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To:

International Public Sector Accounting Standards Board

Subject: Comments on the draft IPSASB Work Plan 2019-2023

We congratulate the IPSASB on its well-thought-out draft Work Plan for 2019-2023. We strongly support the projects that the IPSASB proposes to prioritize for addition to the Work Plan 2019–2023 on Theme A (SMC 4), and in particular, the standard for natural resources.

Background

In most sovereign nations, the state owns all sub-soil minerals. The minerals are a part of the “commons” – assets owned ultimately by the citizens. A major problem is that the IMF, UN & IPSASB standards for government accounting, statistics and disclosure treat the receipts from minerals as “revenues” rather than “capital receipts on account of the sale of a non-renewable natural resource asset.” Similar to the non-accrual of pension liabilities, which justified their funding on a pay-as-you-go basis and led to governmental fiscal crises, this accounting treatment of minerals has even bigger and more dangerous implications. The World Development Indicators show that the energy and mineral depletion that occurred between 1970 and 2013 totals \$27 trillion. Most of these receipts have been already spent or consumed, aided in part by government accounting for mineral receipts as revenues instead of their actual status – sale of assets.

Who we are

The Goa Foundation is a non-governmental organization (NGO) in India with a long history of work on the environmental issues involved in mining. Goa is a world biodiversity hotspot. The Foundation also works on the conservation of Goa's beaches, forests, mountains and agricultural fields.

The Foundation petitioned the Supreme Court of India in 2012 to cure the illegal mining then rampant in the State of Goa. The Supreme Court allowed the petition in 2014, declared mining activity over a 5-year period illegal, and issued directions that in future, 10% of the sale value of iron ore would be transferred to a new Goa Iron Ore Permanent

Fund to meet the demands of intergenerational equity.¹ This direction by a court to set up a Permanent Fund is a first for India and, to our knowledge, a global judicial precedent. Pursuant to the judgement, the Government of India amended the mineral law to ensure that in future all leases for extraction of minerals would be auctioned.

Our recommendations

We support the overall draft Work Plan. We strongly support the three projects in Theme A (SMC 4), and in particular, the IPSAS for Natural Resources. The present treatment of natural resources having a zero cost and the receipts as revenue creates significant errors in the calculation of the “revenue deficit” or Net Operating Balance (IMF GFS), depending on how resource rich the region is. In turn, this incentivizes politicians to sell off natural resources, enabling them to buy the support of a winning coalition. The equivalent standards in the Global Finance Statistics and System of National Accounts also create similar distortions. We provide a couple of examples later in this representation.

The other two projects on discount rates and the differential reporting and conceptual framework review align with the project on natural resources. Discount rates are critical to valuing natural resources. We have already pointed out that the GFS and the SNA would need equivalent changes, which we advocate.

Within the broad gamut of natural resources, minerals have the largest monetary value. Further, they are almost always a depleting asset, and the distinction between revenue and capital is fairly clear. It would be useful if the IPSAS could consider at the time of scoping the Natural Resources project to first set out a standard for spectrum (entirely revenue because non-depleting) and minerals (entirely capital because fully depleting). This framework could then be extended to all other natural resources, which would be more contentious as the determination of when an asset is impaired is crucial.

We enclose two notes that we sent to the IMF, UN and IPSASB in 2016 and 2017 that elaborate our reasoning. We argue that accounting for mineral receipts as capital receipts is desirable. The present accounting as “revenue” creates the fertile conditions for many problems including (i) increasing inequality, (ii) strengthening authoritarian regimes, (iii) unmanageable volatility in the government budget, (iv) human rights violations, (v) environmental damage, (vi) crony capitalism, (vii) armed conflict, (viii) poverty, and (ix) unsustainability. This “revenue” accounting is clearly motivating, for instance, the opening of the critical wetlands of the Arctic National Wildlife Refuge to oil drilling.

We provide below a couple of case studies to underline the importance of the standard on Natural Resources, and more particularly minerals.

Distortion to government deficits

Under the Indian Constitution, states like Goa own sub-soil minerals, as a public trustee on behalf of the people and especially future generations. Minerals are depleting assets, and mining is essentially the sale of the mineral with royalty, taxes and other sums as the

¹ <http://supremecourtindia.nic.in/outtoday/41437.pdf>

consideration. An obvious standard is zero loss in value when selling assets.

We studied iron-ore mining in Goa for the eight-year period 2004-2012, using the annual reports of the largest miner (1/3rd of the volume), volume statistics from the industry body and the government financial statement. Over this period, we estimated the loss to be over 95% of the economic rent (sale price minus all expenses and a generous profit). In other words, for iron ore worth 100 (after all extraction costs), the State Government of Goa as owner received less than 5.

The majority of the value (60%) was captured by miners, while a large part was captured by the national government (35%). This amounts to a transfer of wealth from the commons to private individuals, and is astonishing for its scale – an average of 22.8% of State GDP was redistributed each year.

An important accounting metric for evaluating the performance of government entities is revenues minus expenses, the revenue surplus / deficit or the Net Operating Balance (NOB). An entity constantly incurring deficits is not in a position to sustain its operations in the long term. At some point, it would have consumed its capital, and creditors would stop financing the deficit, resulting in a crisis.

Over the 8 years, Goa's mineral receipts were reported at merely 8% of government revenues, and 1.3% of GDP. This report conceals a catastrophe. The table below illustrates how Goa's public finances would change with better accounting for mineral receipts.

| Cumulative amounts for 8 years in Rs. billion | | | | |
|---|---------------------|----------|--|--|
| Aggregate | As Reported | | In Reality | |
| Transaction narrative | Revenue from mining | 23.87 | Opening capital : mineral Mineral sold Capital receipt : cash Change in net worth : loss Closing capital : cash | 516.55 -516.55 +23.87 -492.68 23.87 |
| Reported Revenue | | 274.02 | True revenue Reported revenue Less: mineral receipts | 250.15 274.02 -23.87 |
| Reported Expenditure | | 320.08 | True Expenditure Reported expense Add: Loss from mining | 812.76 320.08 492.68 |
| Reported Revenue Deficit / NOB | | 1,872.97 | True Revenue Deficit / NOB | 562.51 |
| Reported Goa GDP | | 1,872.97 | True GDP (<i>Subtracting the economic rent²</i>) | 1,356.42 |
| Goa net worth | Increase | 23.87 | Loss | -492.68 |
| As a % of cumulative GDP over 8 years | | | | |
| Aggregate | As Reported | | In Reality | |

² If we subtract the mining contribution to GDP (instead of economic rent), real GDP is Rs. 1,598.53 billion.

| | | | | |
|--|----------------------------|--------------|---|----------------------------------|
| Transaction narrative | Revenue from mining | 1.27% | Mineral sold Capital receipt : cash Change in net worth : loss | 38.08% 1.76% 36.32% |
| Reported Revenue Deficit / NOB | | 2.46% | True Revenue Deficit / NOB | 41.47% |
| Non-mineral revenue deficit (NOB – mineral receipts) | | 3.73% | | |

Governments usually target a balanced budget or a small deficit. The *reported revenue deficit (NOB) in Goa was 2.46% of GDP*, already a little high. In the present accounting framework, increasing mining would increase revenues, lowering the deficit.

The “non-mineral deficit” is an additional measure provided by the IMF. As its name indicates, this metric effectively treats mineral receipts as capital receipts by excluding them from government revenues. *Goa’s non-mineral revenue deficit was 3.73% of GDP*. This is already unsustainable. Observe that increasing or reducing mining has no impact on the non-mineral deficit.

However, accounting for the losses in capital as expenses, *the true revenue deficit (NOB) is an astonishing 41.47% of GDP*. It is unlikely that any democracy has reported such large revenue deficits in normal times. Note that additional mining worsens the true revenue deficit.

The current revenue accounting for mineral receipts is incentivising the consumption of mineral wealth across the world. This is unsustainable.

A recent example

The Tax Cuts and Jobs Act of 2017 has become law in the U.S.³ One provision opens the wetlands of the Arctic National Wildlife Refuge for oil drilling.⁴ The U.S. federal government estimates it will receive \$1 billion in revenues over the next 10 years.⁵ The Alaska government will receive an equal amount of revenues, helping bridge its yawning deficit. The Alaska Native Corporations would also benefit from their holdings of land within the Refuge.

The oil deposits in the Refuge are valuable assets, held by the government under a public trust on behalf of the people. The oil, the Refuge, and the way of life it sustains are a shared inheritance, a common birthright.

Once the Refuge is opened up to oil extraction, then the oil will be sold. The owners receive compensation, in this case an estimated \$1 billion for the federal government. This \$1 billion isn’t revenue or a tax. It is merely the consideration received in exchange for the oil, an asset. The government is converting mineral wealth into financial wealth by selling

³ <https://www.vox.com/2017/11/9/16620290/senate-republican-tax-plan-orrin-hatch-mitch-mcconnell>

⁴ <http://www.audubon.org/news/report-arctic-refuge-facing-its-biggest-threat-yet>

⁵ https://www.audubon.org/sites/default/files/arctic_refuge_scroll_final.pdf

oil. Consuming this financial wealth depletes the government's wealth.

[This is an economic error](#). Since the \$1 billion is labeled as revenue, it is more likely to be consumed. The nation would then be poorer by ruining its wetland, endangering the Porcupine caribou herd and the way of life of the Gwich'in indigenous people.

Government accounting worldwide wrongly treats royalty and other mineral receipts (where the government owns the mineral) as "revenue".

Politicians love selling off national assets like oil and minerals because it gives them "revenue" without raising taxes, i.e., easy money. The politicians choose how to spend the money, and whether to save anything (most often, without any consultation with the people they serve or consideration of future generations). The current U.S. tax bill cuts tax rates. In other countries, it may be to buy arms to stay in power, or to buy support through contracts to cronies. Selling the family jewels to consume the proceeds becomes a national project.

The consequences aren't pretty. The Refuge is being opened up to drilling because of the "revenue" that will be received by the federal government, the Alaska government and the indigenous peoples. How would ordinary citizens view this project if they understood it in terms of consuming the family jewels?

Conclusion

The IPSAS should urgently issue a standard to correct this representational error in the accounting, statistical and disclosure standards for minerals. Given the \$27 trillion of public funds involved, the wealth mismanagement incentive for politicians is possibly the single largest issue facing resource-rich states and nations.

Natural wealth mismanagement is much more than an accounting issue. Properly speaking, it is an ethical and moral issue. However, the misleading accounting affects whether we can as human beings change our current mindset for a better and more just way of handling these assets. It is also directly connected to the persistent extreme poverty and growing inequality the world has experienced in the past half century. Lives are at stake.

Yours faithfully,



(Dr. Claude Alvares)
Director

- Encl: 1. [Mitigating the Resource Curse by improving Government Accounting](#)
 2. [Response to FAQs](#)

Mitigating the Resource Curse by Improved Governmental Accounting

Summary

In most sovereign countries, sub-soil minerals are owned by the Government. The minerals are a part of the “commons,” assets owned ultimately by the citizens. The IMF, UN & IPSASB standards for government accounting, statistics and disclosure treat receipts from minerals as “windfall revenues” rather than “capital receipts on account of the sale of anon-renewable natural resource asset.” This is a major accounting error similar to the funding of pension liabilities on a pay-as-you-go basis, but with even bigger and more dangerous implications. The World Development Indicators show that the total energy and mineral depletion between 1970 and 2013 amounts to \$27 trillion. Much of this has been consumed, aided in part by government accounting for mineral receipts as revenues rather than asset sales. We therefore petition the IMF, UN & IPSASB to undertake a review of their treatment of mineral receipts in government accounting, statistics and disclosures, as well as take appropriate steps to modify the overall discourse from “windfall revenues” to “sale of non-renewable natural resource assets”.¹

Government accounting for minerals

In most countries, some level of government owns the minerals.² Constitutional provisions or the public trust doctrine (common law principle that natural resources are owned by the state as a trustee for the public) often consider minerals a part of the commons, owned by the government in name but held in trust for the people and especially future generations. The USA, Canada, Australia and India are notable partial exceptions. In the USA, land owners also own the sub-soil minerals. However, the government and Native American tribes are the largest owners of the land, and hence, the sub-soil minerals.³ In India, among several forms of ownership, the

¹IMF Fiscal Monitor -- *The Commodities Roller Coaster: A Fiscal Framework for Uncertain Times* -- October 2015. (2015). *Imf.org*. Retrieved 14 July 2016, from <https://www.imf.org/external/pubs/ft/fm/2015/02/fmindex.htm>

²Venables, A. (2016). [Using Natural Resources for Development: Why Has It Proven So Difficult?](#) *Journal of Economic Perspectives*, 30(1), 161-184. <http://dx.doi.org/10.1257/jep.30.1.161>

³*Merrion v. Jicarilla Apache Tribe*. (2016). *Wikipedia*. Retrieved 14 July 2016, from https://en.wikipedia.org/wiki/Merrion_v._Jicarilla_Apache_Tribe

dominant form is ownership by the state government, not the national government.⁴ Where governments own the minerals, mining activity transfers minerals from the natural resource commons to other owners, usually the mining leaseholder or concession holder. How are mineral receipts treated by governments?

Mixed metaphors

A metaphor is an analogy that harnesses what we know well to understand something different, a target system. Metaphorical thinking is fundamental to our cognition. It is omnipresent, and usually works completely unconsciously. Multiple metaphors may be used to provide a fuller understanding of a concept. Since metaphors are only partial parallels, it is important to recognize the limits they impose on understanding of the target system.⁵ Metaphors are used extensively in accounting.⁶

Minerals are economic resources that can yield future economic benefits, and thus, meet accountants' definition of an asset.⁷ Revenues are recurring cash flows arising from a combination of work, the use (without depletion) of capital and the use (without depletion) of land. Two metaphors are prevalent when we examine mineral receipts in the context of governments. In one metaphor, minerals are inherited assets, a part of the natural resource commons, whose value must be conserved for future generations. In the other, they are windfalls or unexpected gains and the receipts from mining are windfall revenues to be consumed. In which situation is each metaphor more applicable?

When minerals receipts are treated as “revenues” in government accounting, it lets politicians argue for extracting more and more, and to consume the proceeds. Implicitly, we are free to consume our inherited planet. This mindset also exposes the government revenues to the volatile commodity cycle. If mineral receipts are treated as “sale of assets”, other incentives are created. Should we convert mineral receipts into other assets? When should we be mining and when should we halt mining? Is the

⁴ In certain areas, tribes own sub-soil minerals. In other areas, for particular parcels of land, the individual land owner owns the mineral rights as well

⁵ Lakoff, G. and Johnson, M. (1980). *Metaphors We Live By*. Chicago: University of Chicago Press.

⁶ Young, J. J., (2013). *Devil's Advocate: The Importance of Metaphor*, *Accounting Horizons*, 27(4), 877-886. DOI: <http://dx.doi.org/10.2308/acch-10369>

⁷ FASB/IASB Conceptual Framework (2010). <http://www.ifrs.org/News/Press-Releases/Documents/ConceptualFW2010vb.pdf>

government receiving the full value of its minerals? Are we creating new non-wasting assets of at least equal value?

Windfalls and the Revenue - Asset Sale continuum

The distinction between revenue and asset can be clearly understood in the context of a forest. Indigenous people have for millennia lived off forest produce without impairing the long term existence of the forest, so their consumption should be accounted for as periodic revenue. However, like the ancient cedars of Lebanon or clear cutting in the Amazon, it is possible to completely exhaust the forest. This circumstance would merit asset sale treatment in the sense that the revenue-generating forest asset no longer exists and no future consumption or revenue stream can be expected from the forest asset.

From this we deduce/derive the essential principle: if the contract is for extraction to the point of irreversibility (extraction of one ton of a mineral, clearing most of a forest, or a perpetual contract for beachfront), then we should treat it as a sale/transfer of asset. The contracted obligation cannot be considered simply a “use” of the asset. Only where it is a genuine agreement for use, and the underlying asset is not depleted, would pure revenue accounting be appropriate.⁸

For most uses of land, rent is properly treated as revenue, because the land can be used in a similar manner in the future. However, in the case of a mining lease, it is not just a use of land – the mineral is depleted. The mining lease is essentially a master agreement granting an option to the lessee to receive mineral ore in exchange for the royalty. Common law systems (and presumably other legal systems) have case law which clarifies that for title to the mineral to transfer from the owner of the sub-soil minerals to the mining lessee, there needs to be (a) a valid agreement / right (the mining lease or concession), (b) the lessee/concessionaire must “win the ore,” and (c) the lessee / concessionaire must pay compensation, usually “royalty.” Use of land is a poor descriptor because less mineral can be extracted in future, reducing expected future revenues from mining.

⁸ Sale of inventory, which is akin to fruit from the forest, is recorded as revenue. This is like the first case because the trees are expected to bear similar amounts of fruit in future periods.

Mineral assets are often unexpected in that they are usually either discovered (deep offshore oil for example) or a new commercial use is found (guano). Minerals are clearly assets, not the fruit (usufruct) of the land. However, since minerals (and many asset inheritances) are often called “windfalls”, it automatically triggers the associated metaphor of fruit blown off trees which passersby could and should pick up and consume. The windfall revenue metaphor is triggered. The consequences of windfalls are well known. Most lottery winners quickly spend their windfall and end up poor again.⁹

In general, the windfall revenue metaphor dominates mining terminology – mining lease, not mineral sale agreement; royalty, not purchase / sale price; mineral receipts are revenue receipts rather than capital receipts on the sale of an asset; the mineral value is treated as income for GDP purposes, not depletion of capital. We argue that this windfall revenue metaphor is the reason for most of the ills of mining, and the ills are many. It is incentivizing consumption of natural resources instead of judicious stewardship and long term investment into non-wasting assets.

A speculative history of mining and related metaphors

Minerals started out as deposits that had essentially no value. At some point, someone realized that a particular stone is pretty, or another made a sharp cutting implement or an adze – the Stone Age. Over time, the uses increased. However, manual mining was still a small scale enterprise. With the invention of smelting, the products of ore became useful, leading to the Bronze Age and trade in metals. At some point, the sovereign may have decided to tax the extraction of the mineral, especially if ore was traded rather than just the final products. This initial tax likely did not indicate whether it was an excise tax or a compensation for ownership. The current term royalty would suggest a compensation for ownership. However, the tax was probably kept at a low level as the economic rent would be low - prospecting meant trips into dense jungles, mining was manual, conversion to metal expensive in energy terms requiring deforestation of large areas, and transportation of the ore difficult and expensive.

However, certain minerals generated significant economic rent – shiny metals and sparkling stones – and this is probably the origin of “precious” metals and stones.

⁹ http://www.cleveland.com/business/index.ssf/2016/01/why_do_70_percent_of_lottery_w.html

These were also scarce, making their capital value apparent. They became a significant store of wealth – in temples and treasuries. Today, precious metals and stones are still one of the largest forms of inherited wealth as they are considered non-wasting assets, or assets that do not lose value with time. They have the added advantages of being dense, easy to conceal, travel with or exchange.

As minerals were needed for useful products, culminating in industrialization, a concern was to have enough minerals available for growth and development. Finding new mineral deposits was a bonanza for a poor developing country as was the discovery of new valuable uses for known deposits. 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 a frequent race to the bottom.

As long as the extraction was minimal and the size of the deposits was large, the capital nature of the mineral was never in focus because it seemed that the fruits would be available forever. However, as demands grew exponentially, the capital nature of minerals became clearer. Today, we have reached the point where many mineral deposits have been exhausted. Mechanized mining can devour even giant ore deposits within human lifetimes. We are even running out of sand.¹⁰ Mineral receipts can no longer be considered pure revenue but rather a compensation for (partial) sale of an asset.

How Government Accounting, Statistics and Disclosure distort Mining

The general public (including the IMF and most governments) views mining receipts as “windfall revenue,” and not as receipts from the gradual sale of an asset. This error has multiple serious consequences working through different factors:

1. Governments are generally not required to prepare lists of their assets, let alone balance sheets. Consequently, government officials have strong incentives to treat asset reductions as revenue (as in this case), but not to recognize liability increases as expenses (as with pensions and healthcare benefits).
2. In government accounts, mineral royalty is reported incorrectly as revenue receipts rather than as originating from the sale of an asset. This wrongly incentivizes extraction, when conservation may be a better path.

¹⁰ <http://www.nytimes.com/2016/06/23/opinion/the-worlds-disappearing-sand.html>

3. The economic rent associated with a mineral varies widely through time. The key driver is the international price of the mineral, which often fluctuates unpredictably and violently.
4. From the previous points, mineral royalty is income that magically appears from nowhere in government coffers, and whose amount varies unpredictably – a classic windfall. Consequently, the public discourse treats mining receipts as “windfall revenue”. See the IMF’s recent publication, the Oct 2015 Fiscal Monitor on *The Commodities Roller Coaster* for numerous examples.¹¹ As we know from research into framing, terms matter.¹²
5. Studies on mental accounting show that humans violate the fungibility principle. We mentally treat \$100 from a lottery very differently from the same amount earned, the same amount saved, and the same amount inherited.¹³ As we have seen, the public discourse treats mineral receipts as lottery winnings, not as a sale of our inheritance. The marginal propensity to consume from a lottery winning is almost 100%, while the marginal propensity to consume from inherited assets is very low.¹⁴ The total assets of natural resource funds were estimated at \$4 trillion in July 2014, barely 15% of the total depletion between 1970 and 2013.¹⁵ A study of Brazil municipalities found a marginal propensity to save from mineral royalties of approximately 30%.¹⁶
6. The volatility of government revenues as a result of mineral prices is one proposed cause for the “resource curse”.¹⁷ The voracity effect results in governments increasing spending during commodity booms, when their “revenues” are high – organized groups compete to gain access to these increased

¹¹IMF Fiscal Monitor -- *The Commodities Roller Coaster: A Fiscal Framework for Uncertain Times -- October 2015*. (2015). *Imf.org*. Retrieved 14 July 2016, from <https://www.imf.org/external/pubs/ft/fm/2015/02/fmindex.htm>

¹²Tversky, A. and Kahneman, D. (1981). [The framing of decisions and the psychology of choice](https://doi.org/10.1126/science.7455683). *Science*, 211(4481), 453-458. <http://dx.doi.org/10.1126/science.7455683>

¹³Thaler, R. (1999). [Mental accounting matters](https://doi.org/10.1002/(sici)1099-0771(199909)12:3<183::aid-bdm318>3.0.co;2-f). *Journal of Behavioral Decision Making*, 12(3), 183-206. [http://dx.doi.org/10.1002/\(sici\)1099-0771\(199909\)12:3<183::aid-bdm318>3.0.co;2-f](http://dx.doi.org/10.1002/(sici)1099-0771(199909)12:3<183::aid-bdm318>3.0.co;2-f)

¹⁴Arkes, H., Joyner, C., Pezzo, M., Nash, J., Siegel-Jacobs, K., and Stone, E. (1994). [The Psychology of Windfall Gains](https://doi.org/10.1006/obhd.1994.1063). *Organizational Behavior and Human Decision Processes*, 59(3), 331-347. <http://dx.doi.org/10.1006/obhd.1994.1063>

¹⁵Bauer, A. (2014). [Managing the Public Trust: How to make Natural Resource Funds work for Citizens](https://doi.org/10.1006/obhd.1994.1063). Natural Resource Governance Institute and Columbia Center on Sustainable Investment. Page 3

¹⁶Caselli, F. and Michaels, G. (2013). [Do Oil Windfalls Improve Living Standards? Evidence from Brazil](https://doi.org/10.1257/app.5.1.208). *American Economic Journal: Applied Economics*, 5(1), 208-238. <http://dx.doi.org/10.1257/app.5.1.208>

¹⁷van der Ploeg, F. and Poelhekke, S. (2009). [Volatility and the Natural Resource Curse](https://doi.org/10.1093/oep/gpp027). *Oxford Economic Papers*, 61(4), 727-760. <http://dx.doi.org/10.1093/oep/gpp027>

“revenues”.¹⁸ However, government spending is not reduced when prices crash due to the flypaper effect – it is politically difficult to reduce subsidies.¹⁹ This creates an incentive to expand extraction at the worst moment, when commodity prices are in a slump. Both of these effects are variants of the fiscal illusion – where the public is not properly informed about the full implications of increases in government revenues – driven by the mis-classification of government receipts.²⁰ This dynamic is clearly visible in highly distressed nations like Venezuela and Saudi Arabia. Public spending expanded during the China boom, and the governments are reaping what they sowed.

7. A more pernicious issue is that without linking mineral receipts to the depletion of the mineral asset, it is difficult to evaluate how the government is performing. A windfall can hardly be budgeted. The government should strive not to lose any of its asset value, i.e., to capture 100% of the economic rent. However, the IMF tends to use the flawed metric of Government Take for ex-post analysis, which results in a poor benchmark.²¹ It is not comparable across projects, and there is no specific target that can be established.²²
8. If we treat minerals receipts as “windfall revenues,” then the “deservedness” of the “revenues” is low. It is a lottery winning after all. This reduces the legitimacy of the government capturing these amounts. Why shouldn’t the local people get all the money since they bear the brunt of the socio-environmental problems? This increases the incentives for a variety of stakeholders to lay claim to the mining receipts, often triggering armed conflicts.
9. The windfall nature of mineral receipts also makes it easy money for the politicians. This leads to poor governance as the taxation link between the citizen and the government is weakened.
10. Similar to defense expenditure, the lack of disclosure of the value of asset depletion coupled with the lack of scrutiny on “windfalls” makes it very easy for corruption to expand further. This makes minerals fertile ground for corruption and crony capitalism to bloom.

¹⁸Tornell, A. and Lane, P. (1999). [The Voracity Effect](https://doi.org/10.1257/aer.89.1.22). *American Economic Review*, 89(1), 22-46.
<http://dx.doi.org/10.1257/aer.89.1.22>

¹⁹Hines, J. and Thaler, R. (1995). [Anomalies: The Flypaper Effect](https://doi.org/10.1257/jep.9.4.217). *Journal of Economic Perspectives*, 9(4), 217-226. <http://dx.doi.org/10.1257/jep.9.4.217>

²⁰*Fiscal illusion*. (2016). *Wikipedia*. Retrieved 14 July 2016, from https://en.wikipedia.org/wiki/Fiscal_illusion

²¹ Average Effective Tax Rate (AETR) is also used, essentially the same as Government Take.

²² Basu, R. (2015). [Catastrophic Failure of Public Trust in Mining: Case Study of Goa](#). *Economic and Political Weekly* L(38), 44-51.

11. Given the large sums involved, incentives are created for miners and politicians to enter into unfair mining arrangements. The illegitimacy of such arrangements incentivize rapid extraction before the population wakes up. This in turn leads to environmental damage and human rights violations. As the local population resist, it often turns to armed conflict and civil war.
12. Since we treat the economic rent as income and not as a capital receipt, we are significantly overstating our GDP and our savings rate. When we add up mineral depletion and energy depletion for the world from 1970 through 2013 (43 years) using the World Development Indicators of the World Bank, we arrive at a total depletion of \$27 trillion. Even if we assume 30% has been saved, we have likely been overstating global income and savings by \$19 trillion to the extent that mineral asset depletion has not been correctly accounted for in GDP calculations.
13. Further, since almost all of this depletion has come from the mineral commons and a large portion is captured by a few plutocrats, mineral depletion is a key driver of the growing worldwide inequality of wealth.
14. There is a link between government accounting and law. For example, the Indian Supreme Court has not decided whether mineral royalties are a tax or a compensation for the mineral.²³ Tax has a negative connotation in the public imagination. Since royalty on minerals is perceived to be a tax, the public often support opposition by miners to increases in rates. If mineral receipts were explicitly treated as a compensation for the mineral, the public focus would change to conservation of value, the timing of extraction, and the prudent and ethical saving and investment of the ensuing capital receipts.
15. In general, the lack of a proper inventory, valuation and disclosure of government assets creates many other distortions. One estimate is that better management of the total global government assets would yield \$2.7tn.²⁴ Similar arguments have been made by others.²⁵

²³ Mineral Area Development Authority and Others vs. Steel Authority Of India and Others - CA 4056-4064 of 1999 - <http://judis.nic.in/supremecourt/imgst.aspx?filename=37940>

²⁴ <http://www.economist.com/news/finance-and-economics/21654085-cash-strapped-governments-are-leaving-riches-wayside-neglected-wealth>

²⁵ Barnes, P. (2006). [*Capitalism 3.0*](#). San Francisco, US: Berrett-Koehler Publishers

Deeper issues

There are further issues in the terminology used for minerals. We can categorize natural resources into renewable and non-renewable.²⁶ Renewable resources would include forests (provided they are not completely cut down). Most minerals are non-renewable.²⁷ Wireless spectrum is non-depleting while minerals deplete.

Similar confusion arises with the terms “rent” and “lease”. Rent when used with land implies income / expenditure. However, rent (economic rent) in the context of minerals is a capital value. Again, a lease of land implies the eventual return of the land. On the other hand, governments would be exceedingly startled if mining lessors handed over the mineral at the expiry of the mining lease. Using the same term in similar yet crucially different contexts compounds the confusion. Worse still, the government accounting standards do not clearly differentiate between these various situations, treating all kinds of use as revenue items.

Common Trust Asset metaphor

So what is the common trust asset metaphor that the Goa Foundation recommends? The common trust asset metaphor considers minerals to be assets that are inherited, depleting, non-renewable, non-wasting, and in most jurisdictions, a part of the public trust and/or a part of the commons. In the process of mining, the mineral assets are not simply being used over time and returned to the owner (like a building would be). They are being depleted – the remaining store of minerals has reduced. The owner receives royalty and other payments in compensation. And there is a transfer of title over the mineral.²⁸ This is the sale of an asset, with the resulting receipts being capital receipts on account of the sale of the mineral.

As inherited assets, minerals fall under the Intergenerational Equity principle, i.e., future generations should inherit at least the same opportunities and resources that we did.²⁹ The simple rule of thumb is that total assets must not decline.³⁰ A change of

²⁶ We recognize these are not absolute categories.

²⁷ River sand, ocean sand and groundwater arguably are renewable but over much longer time scales than forests.

²⁸ It is possible to separate the act of mining from the sale of the ore. For simplicity, we are considering the situation where a third party is carrying out mining, and thereby gains title to the mineral.

²⁹ *Equity - Intergenerational Equity*. (2016). *Uow.edu.au*. Retrieved 14 July 2016, from

form is permitted, say from gold to land. If we acknowledge minerals to be inherited assets owned in common by the Government on behalf of the present generation, which in turn is morally/ethically obliged to preserve its value for future generations, we arrive at a logically consistent metaphor which significantly reduces many of the above distortions. Minerals should be sold only when prices are high. A floor price would be demanded for government-owned minerals, which in the context of carbon, would act as the much desired carbon tax.

If mining does take place, the following steps are necessary (a) the full economic value of the mineral must be captured – losses must be avoided. (b), all the mineral receipts must be saved in a new asset that is inheritable, non-wasting and a part of the commons – owned by the state as trustee for the people and especially future generations. Permanent Funds are a modern path while traditional societies stored gold and jewelry in holy places.³¹ (c) By extension, the real income from these new commons, created from the sale of minerals, should be distributed equally to all as befits equal ownership - a commons dividend or a Citizen's Dividend, as is currently the case in Alaska.³² This ensures that the total common assets never decrease and that income is earned and shared equally by all.

The first step, zero loss mining, is made difficult by the mixed metaphors. While there are few ex-post loss calculations, the many nationalization movements worldwide suggest that the private mining companies were making excessive profits in selling minerals (causing big public losses). The consequence is crony capitalism, plutocrats and neo-colonialism.

The second step, saving all the mineral receipts, is made difficult by the windfall revenue metaphor – it is difficult to save revenues when there are so many urgent needs. This is exacerbated by the “windfall” characterization of mineral receipts. While over 50 natural resource funds exist, many designed based on intergenerational

<https://www.uow.edu.au/~sharonb/STS300/equity/meaning/integen.html>

³⁰ Hartwick's Rule in economics. See *Hartwick's rule*. (2016). *Wikipedia*. Retrieved 14 July 2016, from https://en.wikipedia.org/wiki/Hartwick%27s_rule

³¹ https://en.wikipedia.org/wiki/Permanent_fund

³² An IMF-published paper recommended a similar idea – See Subramanian, A. and Sala-i-Martin, X. (2003). [Addressing the Natural Resource Curse: An Illustration From Nigeria](http://dx.doi.org/10.5089/9781451856064.001). *IMF Working Papers*, 03(139), 1. <http://dx.doi.org/10.5089/9781451856064.001>

equity or for the benefit of future generations, the principal rationale is usually smoothing the “revenue” to the government, a counter-cyclical fund. As seen earlier, much of the wealth depletion is celebrated as higher income, creating disastrous incentives for over-exploitation and over-spending.

There are a few reasons for recommending only a Permanent Fund as the new asset, ideally invested overseas. The primary reason is to ensure that politicians do not have access to easy money from minerals. Second, this reduces the incentives for politicians to recommend conversion of minerals to cash at inappropriate times. Third, governments are usually not very efficient in their investments. Fourth, most possible investments such as in infrastructure, health and education are not “non-wasting” assets.³³ Lastly, investing overseas prevents many aspects of Dutch Disease, keeping the economy competitive.

The third step, distributing the income from the Fund as a Citizen’s Dividend in a controlled manner is rarest of all. Alaska seems to be the sole large-scale example.^{34,35} However, in Goa, India, there are over 100 “*comunidades*,” village level commons, which pay out a dividend each year. There are countless such examples globally – common pool resources, cooperatives and mutuals are some examples.

The common trust asset metaphor can be extended (with appropriate modifications) to other common trust assets like the atmosphere, spectrum, deep groundwater, forests and biodiversity, etc. This opens up the space for discussing ideas like cap-and-dividend, carbon taxes, and many other such initiatives to reduce our impact on the planet without reducing the functioning of the market.

³³ It could be argued that the first person in a family to get education is an investment. However, once the population is educated, further education is an investment that dies along with the individual.

³⁴ The Permanent Fund Dividend - <https://pfd.alaska.gov/>

³⁵ Mongolia implemented a programme of mineral-to-cash, under which mineral receipts were distributed directly to the people instead of being saved. A disastrous situation arose as political parties competed to give money to the people. When mineral prices collapsed, so did the economy. See Yeung, Y. and Howes, S. [Resources-to-Cash: A Cautionary Tale from Mongolia](http://dx.doi.org/10.2139/ssrn.2661202). *SSRN Electronic Journal*. <http://dx.doi.org/10.2139/ssrn.2661202>

When and why to extract

Arguments in favor of mining include the useful products made from the minerals, government tax receipts and generation of employment and income. Global trading of minerals, metal and finished products has made most goods widely available. As we have seen above, the mining receipts of the government are wrongly treated as revenues in the budget instead of asset sales.

The employment and income associated with the extraction activity and creation of useful products is an inherited opportunity that depletes along with the mineral. We can earn income from mining today only because previous generations did not deplete this opportunity. If we do not mine today, the next generation inherits a possibility of earning income from mining. Therefore, the potential value addition / domestic product / national income associated with mining is an inherited contingent asset. This value addition is not all income because we are simultaneously liquidating our asset, which is not deducted appropriately in computing income when we record mineral receipts as a revenue rather than the sale of an asset.

The best case for mineral extraction is when the economic rent is significantly positive and alternative non-wasting investments exist whose principal value can be protected against erosion or loss in perpetuity. This is rarely the yardstick used by governments when deciding on mineral extraction, because they are rarely interested in economic efficiency and instead driven by political expediency.

Global problems arising and the Common Trust Asset metaphor

Since mineral receipts are reported as “revenue”, and the world is in thrall with GDP growth, more mining is considered better. The overall frame is of immediate individual consumption, instead of judicious saving for our children. This has created a slew of global problems including our environmental crisis, and the great wars for control over natural resources. The loss of value from the commons to the miners (and corrupt politicians) is also a driver of the increasing inequality that Piketty and others have claimed.

The Citizen's Dividend was earlier recommended by the IMF in the context of oil in Nigeria and Iraq, the reasoning being that it would create a direct link between citizens and their inheritance, and simultaneously increasing voice through an income buffer.³⁶ From a political economy perspective, this link coupled with the disclosure of loss rates will reduce the incentives for rampant mining in violation of the law.³⁷ This would reduce the overall environmental damage and human rights violations associated with the extractive industry. And by reducing the looting of commonwealth by private interests, we reduce the present tendency towards growing inequality of wealth.

The Citizen's Dividend is also a version of a Universal Basic Income, albeit as a right of ownership, with its own financing and without a link to the poverty line. However, even at low levels, unconditional cash transfers have been shown to have remarkable positive impacts on difficult problems such as poverty, nutrition and health, inequality and entrepreneurship. Also, it acts as a safety net for the precariat, people living without predictability or security, a growing class of people who are omnipresent in developing countries.

The five key elements of the Sustainable Development Goals (SDGs) are People, Planet, Prosperity, Peace and Partnership.³⁸ Viewed in totality, implementing a better metaphor would be one massive step towards achieving our SDGs.

We also anticipate some subtler framing impacts, which would be enhanced by the common trust asset metaphor. Principally, we anticipate (a) greater fraternity among the people arising from their joint ownership, and (b) a greater sense of custodianship over minerals, and by extension, natural resources and our planet. We believe that this re-framing is necessary if mankind is to reduce consumption to sustainable levels.

³⁶ See Birdsall, N. and Subramanian, A. (2004). [Saving Iraq from Its Oil](http://dx.doi.org/10.2307/20034048). *Foreign Affairs*, 83(4), 77. <http://dx.doi.org/10.2307/20034048>; and Subramanian, A. and Sala-i-Martin, X. (2003). [Addressing the Natural Resource Curse: An Illustration from Nigeria](http://dx.doi.org/10.5089/9781451856064.001). *IMF Working Papers*, 03(139), 1. <http://dx.doi.org/10.5089/9781451856064.001>

³⁷ Orit E. Tykocinski and Thane S. Pittman (2013) Money Imbued with Essence: How We Preserve, Invest, and Spend Inherited Money, *Basic and Applied Social Psychology*, 35:6, 506-514, DOI: 10.1080/01973533.2013.840635

³⁸ <https://sustainabledevelopment.un.org/post2015/transformingourworld>

Empirical evidence

There is strong evidence that the mixed metaphors have wreaked extensive damage across the globe. We give below a brief overview of the incredible scale of the horrors.

Case Study: Goa - Mineral commons and equality

Under Article 295 of the Constitution of India, sub-soil minerals are owned by the State Governments, not the federal Government of India. Using audited financial data of the largest mining company, we found that over the last eight full years of open cast iron ore mining in Goa (2004-5 – 2011-12), the state of Goa lost over 95% of the economic rent (sale value minus full extraction costs, which would include a reasonable profit for the miner) associated with the iron ore exported.³⁹ Further, the State of Goa treated the trifles it received as windfall revenue receipts and frittered them away. Consequently, the loss to Goan children and future generations is total.

Of the economic rent, the miners captured 60%, the national government 35% and the state of Goa 5%. In absolute terms, the loss was 28% of GSDP (Gross State Domestic Product), nearly twice the Revenue Receipts of the state, and nearly three times the poverty line on a per capita basis. The amount the miners unfairly captured was more than the Revenue Receipts of the state. The amount the miners unfairly captured was 10 times their earned profit (itself deliberately set by Goa Foundation high at 20% post-tax return on assets).

Since the minerals are owned in principle equally by all citizens, the loss is suffered equally by them all. Every man, woman and child in Goa lost the equivalent of two years' income in a mere eight years, without their knowledge, let alone consent. Such a loss from the commons is effectively a well-hidden per head wealth tax or a poll tax. The common wealth of the poor is producing some very rich mining elites. This is not trickle-down economics; rather it is looting economics. It is an affront to the principles of equality of "socialist" India and contravenes Article 17 of the UN Declaration of Human Rights. It is unjust, immoral, unethical and wrong.

³⁹ Basu, R. (2015). [Catastrophic Failure of Public Trust in Mining: Case Study of Goa](#), *Economic and Political Weekly* L(38), 44-51.

Worldwide impact

We extended our Goa analysis to cover iron ore from elsewhere within India and to coal, crude oil and natural gas as well.⁴⁰ We found evidence of very high loss rates for these cases as well. Iron ore mining by a different company in other states of India showed a 92% loss rate for the mineral owners - over a 10-year period. The loss rates for coal, oil and gas exceeded 50% at the end of the decade ending in 2005-06. The China boom occurred after this and cannot be held responsible for this earlier episode.

Since royalty rates are usually set by benchmarking with other countries in a race to the bottom, these results are likely to hold worldwide and across minerals. *Rents to Riches?: The Political Economy of Natural Resource-led Development* by the World Bank reports that loss rates⁴¹ are rarely lower than 10% for petroleum and 30% for solid minerals.⁴²

The full ramifications of treating mineral receipts as windfall revenues is a loss of inherited assets, a loss of the commons. Indeed, *The Changing Wealth of Nations* study by the World Bank (2011) found that that since 1970, all countries in which rent from minerals accounted for more than 15% of GDP had negative Adjusted Net Savings.⁴³ In simple terms, they became poorer. *Where is the Wealth of Nations?*, a 2005 study by the World Bank, found that had countries like Venezuela, Trinidad and Tobago, and Gabon saved their mineral wealth as required by the IE principle and Hartwick's Rule,⁴⁴ they would now be as rich as South Korea.⁴⁵

The stunning example of Nigeria is also worth recounting. “Over a 35-year period, Nigeria’s cumulative revenues from oil (after deducting payments to foreign oil

⁴⁰ Basu, R. (2015). [Catastrophic Failure of Public Trust in Mining: Case Study of Goa](#). *Economic and Political Weekly* L(38), 44-51.

⁴¹ The study quotes government take / average effective tax rates. It can be shown that under normal circumstances, the capture rate is lower than the government take. See Basu, R. (2015). [Catastrophic Failure of Public Trust in Mining: Case Study of Goa](#). *Economic and Political Weekly* L(38), 44-51.

⁴² Barma, N., Kaiser, K., and Le, T. (2011). [Rents to Riches?: The Political Economy of Natural Resource-Led Development](#). The World Bank Group. Annex 4.2 and 4.3.

⁴³ *The Changing Wealth of Nations*. (2011). Washington, D.C.: World Bank. Page 11.

⁴⁴ “The Hartwick rule holds that consumption can be maintained—the definition of sustainable development—if the rents from nonrenewable resources are continuously invested rather than used for consumption.” Hamilton, K. (2006). [Where is the Wealth of Nations?](#). Washington, D.C.: World Bank. Page 9.

⁴⁵ Hamilton, K. (2006). [Where is the Wealth of Nations?](#). Washington, D.C.: World Bank. Page 54.

companies) have amounted to US\$ 350 billion at 1995 prices. In 1965, when per capita oil revenues were about US\$33, per capita GDP was about US\$245. In 2000, when oil revenues per capita were US\$325 per capita, per capita GDP remained at the 1965 level. In other words, all the oil revenues – US\$350 bn in total – did not seem to add to the standard of living at all. Worse, however, it could have actually contributed to the decline in the standard of living.”⁴⁶ It should be remarked that US\$ 350 billion works out to US\$ 2,500 per person (using the 2006 census population of 140 million), approximately 10 years of income in 35 years. A catastrophe.

Common Trust Asset metaphor in practice

There has been widespread recognition of the distortion, though not explicitly couched in these terms. Popular movements against mining companies due to the private capture of economic rent have a long history. In general, it has been found that better institutions lower the risk of the resource curse. Norway and Botswana, two nations that have successfully managed large mineral endowments, treat their mineral receipts as capital receipts both for their budget revenue deficit targets and for utilization of the receipts – saved into a Permanent Fund, implicitly a part of the commons. Norway has defined mineral receipts expansively to include production shares, income tax payments as well as returns from equity stakes, as they are simply tools to increase the amount of the economic rent captured by the owner, the government. Unfortunately, neither Norway nor Botswana has an explicit goal of achieving zero loss mining, i.e., 100% capture of the economic rent in all price and other scenarios. Nor does either distribute the real income as a commons dividend, instead each government appropriates the real income into its budget.

Many nations and sub-nationals have established Natural Resource Funds or Future Generations Funds. The first saving fund from minerals, the Revenue Equalization Reserve Fund was set up in 1956 in what is now Kiribati in anticipation of exhaustion of its phosphates.⁴⁷ It was set up by the UK’s colonial administration in Kiribati, as the guano deposits were on a single raised coral island with an area of 6 sq. km, visibly finite.⁴⁸ Over 50 natural resource funds exist worldwide, including happily Goa,

⁴⁶Subramanian, A. and Sala-i-Martin, X. (2003). [Addressing the Natural Resource Curse: An Illustration From Nigeria](http://dx.doi.org/10.5089/9781451856064.001). IMF Working Papers, 03(139), 1. <http://dx.doi.org/10.5089/9781451856064.001>

⁴⁷ <http://www.adb.org/sites/default/files/linked-documents/47314-001-sd-03.pdf>

following an order of the Supreme Court. In fact, a few have been set up as a part of loan conditionality from IMF/World Bank actions. However, distressingly few follow the correct fiscal rule of investing all mineral receipts into a Permanent Fund.

The present budget crisis in Alaska presents an instructive lesson. Only 25% of the receipts from oil have been saved in the Alaska Permanent Fund, while the balance 75% has been treated as revenues in the government budget. This is a clear implementation of the mixed metaphor. As a consequence, Alaska does not have a state income tax. With the recent crash in oil prices following soon after the China boom, the Alaska budget is in shreds. The politicians continue their efforts to raid the Permanent Fund, via the dividend – easy money, avoiding the politically more difficult task of instituting an income tax and providing good governance in return.

Nauru also provides a salutary lesson in mineral management. It is another South Pacific island state with large deposits of guano. Mining began in the 1906. After independence in 1968, Nauru purchased its mineral rights back from Australia. Then began a boom period till the late 1990s when Nauru had the highest per capita income in the world, simply because the receipts from phosphate were treated as revenue. The mineral receipts were so large that even after all expenses (it was for a period a 100% welfare state), a savings fund of nearly \$2 bn was built up. Alas, the phosphates are nearly exhausted and the savings fund mismanaged – it is now worth merely \$50 million. Nauru today survives from rent paid for a refugee processing center for Australia, a prison camp by another name.

Private Sector Accounting

Private sector accounting standards have always treated many leases as capital items, not operating. The relevant IFRS standards now mandate capital treatment, while the FASB standards have whittled down the exceptions. Disclosure requirements have also increased with detailed reserves and project level financials now required.^{49,50} This is far greater than the equivalent disclosures by governments. If a listed private sector entity in a developed nation accounted for minerals in the manner that governments do, they would almost certainly be committing a felony.

⁴⁹ <http://www.ifrs.org/Current-Projects/IASB-Projects/Leases/Pages/Leases.aspx>

⁵⁰ <http://www.fasb.org/jsp/FASB/Page/BridgePage%26cid=1351027207574>

Natural Capital Accounting

The concept of accounting for natural capital has been around for over 30 years. The World Bank has calculated Adjusted Net Savings, triggered by its own publication in late 1995 of *Monitoring Environmental Progress: A Report on Work in Progress*.⁵¹

The WAVES is a World Bank-led global partnership that aims to promote sustainable development by ensuring that natural resources are mainstreamed in development planning and national economic accounts. The UN-SEEA also accounts for various natural resources.

However, these are not sufficient. (1) By grouping minerals with other harder to value and likely lower value assets, a lot more time would be needed before techniques are refined. For minerals, we can simply adopt private sector accounting standards (and could have 30 years ago). (2) Natural capital accounts will likely remain proforma accounts or subsidiary accounts. As the public discourse is linked to standard metrics such as GDP and government budgets, it is essential that the accounting for minerals be changed in the main accounts and statistics. (3) There needs to be a wholesale change in terminology, a conscious change in metaphor used across all communication. Just publishing proforma accounts will not suffice.

Recommendations on Government Accounting, Statistics and Disclosure

In order to move governments from simply frittering away their mineral assets as windfall revenues to a more judicious saving and conservation view, we need:

1. Inventorisation, disclosure and valuation of Government mineral assets, with annual changes being consistently measured and explained.
2. All mineral receipts should be treated by the government/community mineral owner as being from the sale of common inherited assets.⁵²
3. Metaphors are cognitive systems that work unconsciously. Terminology needs to be changed across the board to create a new frame of thinking, strengthening the common trust asset metaphor. For example, “receipts on account of the depletion of natural resources” or “Sale of Natural Resources” would be appropriate instead of “windfall revenues”. Assets also need to be categorized into wasting/non-wasting, depleting/non-depleting, renewable/non-renewable, inherited/created.

⁵¹ <http://documents.worldbank.org/curated/en/378701468765915443/pdf/multi-page.pdf>

⁵² In a number of jurisdictions such as USA, Canada, Australia and India, indigenous people own the mineral rights over their lands

Better terms also need to be developed - “non-wasting” is cognitively extremely difficult. The words “lease”, “rent” and “use” in the context of minerals is misleading. A new term is needed for “economic rent”. A separate framing initiative may be required here.⁵³

4. A fiscal rule or guideline that all mineral receipts should be saved as fresh non-wasting assets. In most cases, a fund such as the Norway Government Pension Fund or the Alaska Permanent Fund would be an appropriate investment vehicle.
5. A reliable system of controls for the government fund including audited financial statements is crucial to prevent looting of the trust fund by government officials similar to the U.S. Bureau of Indian Affairs.⁵⁴
6. Following well-developed accounting practices for minerals in the private sector, these changes should be made in the main Government Accounts, not just the green accounts. This would help ensure effective framing of depletion of minerals as an intergenerational equity issue.
7. We recognize this change would create significant cascading impacts not just dealing with statistical comparability. It may impact laws, rules, regulations, even international treaties (targeting a revenue deficit for example). We would recommend a transition period of say 10 years where both sets of accounts are published to debug the system, provide comparability, and to make the necessary changes in laws, rules, regulations, treaties, etc.
8. Time is of the essence. The earlier we start, the better our chances at averting environmental disaster and achieving the SDGs.

Standards impacted

We believe that the following standards at a minimum must conform to the capital metaphor:

System of National Accounts – UN

Government Financial Statistics Manual – IMF

International Public Sector Accounting Standards, in particular IPSAS 13 – Leases

System of Environmental-Economic Accounting – UN

⁵³ [Frameworks Institute](#) and the [Public Interest Research Centre](#) are non-profits in this area

⁵⁴ https://en.wikipedia.org/wiki/Cobell_v._Salazar

We provide some detailed recommendations in the Annexure as a sample of the changes required. Our accounting recommendations are in line with private sector accounting standards, in particular the current FASB⁵⁵ and IASB⁵⁶ standards.

Conclusion

In light of the above, we request that the IMF, UN and IPSASB adopt a common trust asset approach towards the accounting, statistical and disclosure standards for minerals. It is clear – given the \$27 tn of public funds involved – that the Resource Curse is possibly the single largest issue facing resource-rich states and nations. This is more than an accounting issue. Properly speaking, it is an ethical and moral issue. It is deeply linked to whether we can as humans change our mental frame. It is also directly connected to the persistent extreme poverty and growing inequality. We therefore request the IMF, UN and IPSASB to quickly change their accounting guidance for mining leases to help these countries and their people break/dispel the curse, which has its origins at least in part in faulty government accounting. The problem is huge – billions of people suffer from the Resource Curse – and the suggested change is tiny in comparison.

⁵⁵ <http://www.fasb.org/jsp/FASB/Page/BridgePage%26cid=1351027207574>

⁵⁶ <http://www.ifrs.org/Current-Projects/IASB-Projects/Leases/Pages/Leases.aspx>

Annexure 1

IMF's Government Finance Statistics Manual 2014

A quick read through the relevant sections of the IMF's Government Finance Statistics Manual 2014 shows that the IMF has consistently taken the position that compensation for "use" of natural resources is income, and in particular "rent". While this may be true for land or even forests, it cannot be true for sub-soil resources. The planet is finite, and therefore so are sub-soil assets. A use of these resources results in depletion from the commons. This is a transfer of an asset. The accounting standards must distinguish between these cases.

Relevant sections

The IMF's Government Finance Statistics Manual 2014 provides in paragraph 5.54 (page 94):

"Taxes on exploitation of natural resources, such as land and subsoil assets not owned by government units, including taxes on extraction and exploitation of minerals and other resources, should be recorded in *other taxes on goods and services* (1146). Payments to a government unit as the owner of land and **subsoil assets** for the exploitation of such natural resources (often referred to as royalties) should be recorded in ***rent*** (1415). Payments for licenses that allow the beneficiary to carry out the business of exploitation of land and subsoil assets are classified in *taxes on use of goods and on permission to use goods or perform activities* (1145)." (Bold emphasis added, italics in original)

Thus, the IMF's default position is that payments received by the government in exchange for rights to exploit government-owned subsoil resources should be recorded as rent, a component of government revenue. Where minerals are concerned, this is patently absurd.

However, the IMF acknowledges a possible exception for the third category above (1145: Payments for licences) in paragraph 5.78 (page 98):

“**5.78** Boundary cases arise with the payments for licenses to make use of a natural resource. If the natural resource qualifies as an asset and the government controls it on behalf of the community, payments for the license **could be recorded** as the disposal of the asset when government surrenders economic control of the asset and the life span of the license and the life span of the asset are the same. If the license agreement is recorded as the sale of an asset in its own right, it should be recorded as the disposal of an asset in the category of *contracts, leases, and licenses* (31441). A license for the use of the natural resource itself for **a finite period** does not reflect a disposal of an asset and should be classified as *rent* (see paragraph 5.124). Licenses to permit the use of natural resources not under the control of government will be treated as a tax (classified under this item) in all other cases except if the license is legally and practically transferable to a third party, in which case it should be classified as an asset in the category of *contracts, leases, and licenses* (see paragraphs A4.54–A4.55).” (Bold emphasis added, italics in original).

In the first sentence of paragraph 5.78, the IMF acknowledges that mining licenses for government-owned natural resources can be recorded as asset sales in the limited circumstance that the lease term matches the asset life, as might be the case for a long-term lease of a building or aircraft. In the private sector, this transaction would almost surely be treated as an asset sale.

However, in the third sentence (referring to paragraph 5.124), the IMF says that a finite-term lease does not qualify as an asset disposal. This is also at odds with current private sector accounting, where the owner of the asset would be required to apply capital treatment. The underlying basis for this claim by the IMF is disclosed in paragraph 5.122 (page 108):

“**5.122** Rent (1415) is the revenue receivable by the owners of a natural resource (the lessor or landlord) for putting the natural resource at the disposal of another institutional unit (a lessee or tenant) for use of the natural resource in production. **Rent receivable is typically related to a resource lease** on land, **subsoil resources**, and other natural resources. In terms of the agreement, the owner can extend or withhold permission for continued use of the asset from one year to the next. It constitutes an agreement whereby the legal owner of a **natural resource**

that is considered to have an infinite life makes it available to a lessee in return for a regular payment recorded as property income and described as rent.” (Bold emphasis added).

This paragraph makes excellent sense for land, which is assumed to have an infinite life for accounting purposes (and is thus not depreciated unlike buildings). It also makes sense for the use of water from a spring. However, the life of subsoil mineral resources depends on whether they are extracted. If not extracted, then they likely have an infinite life. An extraction of minerals implies that the quantum of mineral left is irrevocably reduced by that amount. And with payment of compensation, typically royalty, it is a transfer of title of the asset to the miner. It makes no sense to treat the compensation as revenue. This is true even of a short-term mining lease.

The IMF allows for another exception in paragraph 5.124 (page 108):

5.124Rent excludes payments receivable by the owners of natural resources if such payments permit the **resource to be used to extinction**—such activity is regarded as a sale (see paragraphs 8.54 and A4.19) and possibly depletion (see paragraph 10.52) of the non produced asset. Also excluded from rent are amounts receivable by owners of natural resources when they allow the resource to be used for an extended period of time in such a way that, in effect, the user controls the use of the resource during this time with little, if any, intervention from the legal owner. This option leads to recording a transaction in an asset, classified as *contracts, leases, and licenses* (31441), for the user, distinct from the resource itself (see paragraphs 8.56 and A4.19).” (Bold emphasis added, italics in original)

The infinite life assumption of paragraph 5.122 is at odds with the possibility that the resource can be used to extinction in paragraph 5.124. While the subsoil asset may have a theoretical infinite life if left undisturbed by man, the moment some of it is consumed by mining, that portion is consumed. Nature will take millions of years to re-create the same mineral, and likely in another geographical location entirely. This is quite different from say water from a natural spring. As it rains, this water will flow. We do not exhaust it. Therefore, for minerals, we should not have the qualifiers of “used to extinction”. The moment something is extracted, that portion is extinct with no possibility of renewal.

Equally important is the second sentence in paragraph 5.124, which describes many long-term mining leases in developing countries, which are still unfortunately reported as resource rentals based on guidance such as in paragraphs 5.54 and 5.122. We note that the third sentence in paragraph 5.124 applies capital accounting for the user of the resource (the lessee), not the original owner.

We believe that one way to reduce corruption and crony capitalism is to reverse the IMF presumption of lease reporting as rent and have sale accounting (capital lease treatment) be the default with rental accounting (operating lease treatment) be the exception.

Private Sector Accounting Standards

Private sector accounting is increasingly taking this stance with the International Accounting Standard Board (IASB) requiring that lessees capitalize ALL lease rentals under International Financial Reporting Standards (IFRS) and the Financial Accounting Standards Board (FASB) narrowing the application of operating lease treatment under U.S. Generally Accepted Accounting Principles (U.S. GAAP).⁵⁷ Even under previous private sector accounting standards such as SFAS 13 (FASB 1976) paragraph 7, the transaction had to be treated as a sale if the lease extended for more than 75% of an asset's economic life (as opposed to the more lenient 100% benchmark in IMF paragraph 5.78) OR if the lessee was expected to receive more than 90% of the economic benefits of the resource estimated at inception of lease (which is again stricter than the 100% benchmark of use to extinction in IMF paragraph 5.124).⁵⁸

Action Desired of IMF

Following the above discussion, we believe that the IMF should reverse its guidance and set sale accounting as the default accounting treatment by both lessees and lessors for all leases of non produced non-renewable assets especially mineral resources. Rental accounting should only be permitted if the lessee and lessor can point to specific lease contract terms that prevent such use to (near) extinction, provide independent valuations of mineral resources before the lease contract is negotiated, provide evidence of arms-length contracting such as open auctions, independent

⁵⁷ <http://www.pwc.com/us/en/cfodirect/publications/accounting-guides/pwc-lease-accounting-guide-asc-842.html>

⁵⁸ <http://www.fasb.org/pdf/fas13.pdf>

monitoring arrangements to track compliance with lease terms, independent valuations of minerals extracted, sold and retained minimally at an annual frequency on a project level, and establish sufficiently large penalties on the lessee to deter use to extinction.

Following classification of these lease transactions as sales, the sold mineral resource should be removed from the balance sheet and the related cash inflows be reported as non operating (or investing) cash flows. But this assumes that these assets were on the government's balance sheet before the lease transaction. The IMF should require that proved mineral resources be reported on the balance sheet at net recoverable value (i.e. present value of estimated sales less cost to recover) when discovered. Subsequently, these net recoverable values should be periodically re-estimated to account for changes in market prices and recovery costs, with the updated values either disclosed in footnotes or preferably reported on the balance sheet with the cumulative gains/losses disclosed as net revaluations.

In addition, the IMF should encourage, if not require, government reporting on the use of the funds received from each asset sale (following guidelines in the U.S. Federal Funding Accountability and Transparency Act of 2006). The last provision will empower concerned citizens to monitor government waste and abuse of public assets (see e.g. <https://www.nationalpriorities.org/interactive-data/database/>).

FAQs on Accounting Metaphors

The IMF, UN & IPSASB standards for government accounting, statistics and disclosure treat receipts from minerals as “windfall revenues” rather than “capital receipts on account of the sale of a non-renewable natural resource asset.” In October 2016, Goa Foundation had sent [a note](#) on mitigating the resource curse by improving government accounting to the IMF, UN, WB, IPSASB, INTOSAI and others.¹ We had argued that the present accounting is a major accounting error similar to the funding of pension liabilities on a pay-as-you-go basis, but with even bigger and more dangerous implications. The World Development Indicators show that the total energy and mineral depletion between 1970 and 2013 amounts to \$27 trillion. Much of this has been consumed, aided in part by government accounting for mineral receipts as revenues rather than asset sales. We petitioned the IMF, UN & IPSASB to undertake a review of their treatment of mineral receipts in government accounting, statistics and disclosures, as well as take appropriate steps to modify the overall discourse from “windfall revenues” to “sale of non-renewable natural resource assets”.

We have received quite a few responses to our note. In general, commenters agree that accounting for mineral receipts as a sale of assets is reasonable. Their principal concern is that we are being naïve and overstating the likely impact on altering political behaviour as relates to resource exploitation/conservation. Several other secondary issues were also raised.

In response, we first provide our broad framework for thinking about minerals. We start with the accounting issues. We then deal with the confusion caused by the use of conflicting metaphors. We move on to discuss our suggestion for dealing with minerals in the context of alternative fiscal paths. Each section ends with a set of recommendations for the IMF. Annex 1 goes into the accounting issues in greater detail. Annex 2 deals with some residual issues.

IMF's work on minerals

We acknowledge upfront that the IMF has done much to promote the idea of minerals as capital. Substantial portions of our work are a direct result of reports from the World Bank and the IMF. We are aware that a number of sovereign wealth funds have been set up as a result of loan conditions. However, we believe the IMF can and should do more to mitigate the resource curse and our unsustainable global economy.

Boundary: Minerals, including fossil fuels

We are restricting our analysis to minerals (including fossil fuels), not all natural resources. Our perspective is that of an owner of minerals, whether a government, indigenous people or even an individual. We restrict our analysis to the case where the government is the legal owner of the minerals.

Our broad framework

A well-functioning economy increases wealth, with the change in wealth labelled income. All else equal, less inequality is better. In most economies, growth is increased by prudent investment.

¹ <http://goenchimati.org/wp-content/uploads/2016/10/2016-10-04-Mitigating-the-Resource-Curse-by-improving-Government-Accounting-Note-for-IMF.pdf>

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Natural resources are typically part of the commons, with the government usually the trustee of the shared inheritance on behalf of living people and future generations. The present generation has a duty to ensure that the next generation receives at least the capital – meeting Intergenerational Equity.² If we maintain the capital, we may consume the fruit, the income from the capital, although ideally, each generation would leave a growing bequest, a positive legacy.

Usually, mining leads to the sale of the mineral. A mining lease is effectively a long-term sale and purchase agreement for the mineral. Royalty and other mineral receipts are the consideration received for the mineral sold.

Consider the case of inherited family gold. Intergenerational equity can be met by keeping the gold as it is, but gold earns no income. An alternative is to sell the gold and invest the proceeds in land. Provided owners maintain the productivity of the land, by crop rotation or keeping it fallow, they can consume the harvests. And so could all future owners. Any loss of the initial capital is a permanent loss to all future generations.

In a similar vein, each owner must strive to sell the mineral for zero loss, i.e., its economic rent.³ Whatever the owner receives must be saved in a new “non-wasting” asset. Since this asset has been financed from the mineral commons, it should remain part of the commons. The owners must prevent theft or erosion of value of the new asset. Provided the capital is intact, the owners may consume the income. Since the minerals and the new asset constitute the commons, the income should be distributed equitably as a commons dividend.

This prescription meets Intergenerational Equity – the capital is at least held constant over time. If we assume that the new “non-wasting” asset earns income at the market rate of return, and that some of that income is saved each period, then the economy’s wealth will keep growing. The original property of the commoners (the minerals) remains the property of the commoners (in the form of the new asset) and the income earned on the capital is distributed to the owners. The prescription explicitly meets equality in distribution.

The recent history of mining is a tale of failures. Even the history of the few successes is short. Why is this?

Ants to honey

The fundamental challenge is that minerals are a concentrated source of common wealth. Consequently, they draw rent seekers. The quantum of wealth is so large that miners, politicians, bureaucrats and present citizens are tempted to consume it. The losers are future generations, who do not have a voice, today.⁴ This is the central problem – how can owners stop theft in various disguises and reduce the temptation?

Conceptually, there are 6 stages of mineral transformation to consider – as a mineral (before mining), when selling the mineral, when investing the proceeds, maintaining the new capital, earning income and distributing the income. At each stage, loss or theft must be prevented. If

² Otherwise, future generations will be worse off (assuming zero technological progress forever). In the limit, there may not be a future generation if the current generation consumes the planet or triggers a catastrophe.

³ Economic rent is the sale value minus cost of extraction minus reasonable profit for the extractor.

⁴ They will get their voice when they write our history!

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income can be increased or distributed better at no greater risk, that would be preferred. The wealth is most vulnerable when it is being converted from mineral to cash to investment. The table below lists the six stages and the corresponding goals for the two situations described above.

| Stages | Gold to Crop | Mineral to income |
|------------------------------|----------------------------|---|
| 1. Mineral in situ | Prevent theft | Prevent theft |
| 2. Sale of inheritance | Zero loss | Zero loss |
| 3. Investment (save all) | Buy land | Invest in new “non-wasting” assets 1. Real – infrastructure, education, public health, sometimes through a fund ⁵ 2. Financial – Future Generations Fund |
| 4. Protect investment | Maintain land productivity | 1. Real : Maintenance 2. Financial : Inflation proofing |
| 5. Earn real income | Grow a crop | 1. Real : Management 2. Financial : Investment management |
| 6. Distribute income equally | Consume the crop | Distribute commons dividend |

Resource protection failures occur at all stages. Resource wars are well known. We have documented very significant losses to mineral owners based on audited financial statements.⁶ Significant portions of mineral receipts are diverted to arms purchases and lining the pockets of ruling politicians. Of the rest, often substantial sums are consumed, not invested, driving patronage. When invested in real assets, there are numerous issues with corruption, patronage and poor project selection. Raiding a Future Generations Fund is common as well. For 2 consecutive years now, legislators in Alaska have voted not to pay the full permanent fund dividend.

Names matter

Importantly, the revenue metaphor obscures our moral failure. It is easy to rationalize that no rights of future generations are impacted when we earn revenue and dispose of it to benefit ourselves, as future generations will earn their revenue in their own time. In reality, the people alive are consuming their inheritance. By hiding the asset depletion and intergenerational inequity, the revenue metaphor removes future generations from the discussion.

This metaphor induces a multi-party struggle for the mining “revenues” by miners, politicians, local governments, government officials, police, local strongmen, lobbies, civil society, etc., all essentially rent seekers, with everyone arguing for more.

We want a clear communication of the underlying moral principle – Intergenerational Equity. “*We haven’t inherited the world from our ancestors, we’ve borrowed it from our children*”⁷ or “*the earth is essentially a shared inheritance*”⁸. Good accounting and transparent disclosure will help verify if current generations are failing in their duty.

⁵ In theory, a public investment management fund like Temasek could pay out a commons dividend.

⁶ From [Catastrophic Failure of Public Trust in Mining: Case Study of Goa](#).

⁷ Provenance of this quote is uncertain. See [Quote Investigator](#)

⁸ [Laudato Si](#) by Pope Francis

Introducing our benchmark

Goa Foundation proposes a simple three-step policy as a benchmark for evaluating alternative ways to safeguard the capital, earn income and distribute equally. These are (a) if we mine and sell our mineral, we must have a zero loss rate; (b) everything we receive must be saved in a Future Generations Fund, invested in deep capital markets, with inflation proofing; and (c) any real income must be distributed only as a commons dividend, equally to all. We believe that this policy is politically implementable and will be difficult to out-perform. We discuss this benchmark in more detail later.

Standards for Statistics & Accounting

Natural resources can be grouped in 3 broad categories: (a) non-renewable stocks - minerals, fossil fuels; (b) regenerating stocks – fisheries, aquifers, forests, pasture; and (c) renewable flows – spectrum, rainfall, sunshine.

The current government/public sector accounting standards aimed at guidance for receipts from mobile telephony spectrum auctions. Unfortunately, this revenue treatment appropriate for renewable resources was extended to all receipts from government-owned natural resources. However, sale of asset treatment for receipts from owned minerals is likely better since this is a different class of non-renewable assets, which depletes when exploited.

Impact of revenue accounting

A real life example of Goa, India would help illustrate the impacts of the current accounting:

| Amounts in Rs. billion | | | | |
|------------------------|------------------|----------|--|--|
| Aggregate | As Reported | | In Reality | |
| Transaction narrative | Revenue (mining) | 23.87 | Opening capital : mineral Mineral sold Capital receipt : cash Change in net worth : loss Closing capital : cash | 516.55 -516.55 +23.87 -492.68 23.87 |
| Government revenue | | 274.02 | Net revenue Revenue Loss from mining | -242.53 250.15 -492.68 |
| Government net worth | Increase | 23.87 | Loss | -492.68 |
| Goa GDP | | 1,872.97 | (Subtracting the economic rent ⁹) | 1,356.42 |
| Goa net worth | Increase | 23.87 | Loss | -492.68 |
| Goa commons wealth | Decrease | -23.87 | Decrease | -516.55 |

We found in Goa, over the 8-year period 2004-2012, that the state as mineral owner received 5% of the economic rent (Rs. 23.87 billion out of Rs. 516.55 billion).¹⁰ The mineral receipts were approximately 9% of the cumulative Goa government revenues (Rs. 274.02 billion). Mining was 15%

⁹ If we subtract the mining contribution to GDP (instead of economic rent), real GDP is Rs. 1,598.53 billion.

¹⁰ From [Catastrophic Failure of Public Trust in Mining: Case Study of Goa](#), table 3.

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(Rs. 274.48 billion)¹¹ of Goa's GDP (Rs. 1,872.97 billion). End-of-period government debt was only Rs. 68.72 billion. Mining appears a success, increasing government revenue, and GDP too.

In reality, Goa suffered a decline in net worth to the extent of 95% of the economic rent (Rs. 492.68 billion), and the government suffering a loss of inherited capital of twice its true revenues (Rs. 250.15 billion). The wealth lost from the commons accounted for an average of 28% of Goa's GDP over the period (Rs. 1,872.97 billion), cumulatively 1.5 times exit GDP. True GDP is much lower. Per capita income is over-stated, and the people are actually poorer. The distribution impact is also significant. The losses are effectively a per-head tax, a negative basic income. A few miners and their cronies became super-wealthy.

Revenue accounting obscures this catastrophe in two different ways:

- 1) **Mineral receipts as revenue:** This accounting falsely boosts government revenue and GDP. More mining means more growth, which is the purpose of the economy. The propensity to consume revenue receipts is high, in effect unknowingly consuming capital. This undermines step 3, which is to save everything. Further, except for the rare situation of a commons dividend from mineral receipts (e.g. Iran, Mongolia), the money spent will not distribute benefits equally to all. It is, in effect, a per head wealth tax imposed by the government likely redistributed as patronage to the powerful.
- 2) **Loss of wealth not disclosed:** IMF data shows significant losses of the economic rent from mining are common – a minimum of 15% for oil and 35% for minerals.¹² The revenue treatment reduces scrutiny on the terms of mining leases because losses are not explicitly accounted for. This makes zero loss mining, step 2, difficult to achieve. Crony capitalism blossoms in the shadows. From a distribution perspective, these are also hidden per-head taxes, while the miners are getting unfairly rich.

Opportunity for change

The System of National Accounts (SNA) 2008 and the Government Finance Statistics Manual (GFSM) 2014 recognise that accounting for minerals is problematic. "*Leases to use or exploit natural resources*" is on the SNA 2008 Research Agenda. "*Leases to use or utilise natural resources*" is on the GFSM 2014 Research Agenda. As in the mobile telephony spectrum case, clarifying guidance may be sufficient. In addition, IPSASB is currently examining its standards for Leases and for Revenue, creating an opportunity to improve the current situation.

The [GFSAC Research Agenda](#) item 13 "*Leases to use or utilise natural resources*" sets out the issues clearly (underlining ours):

"The GFSM 2014 provides guidelines on recording licenses and permits to use natural resources in Appendix 4, Box A4.1. These guidelines are based on the 2008 SNA guidelines. Current guidelines make a distinction between: payments treated as sales of assets; payments considered the payment of taxes; and payments that are treated as rent. Which treatment is applied affects GFS aggregates: sales of assets are not recorded as parts of government revenue at all, versus recording payments as taxes impacts the level of taxes/fiscal burden, and payments of rents that

¹¹ Surprisingly, GDP from mining for the period is much lower than the economic rent, estimated from annual financial reports of the largest mining company, Vedanta (then Sesa Goa).

¹² [Fiscal Regimes for Extractive Industries: Design and Implementation](#), paragraph 64.

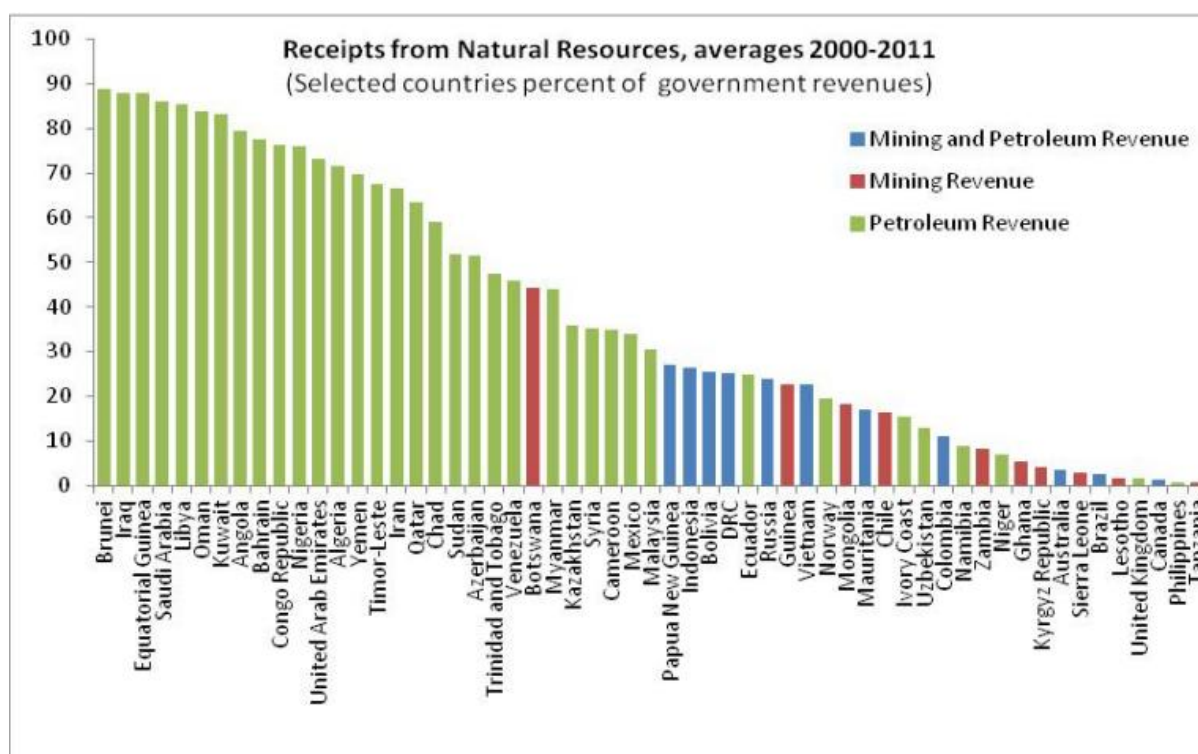
do not impact the fiscal burden but increase property income. The classifications of these transactions have significant impacts and changes to the treatment could significantly impact GFS aggregates for countries reliant on income from the exploitation of natural resources. However, it was found that in practice, making the distinction is not that easy. Therefore, further practical guidance on making these distinctions should be developed."

| Treatment of receipts | Comments |
|-----------------------|---|
| Revenue | GFSM 4.23 " Revenue is an increase in net worth resulting from a transaction." |
| 1. Payment of taxes | Ruled out because the payments are neither compulsory nor unrequited |
| 2. Payment of rent | Current treatment. Assumes infinite life of asset - absurd with minerals |
| Capital | |
| 3. Sale of an asset | Mineral leases are essentially master sale & purchase agreements |

Of the three possibilities for treating receipts for non-renewable minerals (not all natural resources, especially those that are renewable), sale of assets seems to be the only reasonable choice.¹³

Impact on Government and National indicators

This chart from a 2012 IMF presentation shows the governments most impacted:



Under sale of asset accounting, these receipts would not form part of revenue. The government revenue deficits would be extraordinary. This would have significant political repercussions, as

¹³ In the case of Spectrum, "purchase of services" was a fourth option examined. Some studies of government finances treat royalty as an "economic service", part of "non-tax revenues", calculating the ratio of royalty "earned" and the expenditure of the controlling department.

politicians would have to argue for consumption of the family gold in normal times. Reported per capita income would also drop, reflecting the unsustainability of consuming mineral wealth.

Further, we would not be surprised to find loss rates exceeding 50% at the peak of the China boom. This was in evidence in India for coal as well as oil and gas as early as in 2005. Sale of asset accounting would have dramatically changed the fiscal picture for many of these countries. Not only would the government revenues have shrunk, the losses may well have exceeded the non-mineral revenues. It is no surprise that *The Changing Wealth of Nations* study by the World Bank (2011) found that that since 1970, all countries in which rent from minerals accounted for more than 15% of GDP had negative Adjusted Net Savings.¹⁴ In simple terms, they became poorer.

It would be a useful exercise to re-calculate key government and national indicators for nations around the world using sale of asset accounting to see what the impact on government accounts, budgets & national indicators would have been. IMF is the organisation best placed to undertake this.

Does accounting impact behavior?

As set out in our earlier note, the accounting treatment is driving perverse incentives. Politicians argue for new mines or increased extraction on the grounds of a boost to the government revenues. Since mineral receipts are accounted for as revenues, a derived goal is to maximise revenues, a fuzzy target. This drives increased extraction at lower prices, large losses, wasteful spending, declining wealth and increasing inequality.

If politicians had to disclose that they are selling inherited assets, significant losses would be politically untenable. This would squeeze the corruption and crony capitalism.

Arguments for consuming the capital would be difficult. Consequently, the savings rate is likely to rise, leading to further growth. This is the minimal argument for capital treatment in accounting.

Eventually, it is a judgment call whether these massive swings in government and national indicators would change political behaviour or incentives. IMF clearly has the most experience. However, if such large changes have minimal impact, then the GFSM 2014 and the SNA 2008 are likely exercises in futility. And the change should not face much opposition if it will have no impact.

Possible two-step accounting change

There are significant practical difficulties in estimating values of mineral deposits. We therefore propose a two-phase accounting change:

- 1) All countries could start accounting for mineral receipts as sale of assets by first recording the mineral receipt amount as an increase in net worth through the Other Changes in Assets account to the extent of the mineral receipt. The actual transaction (say the receipt of royalty) would be subsequently shown as a sale of assets – reducing the mineral asset created by the same amount, and increasing capital receipt from sale of non-produced assets. The national statistics would exclude the mineral receipts from the GDP. This treatment does not require an estimation of the loss in value. However, the risk of loss at extraction would remain.

¹⁴ [The Changing Wealth of Nations](#). (2011). Washington, D.C.: World Bank. Page 11.

- 2) In a later phase, annual estimations of the value of mineral deposits should be required, and unrealized gains and losses would also need to be recorded. In other words, the mineral asset discovery and subsequent value changes would be recorded through the Other Changes in Assets account. When a mineral sale transaction takes place and royalty is received, the royalty would be treated as before. However, the assets would decline by the value of the mineral as previously estimated, and the difference between the mineral receipt and the recorded value of the mineral would be shown as a capital loss or gain.

An intermediate alternative to consider is valuing the mineral contemporaneously with extraction, and recognising the gain or loss, if any. This doesn't require valuing mineral deposits where extraction isn't planned in the future, but does reduce accountability for the management of the resources.

Action sought from IMF on statistics and accounting

1. Decision to move mineral accounting on a fast track, separate from all other natural resources. Spectrum for mobile phone telephony is a precedent.
2. IMF modifying both the GFSM 2014 as well as the SNA 2008 to require sale of asset treatment for mineral receipts instead of treating it as property income. This can be accomplished through clarifications or guidance.
3. Advocate follow-through changes to the IPSASB standards, potentially in the upcoming Revenues standard.
4. IMF should analyse how historical government and national indicators would have been reported under sale of asset accounting. In a similar vein, contemporary projections for the future could show results from both styles of accounting.

Conflicting metaphors

Our [initial note](#), especially pages 5-8, provides a number of channels by which the concurrent use of conflicting metaphors for mineral receipts – “windfall revenues” and “sale of asset” – causes many of the symptoms associated with the Resource Curse. Briefly, more revenues are good, incentivizing rapid extraction. Revenue terminology breaks the link to the asset value, hiding losses. Windfall terminology increases the urgency, and reduces the propensity to save. Commodity booms and busts create dramatic volatility in government revenues, which are difficult to manage.

Sale of asset treatment changes perspectives. Four questions immediately arise – (a) why are we selling our asset, (b) is this the best time, (c) are we incurring a loss, and (d) are we saving the money in a new asset? Consistent use of the “sale of asset” metaphor would change the way minerals are managed. We also argue for an extended “sale of common inherited assets” metaphor in order to recognize the rights of future generations to our shared inheritance.

The widespread use of conflicting metaphors confuses perspectives. This is not deliberate. However, it is so ingrained that eliminating confusing metaphors will need determined effort and leadership on the part of the IMF. As long as the accounting standards (GFSM, SNA, IPSASB) treat mineral

receipts as revenue, a sale of asset metaphor will be continuously under-mined by the accounting terminology. We explain the impact of metaphors in shaping political narratives for minerals.¹⁵

Mineral receipts as “revenue”: Politicians argue for increased extraction on the basis that it creates jobs and generates income for the government and the nation. It becomes a national project, and those opposing are portrayed as seditious. The underlying political interest in extraction may be to distribute patronage, and more often, plain corruption and lining of pockets. Rent seekers frequently becoming politicians in turn.

Consumption (of the mineral receipts) is also promoted by the revenue metaphor. For the common person, it makes no sense to earn a lot of revenue from mining only to save most or all. What is so special about this revenue? Is there any other kind of revenue which we should be saving in its entirety? The myriad urgent needs today supersede savings for the long term when easy revenue is available. This becomes akin to a coalition of Bootleggers and Baptists¹⁶ - rent seekers look to extract value, and the present generation argue for the benefits that they will receive.

“Taxation” confuses further: “Revenue,” “tax” and “sale of asset” are all used in language analyzing minerals. The “taxes” terminology creates issues not raised in our note. Raising taxes are often politically unpopular. Labelling mineral receipts “taxes” makes the public support reducing the royalty rates, when it would often be in their interest to increase the royalty rate. In the US, this is exacerbated by the Taxpayer Protection Pledge of Americans for Tax Reform, which requires signatories, largely Republicans, to oppose any and all tax increases.¹⁷

We see this dynamic in Alaska. Increases in oil taxes, income taxes or sales taxes are opposed by the Republican controlled senate. On the other hand, drawing from the commons (diverting from the Permanent fund or dividend) is not considered a tax, when it is in effect a per-head tax – compulsory and unrequited. Just due to terminology, the Democrat controlled house finds it easier to advocate drawing from the commons by reducing the Permanent Fund Dividend. The inappropriate “taxation” terminology makes it even harder for ordinary citizens to uncover the reality.

“Windfall”: This appellation is given both to (a) new discoveries of large mineral deposits, as well as to (b) mineral receipts at times of commodity booms when the price of minerals, and by extension, the royalty, soars. Metaphorically, “windfalls” are unpredictable, cannot be planned for or managed, and an opportunity that should be taken. It is true that “windfalls” are not a part of any of the standards. However, it is a metaphor for minerals used in resource extraction discussions.

Discoveries as “windfalls”: Discoveries are called “windfalls”. Suppose someone inherits a huge estate from a distant uncle. After a few days, he notices a Picasso. Did he become richer when he “discovered” the Picasso? No, he was already the owner of the Picasso, and would eventually have noticed it. If someone stole it and our protagonist later found out, could he recover the painting? Of course he can, it was his property.

¹⁵ From real life experience, it is difficult to counter the revenue narrative.

¹⁶ https://en.wikipedia.org/wiki/Bootleggers_and_Baptists

¹⁷ <http://www.atr.org/about-the-pledge>

Similarly, what we discover today, we inevitably would have discovered tomorrow. And we will likely discover more value within our mineral.¹⁸ As technology improves, less can stay hidden. The windfall label gives a licence to consume – we are wealthier. It also creates an urgency to act – someone else will pick up the windfall if we don't. But like the Picasso, we always owned the minerals, whether we knew it or not, and will continue to own it.

Commodity booms and “windfalls”: Commodity booms are also called “windfalls”, implying an unpredictable process, and by extension, one that cannot be managed. It is clear that a significant proportion of the economic rent is created during the boom in a commodity cycle, when prices are high. Selling more minerals at the peak of a boom is what a normal, logical, prudent investor would do. A “windfall” appellation distracts from the correct strategy of (a) sell when prices are high, and (b) ensure zero loss through the price cycle.

Examples of the mixed metaphors

We would like to open by saying each of the entities whose examples we use below have done stellar work on addressing the Resource Curse. Examples of the mixed metaphors are everywhere, the entities have been chosen as they are important. Underlining ours.

The titles of recent IMF reports include "International Taxation and the Extractive Industries"¹⁹; "The Taxation of Petroleum and Minerals"²⁰; "Administering Revenues from Natural Resources"²¹; & "Template to Collect Data on Government Revenues from Natural Resources"²². A quote from a 2012 IMF presentation on mining sums it up: "Recognize revenues as transformation of finite assets in the ground into other assets."

The issue is widespread. EITI's principles include "(3) We recognise that the benefits of resource extraction occur as revenue streams over many years and can be highly price dependent. (4) We recognise that a public understanding of government revenues and expenditure over time could help public debate and inform choice of appropriate and realistic options for sustainable development. ... (8) We believe in the principle and practice of accountability by government to all citizens for the stewardship of revenue streams and public expenditure."

Publish What You Pay (PWYP)'s = Mission is to be: "a global network of civil society organisations united in their call for an open and accountable extractive sector so that oil, gas and mining revenues improve the lives of women, men and youth in resource-rich countries."

The Natural Resource Charter includes: Precept 4 - Taxation; Precept 7 - Revenue Distribution; and Precept 8 - Revenue Volatility.

¹⁸ For example, Goa's iron ore also contains gold and rare earths. The material above the iron ore (overburden) has manganiferous clays, dolomite, red oxide, etc. Just mining for iron ore destroys these other values that may not be recognized today.

¹⁹ <https://www.routledge.com/International-Taxation-and-the-Extractive-Industries/Daniel-Keen-Swistak-Thuronyi/p/book/9781138999626>

²⁰ <https://www.routledge.com/The-Taxation-of-Petroleum-and-Minerals-Principles-Problems-and-Practice/Daniel-Keen-McPherson/p/book/9780415569217>

²¹ <https://www.imf.org/en/Publications/TNM/Issues/2016/12/31/Revenue-Administration-Administering-Revenues-from-Natural-Resources-A-Short-Primer-41604>

²² <http://www.imf.org/external/pubs/ft/gfs/manual/pdf/templatedata.pdf>

Action sought from the IMF

We would like IMF to resolve that treating mineral receipts as the sale of inherited capital is appropriate. Consequently, in future, the language used in its official publications must reflect this position consistently (except when unavoidable, but preferably within quotes). All references to “revenue”, “windfall”, “taxes”, etc. must be deliberately removed from report titles, content of reports, names of aggregates (no more “rent from minerals”), etc.

For the confusion to disappear, the treatment for statistics and accounting must also change quickly.

Fiscal policy and our passive benchmark

If minerals are a shared inheritance, a part of the commons, then mining is the sale of the family gold. The objective is to maintain the principal value while earning higher returns – otherwise, it is a consumption of capital. This policy has three steps: (i) sell the asset ideally without a loss, (ii) save everything in new non-wasting assets (hence converting one form of capital to another), and (iii) consume the income only if the capital has been kept whole. How is this to be achieved in practice?

Active management of fiscal policy

As with asset management, it is tempting to recommend active management of the fiscal policy. There are many credible proposals for improving either the growth rate itself (infrastructure) or a more progressive distribution (universal health / education / work / food). It is argued that in under-developed locations, the optimal fiscal path may even be to sell for a loss, as the returns on investment into physical / human capital assets will rapidly pay off. Alternatively, it is posited that since the government is capital starved, real investments are a better choice compared to either saving in a future generations fund or distributing the real income. We are sceptical.

Global disaster

We have documented extremely high loss rates over long periods for iron ore and fossil fuels in India. IMF data shows significant losses of the value of minerals are common – a minimum of 15% for oil and 35% for minerals.²³ In other words, mineral receipts do not exceed 85% of the value of the oil and 65% for minerals.

Saving rates from mineral receipts are far below 100%. In fact, IMF’s own estimates are that for 2000-2008, the average savings rate (in financial assets) for resource rich economies was around 35%.²⁴ Of the 65% spent, only around 33% was capital spending.²⁵ In other words, around 43% of the mineral receipts were spent. The efficiency of public investment was also very poor. Only about half of public investment effort translates into actual productive public capital.²⁶

If we use IMF data and assume a 10% loss rate, 35% of the amount captured saved in financial assets, 1/3rd of the balance utilised in public investment, whose efficiency in resulting in productive capital is 50%, then we see the following results:

²³ [Fiscal Regimes for Extractive Industries: Design and Implementation](#), para 64

²⁴ Figure 1.17 in the IMF [Fiscal Monitor – The Commodities Roller Coaster](#) (Oct 2015)

²⁵ Figure 1.12 in the IMF [Fiscal Monitor – The Commodities Roller Coaster](#) (Oct 2015)

²⁶ Figure 1.13 in the IMF [Fiscal Monitor – The Commodities Roller Coaster](#) (Oct 2015)

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| Experience in converting mineral capital into other kinds of capital | | | |
|--|-----------------------------|----------------|-----------------|
| | Estimates based on IMF data | | Our benchmark |
| Mineral capital extracted | | \$100.00 | \$100.00 |
| Loss in value to extractors | 10% loss rate | \$10.00 | \$0.00 |
| Mineral receipts | | \$90.00 | \$100.00 |
| Of which: Financial assets | 35% saved | \$31.50 | \$100.00 |
| Balance spent (by politicians) | 65% spent | \$58.50 | \$0.00 |
| Of which: Public investment | 1/3rd | \$19.50 | \$0.00 |
| Wasted investment | 50% | \$9.75 | \$0.00 |
| Useful investment | 50% | \$9.75 | \$0.00 |
| Consumption | Balance | \$39.00 | \$0.00 |
| (Bold rows add up to \$100) | | | |
| Summary | | | |
| Total investment | | \$41.25 | \$100.00 |
| Loss to the economy | | \$58.75 | \$0.00 |
| Loss to the commons | | \$68.50 | \$0.00 |
| Useful public investment | | \$9.75 | \$0.00 |
| Amount spent by politicians | | \$58.50 | \$0.00 |

For every \$100 of minerals extracted, \$31.5 is saved in financial assets (earning the market rate of return, like our benchmark) and \$9.75 of useful public investment achieved, for a decline in net worth of \$58.75. The estimates of wasted and useful investment would have assumed a discount rate, which is unlikely to be higher than the market rate of return. Hence, the useful public investment cannot recoup the loss.

In the example above, only \$31.50 is still a part of the commons. The distribution of wealth has likely deteriorated significantly.

Goa Foundation's Benchmark

We further argue that a specific program can mitigate much of the resource curse. The rationale is grounded on the Public Trust Doctrine (the state holds natural resources as a trustee on behalf of the people and especially future generations) and the Intergenerational Equity Principle (what we inherit, we must pass on).

The core can be simplified to “get all, save all, share all” – (i) zero loss mining (capture the entire economic rent), (ii) save all the capital receipts only in a future generations fund²⁷ with inflation-proofing, and (iii) distribute only the real income only directly to the people as owners, a commons dividend. A loss of the inherited capital is a loss to everyone alive now and all future generations.

If the financial markets are small relative to the mineral receipts, or the resource exports are large, then the Future Generations fund should be invested externally. This avoids both Dutch disease (exchange rate appreciation due to resource exports resulting in the uncompetitiveness of exporting sectors, especially manufacturing) as well as volatility on the capital account due to commodity price volatility.

²⁷ With real investments, some countries have an asset management structure that can retain the nature of the commons and pay out a dividend (eg, Temasek in Singapore).

Goa Foundation

Our benchmark is likely to produce the market rate of return, and retains the nature of the commons. An active fiscal path has a stiff benchmark to outperform. Practically, Norway's Sovereign Wealth Fund (SWF) has been achieving real returns of 3.8%. Like an Index fund, our program can act as a benchmark for evaluating proposals for active fiscal paths.

Absolute standards easy to administer, monitor and defend: Our benchmark uses absolute standards (zero loss, save all (zero consumption, zero physical investment), share all). Miners and governments would find it administratively easier. The standards are easier to monitor by the people and defend from political attack. Even if we start with 1% of mineral receipts going to the government, with budget crises, real or manufactured, this proportion will tend to increase to 100%.

There are a number of other important reasons for our choice of absolute standards. Please read [Why 100% to Permanent Fund](#) and [Why income distribution only as Citizen's Dividend](#).

Implementable: We have made detailed proposals for how this framework could be implemented in the context of iron ore mining in Goa.²⁸ We have received broad support, including from a miner, a mining affected tribal leader and a mining dependent trade union leader.

Meets important criteria

Meets intergenerational equity & the sustainable yield principles: Under our policy, mineral capital is converted into a financial perpetuity. The capital is protected and the sustainable income is distributed equally to all. Each generation benefits from the income in its time. In economic terminology, it is a combination of a loss rate of 0%, a bird-in-hand rule fund²⁹, and distributing the real income only as a commons dividend.

Achieves growth and distribution objectives: The mineral commons become the financial commons, earns the market rate of return, and the income is distributed to the commoners as a commons dividend. As long as some of the distributed income is saved, the economy will grow and the capital we bequeath will increase. This meets both the growth and distribution objectives of the economy.

Follows principles of property rights: The Goa Foundation (GF) Benchmark is logical from the perspective of property rights – mineral commons are transformed into the Future Generations Fund commons, and the real income from the fund is distributed to the commoners. Nothing could be fairer, or more equal.

Reducing theft from the commons: Under the status quo, minerals are a concentrated source of great wealth. Consequently, minerals draw rent seekers such as miners, politicians and even citizens. Under our proposal, the commons dividend creates an endowment effect (ascribing more value to things merely because they know they own them) in citizens, creating an interest in maintaining the mineral / future generations fund commons. The zero loss target puts pressure on the miners benefiting unfairly. The capital is then sequestered from the politicians through the Future Generations Fund & the commons dividend.

Simplicity: Active fiscal paths require continuous decisions as to:

²⁸ [Intergenerational Equity Case Study: Iron-ore Mining in Goa](#) describes this framework as being argued at the Supreme Court (https://www.academia.edu/31511752/Intergenerational_Equity_Case_Study_Iron-ore_Mining_in_Goa.) The Goenchi Mati Manifesto (goenchimati.org/manifesto) provides a popular précis.

²⁹ Where the capital is invested and only the real income is spent – investor preferences for dividends

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- (a) how much of the mineral receipts to be consumed (either under the Permanent Income Hypothesis, or simply as revenue),
- (b) how much public investment (limited by the absorption capacity of the economy), and the balance to be saved (in Stabilization or Future Generations Funds).

These decisions become even more difficult with commodity price volatility (permanent income fluctuates!) Eventually, the powerful bend these decisions to suit their preferences, usually towards higher consumption (for patronage) and higher physical investment (to benefit from the associated corruption).

| Systems of thinking & our passive benchmark | |
|---|--|
| Economics | Purpose is growth in consumption (average). A second purpose is inclusion, growth in consumption should be progressive (distribution) |
| - Private property | Mineral commons transformed to financial commons, income shared with commoners |
| - Mineral economics | Hartwick's Rule |
| - Ecological economics | Intergenerational equity, weak sustainability, polluter pays principle |
| Finance | Lump sum capital converted into perpetuity |
| Accounting | Stock of capital held constant; capital generates income |
| Law | Public Trust Doctrine (state is trustee for people and future generations); Intergenerational Equity Principle (inheritances should be transmitted); Equality; Common Good; Property law |
| - Inheritance | "entails" – part of inheritance law, even in the West until the last 200 years |
| - Endowments | Endowments; Waqfs; Permanent Funds |
| - Environment | Public Trust Doctrine; Intergenerational Equity; Sustainable Development |
| Customs | Inheritance customs of the rich "Selling the family silver" viewed negatively |
| Moral | Everyone treated equally, future generations at least as well off |
| Religion | Golden rule – treat everyone as you would want to be treated |
| Values | Fairness, fraternity, justice, equality, liberty & freedom |

Broad roots: Interestingly, the GF Benchmark has support in law (combination of the Public Trust Doctrine & Intergenerational Equity Principle)³⁰, in consonance with environmental economics³¹, maintains the property rights of commoners, is seen as fair, ethical, just, right, and moral, is in keeping with many inheritance customs, and is arguably a partial implementation of the golden law of religions. The **moral and legal grounding** makes it easier to sell and easier to defend from political attack.

Improves the social contract: If the government needs money for good projects, it should convince the people to pay higher taxes. That will increase the discipline on the government, improving governance. The state may opt to tax the commons dividend explicitly. States which manage to follow the GF Benchmark are also likely to be viewed as better credit risks by the capital markets.

³⁰ See [Government of India's Economic Survey 2017-18](#)

³¹ [Intergenerational Equity Case Study](#)

Basic income included: The commons dividend is a Universal Basic Income (but not a Minimum Income), with all its benefits. This may be the strongest reason to adopt the benchmark.

Cognitively easy: Our benchmark is relatively simple for ordinary people to understand. Inheritance customs and experiences with common pool resources, cooperatives and mutuals make mental analogies easy.

Broad appeal: A key part of our design is the equality of the commons dividend, which tends to promote fraternity. A progressive (unequal) distribution fractures the people into different interest groups that each argue for larger shares.

It should be acceptable across most of the spectrum of economic thought as well as political ideology.

People outside mining areas now have a reason to engage with mineral policy – mining losses impact them as well, both financially and in performing their duty to their children.

Mining companies with integrity would prefer to pay the economic rent directly into Future Generations Funds. This can make them more competitive in corruption-ridden economies.

Deals with “development vs. environment” and climate change skeptics: Even someone who wants development and is willing to risk climate change would want our benchmark implemented – mining continues, in a more positive way. If they accept that the mineral capital should be saved for future generations, the forests on top of the mineral are obviously also a part of the shared inheritance. Caps on extraction and compensation for the damage become integral to achieving intergenerational equity.

Politically feasible: Our benchmark is essentially a combination of zero loss (an unarguable target), the Norway oil fund, and the Alaska Permanent Fund Dividend.

Practical extensions

Integration with Ecological Economics³²: This framework can be extended to ecological economics and harmonised with sustainable development, weak and strong sustainability and the polluter pays principle and the precautionary principle. In essence, the first constraint is the precautionary principle – don’t cause a catastrophe, don’t even risk a catastrophe. This sets overall limits or caps on the factors causing damage to stay within safe limits. For damage caused within these limits, the approach is first to avoid, then minimise, create new assets (plant forests) in lieu of the damage, or finally compensate in monetary terms.

We can then look at mining holistically. In essence, we need to (a) list out all the assets impacted by mining; (b) analyze each one to see if a cap is required; (c) if there is a loss / reduction of an asset, then it must be valued and compensated for. In mining, a partial list of assets includes (i) the environmental being damaged, (ii) the economic rent, (iii) the income from the extraction activity

³² [Intergenerational Equity Case Study](#)

(which depletes with the mineral)³³, (iv) real option of when to mine (see annex 2), and (v) the real option of what to do with the mineral³⁴.

Natural extensions: This framework also logically encompasses a family of alternatives such as carbon tax + dividend, pollution cap + dividend, spectrum auction + dividend, land tax + dividend, etc.

Strengthening the benchmark

How do we strengthen the motivation and ability of the people to protect their great wealth or their commons from enclosure. If we look at the problem of protecting great wealth, there are essentially 3 strategies:

- (a) Few trusted insiders protect the wealth. This almost always fails (“Indiana Jones”). If the sums are large enough, insiders can be tempted for themselves, or by thieves. Tutankhamun was a minor pharaoh, famous only because his was the first tomb with lots of gold that previous raiders hadn’t found.
- (b) Common responsibility. Keep our common wealth where everyone can see and protect it. The commons dividend gives the populace reason to protect the commons. Radical transparency on all stages of the value chain is required to stop the thieves.
- (c) Forget about it as wealth creates too many problems in society. Throw it away (“The Gods must be crazy”). Essentially, it’s better not to extract at all, it’s safer underground.

Transparency: The current push for increasing transparency in extractives is a natural fall-out of salience of the “sale of assets” metaphor, leading to the idea that we have to prevent losses to our assets. Losses caused by insiders are a prominent risk to be controlled. This applies especially to extractives as they are often the single largest store of wealth.

Control systems: As minerals are often the greatest wealth, the controls must be commensurate. More effort in developing strong control systems is required. Along with strong controls, we also need whistleblower rewards and protection.

Learning from our accumulated wisdom

A common strategy is to make the wealth sacred. Nature is sacred to traditional societies as it gives sustenance to the people. Kings ruled in the name of deities, and the royal treasuries were in the temple, protected by the deity. Some indigenous people deny the morality of private property rights.

Another strategy is the idea of the “rope of mankind³⁵”, creating a moral link across generations. The primary objective is the perpetuation of mankind. We worship our ancestors for bequeathing life, nature and society to us, and we hope that our future generations will venerate us in their turn. Or think favourably of us when they write their history of us. For that, surely we must achieve at least intergenerational equity (maintaining the capital stock) and ideally leave a bequest (accumulating capital). And of course have future generations to venerate us.

³³ Hence the calls for the incremental employment to be local

³⁴ Hence the calls for minerals to be processed or refined locally

³⁵ <http://maaori.com/whakapapa/whakapap2.htm>

Open issues

We would be the first to concede that there are open elements in our benchmark that need further analysis. These include:

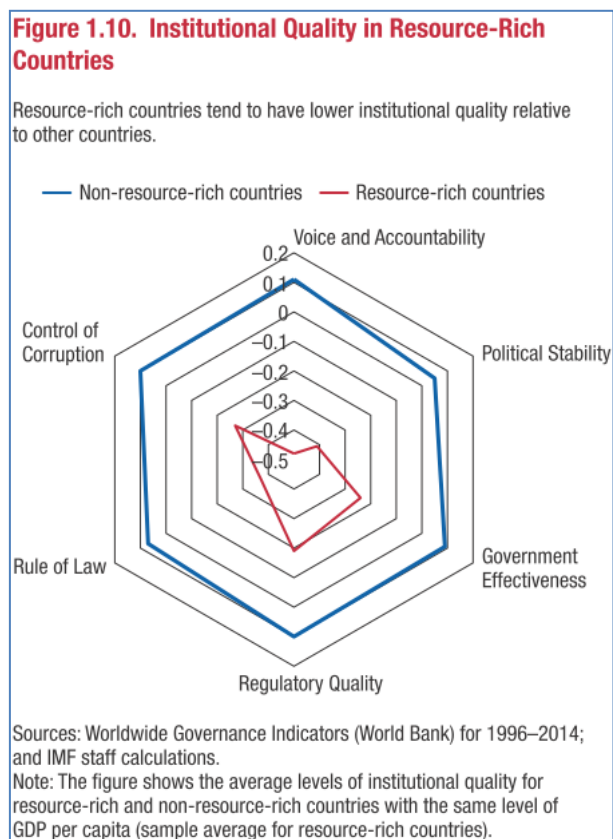
- 1) How to avoid situations like Kazakhstan where the wealth effect (increased consumption due to feeling wealthy) lead to a debt boom which lead to a bank bailout funded by raiding the Future Generations fund?
- 2) How should the Intergenerational Equity principle be applied to (a) the opportunity to earn income from mining and the real options of (b) when to extract, (c) how to use the mineral?
- 3) When and to what extent should we convert our minerals to other forms of capital? Presumably, part of this decision will involve portfolio theory (how much of the wealth to retain as minerals, given that it has different risk characteristics from financial wealth).
- 4) We posit that any theft from the 3-stage cycle creates incentives which tend to worsen the situation. The GF Benchmark seems to be a knife-edge equilibrium, any deviation leading to failure. How do we strengthen the system? Can we help it self-correct? What can we learn from behavioural economics, Ostrom's principles, evolutionary economics, game theory, etc.?

There are many other open questions, and we would be happy to work with the IMF in developing a research programme to study them.

Benchmark vs active fiscal policies

The global experience is relatively short. Yet when we examine the numerous paths taken by countries which start with good intentions and eventually fall prey to the resource curse,³⁶ it seems that any deviation is corrosive (a knife-edge equilibrium). Losses upfront encourage corruption. Diversion from the fund or dividend is easy money to the government that encourages corruption and brings volatility to the government finances along with it.

In theory, governments with good institutions may exceed our benchmark through alternative fiscal paths in limited circumstances. However, good institutions are rare in resource-curse-stricken countries. The accompanying Figure 1.10 is from IMF's Oct 2015 Fiscal Monitor.



³⁶ For example, Nauru, Alaska, Chad, Kazakhstan

Action sought from the IMF

At a minimum, alternative fiscal paths must be compared ex-ante with our program as a default. Ex-post analysis must be mandatory. The IMF could take the following steps:

1. Incorporate Loss Rates into the FARI model
2. Develop a model for the full fiscal cycle of converting minerals into other non-wasting assets of at least equal value and earning a real return in excess.
3. With estimates of loss rates (WB mineral depletion series – mineral receipts), savings rates (IMF) and returns on public expenditure (IMF), it should be possible to estimate how alternative fiscal paths have performed, and are likely to perform. Comparison with our benchmark program would be even more illuminating. This could be added to the IMF Natural Resource Fiscal Transparency Code.
4. IMF should consider creating a global asset management entity that can manage SWFs for smaller nations. They could provide an expropriation guarantee as well. Mineral receipts can be directly deposited into the fund, and commons dividends can be paid out as well.³⁷

Conclusion

Is changing accounting standards sufficient to stop the resource curse? No. Will changing accounting standards plus a shared inheritance metaphor solve the resource curse? No, but we hope it will lessen the severity of the curse. The changes will help see the problem clearly, and give better data for finding solutions.

Will the GF benchmark in addition be sufficient to solve the resource curse? No, risks like those witnessed in Kazakhstan still exist. There are likely other ways thieves will find to get their hands on this great wealth. We will need to be eternally vigilant.

However, we believe that the combination of the three will be a very significant improvement on the current management of minerals. Political change will occur as government budgets do not benefit directly from extraction. Commodity price volatility, which currently afflicts Venezuela, Alaska, Saudi Arabia, among many, would be tempered. Coupled with the commons dividend, corruption would likely be reduced. Commoners in resource rich economies are likely to be better off. And perhaps future generations may remember us for stopping the squandering of their inheritance.

³⁷ This could be adapted for Leif Wenar's Clean Hands Trust proposed as part of the [Clean Trade system](#)

Annex 1: Statistics & Accounting

Mineral accounting in the Government Finance Statistics Manual (GFSM) 2014

The treatment of natural resources in the [GFSM 2014](#) explicitly follows that from the SNA 2008. Rent is defined in 5.122, and would seem to include mineral receipts. Paras 5.124, read with 8.54, A4.19 and 10.52 indicate that when minerals are used to extinction, it should be treated as a sale of assets. Para A5.35

The GFSM Appendix 4 Some Cross-Cutting Issues discusses Resource Leases (A4.16) as well as Licences and Permits to use a Natural Resource. Mineral and energy resources are discussed in A4.35, and require recording mineral rents as rent and the asset depletion in the Other Changes in Assets Account. The footnote refers the rationale back to 17.343 of the SNA 2008. **Note that capital is converted into revenue!**

"A4.35 Mineral and energy resources differ from land, timber, and fish in that, although they also constitute a natural resource, they cannot be used sustainably. All extraction necessarily reduces the amount of the resource available for the future. This consideration necessitates a different set of recommendations for how transactions relating to their use should be recorded.

- *When a unit, such as government, owning a mineral or energy resource cedes all rights over it to another unit, this constitutes the sale of the resource classified as mineral and energy resources (3142). Like land, mineral resources can be owned only by resident units; if necessary, a notional resident unit must be established to preserve this convention.*
- *When a unit extracts a mineral or energy resource under an agreement where the payments made each year are dependent on the amount extracted, the payments (sometimes described as royalties) are recorded as rent (1415 or 2814). The depletion of the resource itself is recorded as other changes in the volume of assets.*

Footnote: The reasons for recommending the simple recording of payments each year from the extractor to the owner as rent and changes in the size and value of the resource as other changes in the volume of assets of the legal owner are given in the 2008 SNA, paragraph 17.343.

Development of mineral accounting in the System of National Accounts (SNA) 2008

The [analysis of Spectrum in 2000](#) forms the basis of natural resource accounting in the SNA. This was issued as a clarification for SNA 1993, and then incorporated into [SNA 2008](#). Underlining ours.

"Four options were considered for the treatment of the purchase of the licence:

- (i) payment of taxes*
- (ii) purchase of services*
- (iii) payment of rent*

(iv) the purchase of an asset.

Treatment as taxes was ruled out because the payments for licences are neither compulsory nor unrequited; indeed there is fierce competition to make the payment. The purchase of a service was also ruled out because the payments made are clearly out of all proportion to the costs to government of making the spectrum available to the licensee. By elimination, therefore, the licensee is acquiring access to an asset. The asset could be either rented by the owner or sold to the licensee. The first question was the nature of the asset involved because the radio spectrum is not explicitly included in the 1993 SNA classification of assets. The ISWGNA considered it fits best into the category of tangible non-produced assets, which are described as covering "mainly land and subsoil assets" (paragraph 7.87). In addition, the right to use the spectrum could be treated as a new asset separate from the spectrum itself. This asset, the licence in a narrow sense, is a legal construct and thus would be classified with other legal constructs as an intangible non-produced asset. The choice between options (iii) and (iv) above is thus between the rent of the spectrum (option (iii)) and the creation and purchase/sale of the licence as an asset in its own right (option (iv)). Payments for the licence can consist of (1) an upfront payment, (2) regular payments at specified intervals, or (3) a combination of these two.

The means of payment does not directly affect the classification as rent or purchase of an asset. The ISWGNA considered that the licence should be regarded as the acquisition of an asset if it is issued for a term of more than one year; if the licence is for one year or less, then it does not represent an asset and the payments should be recorded as rent.

The ISWGNA reviewed this decision on 21 September 2000 at its regular bi-annual meeting in the light of papers being presented at the OECD meeting of national accounts experts in the following week. The ISWGNA considered that no new arguments were being advanced and thus the decision taken at the June meeting should remain its collective view. Also it considers there is no need to formally change the 1993 SNA specifically to handle this case though some clarification of the issues may be helpful.

Extracts from the SNA 2008 (bold in original, underline ours)

The key paragraphs on accounting for minerals are 7.109, 13.50 & 17.343. The SNA 2008 Research Agenda includes Leases to use or exploit natural resources (Annex 4 E 2, paras A4.48-A4.51) due to inconsistent treatment of different natural resources.

7.109 Rent is the income receivable by the owner of a natural resource (the lessor or landlord) for putting the natural resource at the disposal of another institutional unit (a lessee or tenant) for use of the natural resource in production. The terms under which rent on a natural resource is payable are expressed in a resource lease. A resource lease is an agreement whereby the legal owner of a natural resource that the SNA treats as having an infinite life makes it available to a lessee in return for a regular payment recorded as property income and described as rent. A resource lease may apply to any natural resource recognized as an asset in the SNA. For resources such as land it is assumed that, at the end of the resource lease, the land is returned to the legal owner in the same state as when the lease started. For resources such as subsoil assets, though the resources potentially have an infinite life, they are not all returned to the legal owner at the

end of the lease since the purpose of the lease is to permit extraction and disposal of the resource. Although the resource may suffer depletion in excess of any new discoveries or re-evaluations (or natural replenishments for renewable resources) the fact that rent is shown without deduction for any consumption of natural resources means that, in the SNA, the resource is effectively treated as having an infinite life as far as income generation is concerned.

This is obviously problematic for minerals, as the para itself indicates.

13.50 It is frequently the case that the enterprise extracting a resource is different from the owner of the resource. In many countries, for example, oil resources are the property of the state. However, it is the extractor who determines how fast the resource will be depleted and since the resource is not renewable on a human time-scale, it appears as if there has been a change of economic ownership to the extractor even if this is not the legal position. Nor is it necessarily the case that the extractor will have the right to extract until the resource is exhausted. Because there is no wholly satisfactory way in which to show the value of the asset split between the legal owner and the extractor, the whole of the resource is shown on the balance sheet of the legal owner and the payments by the extractor to the owner shown as rent. (This is therefore an extension of the concept of a resource rent applied in this case to a depletable asset.)

There is a valid issue with splitting the value of the asset. However, it is not clear why this requires the payments to be shown as rent. The [UN SNA 2008](#), Ch 17: Cross-cutting and other special issues, Q Licences and permits to use a natural resource, para 17.343 says (underlining ours):

17.343 The owner (in many but not all circumstances government) does not have a productive activity associated with the extraction and yet the wealth represented by the resource declines as extraction takes place. In effect, the wealth is being liquidated with the rent payments covering both a return to the asset and compensation for the decline in wealth. Although the decline in wealth is caused by the extractor, even if the resource were shown on the balance sheet of the extractor, the rundown in wealth would not be reflected in the extractor's production account because it is a non-produced asset and thus not subject to consumption of fixed capital. (The SEEA 2003 describes a form of satellite account where such a deduction from national income can be made for minerals as well as for other natural resources used unsustainably.) For these reasons, simple recording of payments each year from the extractor to the owner as rent and changes in the size and value of the resource as other changes in the asset accounts of the legal owner is recommended.

It is not clear to us how there is a return on an asset where mineral leases are concerned.

Annex 2: Other issues raised

The future will be richer, technological progress, PIH

A frequent argument is that technological progress @ [0.5%] per annum is likely, and hence the future will be richer, and therefore we may consume from our capital today. If we assume our species will last for millions of years, this is at best a conjecture as it ignores volatility in the path.

We only have to look at nations such as Nauru and Iraq to see that the future is not always richer. Surely they would have been better following the GF Benchmark. It is of no comfort to people of these nations that the world as an aggregate has become richer. Empirically, the World Bank found resource dependent countries were becoming poorer.

The future will be richer conjecture also assumes that there are no large scale set-backs to technological progress. The dark ages are a recent example of large parts of the world being poorer than their ancestors were. Colonisation made many parts of the world poorer, even technologically.

We should also note that there are wildly diverging forecasts for future growth. Here are 4 examples (a) singularity, when growth becomes exponential, (b) 0.5% technological progress, (c) those alarmed by climate change, expecting widespread disruption (negative growth), and (d) the doomsday clock, that is currently the closest ever to midnight. It is not apparent why 0.5% is a superior long term forecast. Is it simple anchoring?

Even if we accept the future will be richer, and the present can therefore consume capital, then logically we should be continuously dis-saving across the entire economy, so that we equalise consumption over time. The dis-saving recommendation is at odds with the general recommendation for economies to boost savings rates and thereby growth rates. If growth & bequests are objectives, consuming capital is clearly its anti-thesis.

From a utilitarian perspective, since the market rate of return is likely to be higher than the social discount rate³⁸, the GF Benchmark has positive utility. Consumption would have negative utility.

These objections also apply to fiscal paths based on the Permanent Income Hypothesis (PIH), which argues that with a discovery, people feel richer, and since extraction takes time, it is better to consume some of the capital initially order to balance out consumption over time.

Reservation prices and when to sell

People alive today inherited the minerals because no previous generation extracted them. If the present generation extracts the minerals, no future generation can do so. An analogy may help. Imagine a person running a marathon, and has a bar of chocolate that can provide an energy boost. When in the race does this person consume the bar of chocolate?

³⁸ [How should Benefits and Costs be discounted in an Intergenerational Context? Views of an Expert Panel](#) by Arrow, et al., *Resources for the Future Discussion Paper No. 12-53* (2013)

Now consider a relay race of marathons, and the previous generation has handed the present generation the bar of chocolate. Does the present consume it, or does it hand it on for the millions of following generations to manage? The present generation must be sure that it can implement, in real life, a path that will make the commons whole again, and earn income over that for the risk and trouble. Future generations must not be cheated.

Technically, this is a decision of the optimal time to exercise a real option to sell the minerals. Commodity price volatility and the long time to expiration make it valuable. Extraction exercises the option.³⁹ Different assets have different risks. Part of the decision should include portfolio diversification.

We hypothesize that in this perspective, owners of minerals would be less disposed to sell their inheritance, and are likely to require a reservation price on their minerals. While an ad-valorem royalty also effectively sets a reservation price linked to the cost of extraction of the mineral, there is no guaranteed minimum amount. If costs reduce, the minimum royalty can reduce as lower prices can be economic for the extractor.

We note that a producer cartel for a fossil fuel reservation price would have impacts similar to a consumer carbon tax. Happily, it would extend to other unsustainable uses such as for plastics and fertilizer. The IMF should explore this possibility.

Government Take

Questions were raised why we critique "Government Take" as a flawed metric & prefer "Loss Rates". We are drawing on the detailed critique in [Catastrophic Failure of Public Trust in Mining: Case Study of Goa](#).

If we are earning revenues, maximising revenues is the logical objective. While setting tax rates, the optimal taxation level is the objective. When selling an asset, we seek to avoid a loss, i.e., get the full value. Government Take is designed to maximising revenues for governments, in keeping with the revenue metaphor. We argue Loss Rate is more appropriate for selling assets such as minerals.

Government Take is inferior as (a) it doesn't have an ex-ante target, while the target Loss Rate is 0%, and (b) Government Take rates are not comparable across projects (e.g., which mine should we start, which auction / contracting structure should we use), while Loss Rates are.

In order to calculate Loss Rates from Government take, we need the desired rates of return by the investors of capital. There could be errors in estimating the desired rates of return, but they can be estimated.⁴⁰ Financial investors and researchers do it all the time. The FARI model itself has numerous other inputs with probably similar estimation issues.

³⁹ It is possible to extract the mineral and stock pile it in anticipation of commodity booms. This separates the exercise of the option to extract (consume the chocolate) and the option to use the mineral (create products).

⁴⁰ Weighted Average Cost of Capital (WACC) is a frequently used metric.

Our calculations of Loss Rates

A related objection is to our calculation of loss rates in Goa, India.⁴¹ Only 5% of the economic rent has been captured by the owner, the state of Goa. This is clearly a loss of 95%, for which Goans should hold the Goa government accountable.

If we include the capture by the national government of 35%, the loss rate is still an unacceptable 60%. However, this is misleading. We are conflating the consideration received by the state government for the minerals it has sold, and the recovery by the national government as a taxation authority. The fiscal transfers from the national government to Goa state are not linked to the amount of taxes collected from Goa. Consequently, from the standpoint of the property rights of the owners, it is a loss of 95% of the value. Redistribution cannot be ignored or brushed away.

Thought experiment: would you sell gold jewellery to purchase a mutual fund, if the government imposed a 35% tax at the point of sale? Most likely, you would opt to keep the gold as is, awaiting a more favourable tax regime. Goa is selling its family gold. Its objective must be to receive and save 100% of the value of the mineral. This may require financial structuring to avoid the taxes, or it may require keeping the minerals in the ground.

⁴¹ The detailed critique is in [Catastrophic Failure of Public Trust in Mining: Case Study of Goa](#).