaseholders without adequate compensation to the states (<10% of the value can hardly be considered adequate consideration). The states did not have a say in the matter. One estimate of the loss for iron ore in Chhattisgarh has it at Rs 1,22,000 crore (Sharma 2015). Should the centre compensate owners for this loss?

In totality, this represents the single largest anti-people act in the history of independent India. Such large transfers of wealth will inevitably be seen as illegitimate by the polity. This, in turn, creates a pressure on leaseholders to extract as quickly as possible, and park windfall profit overseas, away from any later attempts to claw back (Humphreys et al 2007: 39–40).

6 Recommendations

Mining has changed. Prospecting is often by remote sensing, mining is highly automated, both capital and expertise are plentiful, and minerals are traded domestically and internationally. The key concern today is the capture of the value of the minerals. The current MMDR Act makes it difficult for the states to avoid losses. Far too much control is in the hands of the centre and not with the states.

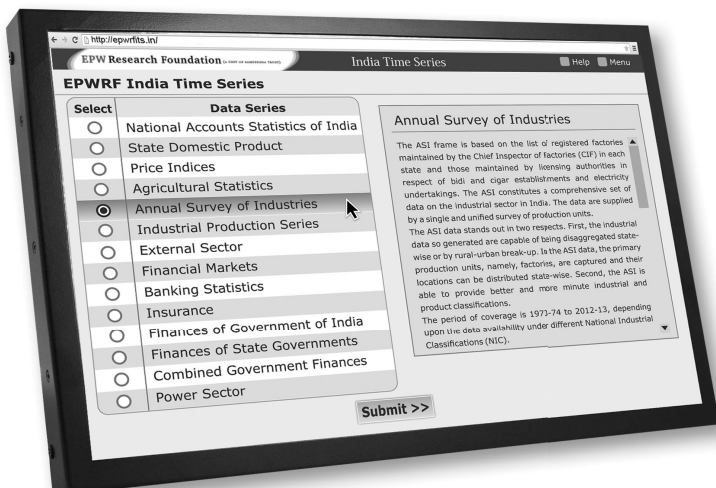
The entire mining regulatory framework needs urgent change to bring it in line with current needs and the Constitution. It should treat minerals as an *uttaradhikari*, and avoiding losses should be at its heart. More than 100 countries have radically updated their mining laws in the last two decades. There is a large body of literature on what changes need to be made (Humphreys et al 2007; Barma et al 2011).

6.1 Awaiting Big Bang Reforms

The cognitive illusion around mining needs to be changed. Our national accounts must treat minerals as an inheritance. We need to inventory and value them. When they are disposed

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of, the receipts should be treated as capital receipts. Green national accounts must be implemented. Parallel accounts can be published for a decade to ensure comparability. Loss rates should be published. Wide publicity is necessary.

All public trustees should report annually on their performance. The loss rate and asset inventory must be provided with its calculations. The CAG and the Central Statistics Office (CSO) can jointly conduct a one-time study of all the states and the centre in a mission mode. This can help standardise the methodology. The public can then be consulted on the way forward.

As we have seen, losses are inevitable under private mining. Mining through a PSU does not avoid loss due to the levies of the centre. A new structure needs to be designed. Pending that, states should immediately reserve all minerals for the public sector. This harks back to the *Arthashastra* (Chanakya's 300 BCE treatise), which concludes Chapter 12 on conducting mining operations and manufacture, saying, "Thus; besides collecting from mines the ten kinds of revenue, such as ..., the government shall keep as a state monopoly both mining and commerce (in minerals)."

Arguably, the states are constitutionally obliged to adopt a policy to terminate all existing leases with high loss rates when legally possible. Further, the standard mining lease provides for termination of leases with a one-year notice. The states can adopt a policy where notices would automatically be sent if certain trigger conditions exist—the loss rate rises above 10%, or the market price rises above a threshold. Market disruption can be minimised by strategically encouraging a domestic market for minerals, and by staggering termination notices by a lottery—10% every month, for example. Another policy that the states can adopt is to automatically terminate 50-year leases so that they become 10 years long in

the normal course and 20 years for captive use (the usual period of capital recovery for large investments). This would be prudent as the realised loss rate can be published, and course corrections made.

In the last instance, the state may decide not to mine at all. Perhaps no structure can avoid losses while the centre holds all the cards. Loss avoidance is a necessary but not a sufficient condition. A lot depends on what the government does with the amount captured. It is very difficult to invest this in assets that retain value indefinitely and can be inherited by future generations. The state can decide that it will be impossible for the public trust to be honoured while mining with present governance structures. The state is not mature enough. In this scenario, the best option is not to mine (Humphreys et al 2007: 11).

There are a number of international best practices and standards that can be adapted or adopted. In particular, radical transparency at all times is a necessary condition to ensure that our children receive their inheritance. This applies across the entire intergenerational equity cycle of mining through investment. It is disappointing to find there has been a sharp decline in government transparency on minerals across India over the last year.

7 Conclusions

There is a widespread failure of states to act as public trustees where minerals are concerned. The MMDR Amendment is perhaps the single largest corporate giveaway in Indian history. Our children's inheritance is disappearing by the day. There are many international best practices that can be adopted. Even Chanakya's prescriptions are far better than present-day practices.

NOTES

- Annual reports of the Ministry of Mines.
- Social cost + (revenues – social cost – private cost) = revenues – private cost.
- Where individuals or representative councils own minerals, there are four competing interests. For analytic simplicity, we assume the states own the minerals.
- We use the figure for "segment result." There is a figure reported for "Unallocated Corporate Exp;" this sometimes adds to profits and at other times subtracts. We have ignored this. The effect is not material.
- For instance, the WACC of Coal India is estimated at 12%; see <http://indiankanoon.org/doc/120592178/>
- Goa Foundation calculations do not separate income tax into these components. The effect is minor.
- A government take of 100% implies no earned profits for the mining leaseholder—clearly unacceptable.
- (Tax on earned profit / (tax on earned profit + earned profit)) is difference between GT and GCR. It is <= than (tax on windfall profit / (tax on windfall profit + windfall profit)) by assumption, and the residual term in GCR, {other government take / other government take}, which is 1.
- The same has happened with the Congress

government in Karnataka but on a smaller scale. Sesa has benefited in both states.

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