



**Role of mining in
national economies**

Mining contribution index

third edition, supplement

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ICMM team

Aidan Davy led the process to develop this index. Marcus Addy and Diane Tang-Lee compiled the macroeconomic data sets that make up the revised MCI and provided additional points of data analysis. Constructive contributions were provided by Fernanda Diez, Duncan Robertson and Nic Benton throughout the process.

Cover image

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Introduction

The third edition of the Role of Mining in National Economies (Romine) introduces an updated Mining Contribution Index (MCI). The MCI aims to synthesise into a single number – and an associated ranking – the significance of the mining sector’s contribution to 183 national economies. The last edition of the MCI was published in 2014, combining indicators including the proportion of a country’s GDP and exports accounted for by mining. In the 2016 Index: the Democratic Republic of the Congo, Mauritania and Burkina Faso are at the top of the list as the national economies which depend most heavily on mining.

The revised MCI – as a composite of four main indicators – is a useful starting point for understanding the extent of mining’s contributions to a country’s economy. However, it remains a compromise between what one would ideally like to measure and include and what can in practice be measured across all countries. In particular it does not yet capture various other factors that are highly significant in determining how effectively mining contributes to broader development.

In the first two editions, the MCI was derived based on the total contribution of mining to export earnings (2012), the change in export earnings in the preceding 5 years (which gives a

sense of whether mining is growing or diminishing in importance over time), and the value of mineral production expressed as a percentage of GDP. For this edition, one new indicator has been incorporated – mineral rents as a percentage of GDP. This makes four indicators in total, with each given one-quarter weight in the Index. Mineral rents are defined as production values minus ‘normal costs’. So they loosely approximate to the aggregation of tax and profit above ‘normal’ profits from mining.¹ Therefore the new indicator may have a relatively small numerical value but may also be quite volatile to changing circumstances such as downswings in mineral prices like those seen since 2011.

1. The World Bank publishes estimates of natural resource rents as a percentage of GDP for minerals and coal separately. It defines these rents as the production values of a range of minerals less their “normal” costs of production including an appropriate rate of return on investment. Mineral rents do not equate precisely with any national account statistic. Their addition to the MCI does add new information relative to the existing production value indicator.

Introduction

The MCI is a composite index comprised of four indicators, each capturing different aspects of mining's contribution to national economies:

- Mineral and metal export contribution 2014. Provides a measure for the scale of mining in relation to other productive activities, in particular for small, open and low- to middle-income countries.
- Increase/decrease in mineral and metal export contribution 2009–2014. Adds a dynamic component to the index by providing an indication of whether the importance of mining as an economic activity is growing or falling over time.
- Mineral production value expressed as a percentage of GDP in 2014. Provides a sense of scale of the value of production relative to the size of the economy. Note that it does not represent the contribution of mining to GDP – on average perhaps a third

of production value represents value addition to the national economy.

- Mineral rents as a percentage of GDP. Production values minus 'normal costs', which provides a clearer indication of tax and profit above 'normal' profits from mining.

The MCI results may demonstrate a greater degree of short-term instability as a consequence, relative to that shown by the previous Index. The new variable's inclusion in the Index is designed to help capture some sense of the margins associated with mining once all normal costs and normal profits have been taken into account.

The MCI is calculated as follows:

1. Countries are ranked in descending order for each of the four MCI indicators. Countries for which data does not exist are omitted.
2. Country percentile ranks are calculated based on the four

indicators, by dividing the country rank by the maximum rank within that indicator – to generate a ranking between 0 and 1.

3. The four MCI indicators are weighted equally at 0.25, summed up, and multiplied by 100. Where data are only available on three of the indicators, these are weighted equally at 0.33 each. Where are only available for two indicators these are weighted equally at 0.5 each. If the country only has available data for one indicator the country is given a zero score on the MCI. For the 31 countries which have available data for only two indicators or less, they have been omitted from the main data table and the rankings. However, available information for these countries is included at the end of this supplement.

Indicators included in the MCI data table (note only indicators in red are used to calculate the MCI)

Column	Indicator	Definition and sources
1	2016 MCI Rank	Country MCI rank in 2016
2	Country (* indicates non-UN country)	Countries in World Bank database, asterisks indicate non-UN countries and territories
3	2016 MCI score	Sum of weighted percentile ranks across selection variables
4	Metallic mineral, metals and coal export contribution 2014	Exports of metallic minerals, metals and coal (UNCTADstat data) as share of total merchandise exports
5	Change in min. exp. contr. 2009-14 (perc. points)	Difference between column no.? (indicator no. above) and the same indicator calculated for 2007, expressed as percentage points
6	Metallic mineral and coal production value 2014 (as % of GDP)	Total production value in US\$, average 2014 price (SNL Data 2016) expressed as percentage of GDP (World Bank data)
7	Mineral rent 2014 (as % of GDP)	Total mineral rents as a percentage of GDP (World Bank data - World Development Indicators)
8	Metallic mineral and coal production value 2014 (USD bn)	Total value of mineral and coal production, calculated at average price for 2014 (SNL Data 2014)
9	Human Dev't Index 2014	United Nations Development Programme
10	GDP per capita (USD) 2014 [(x)/(y)]	GDP per capita (World Bank data)
11	2014 MCI Rank	Country MCI rank in 2014
12	2012 MCI Rank	Country MCI rank in 2012

Mineral coverage of the original and revised production value dataset

Mineral	2016 Data	2014 Data	2012 Data
Antimony	•	•	•
Bauxite	•	•	•
Boron	•	•	
Chromite	•	•	•
Coal	•	•	•
Cobalt	•	•	•
Copper	•	•	•
Diamond	•	•	
Feldspar	•	•	
Fluorspar	•	•	
Gold	•	•	•
Graphite	•	•	
Gypsum	•	•	
Iron Ore	•	•	•
Lead	•	•	•
Manganese	•	•	•
Mercury	•	•	•
Mica	•	•	
Molybdenum	•	•	•
Nickel	•	•	•
Niobium	•	•	•
Palladium	•	•	•
Phosphate rock	•	•	•
Platinum	•	•	•
Potash	•	•	
Rhodium	•	•	•
Salt	•	•	
Silver	•	•	•
Sulphur	•	•	
Talc	•	•	
Tantalum	•	•	•
Tin	•	•	•
Titanium	•	•	•
Tungsten	•	•	•
Vanadium	•	•	•
Zinc	•	•	•
Zirconium	•	•	•

The MCI is a composite index comprised of four indicators, each capturing different aspects of mining's contribution to national economies.

Assessing the MCI: Correlation analysis

Introduction

The MCI in the previous edition of Romine was calculated as a weighted average of three indicators, each expressed as a percentile ranking. These were: (i) mineral production value expressed as a % of GDP; (ii) the contribution of metallic minerals, metals and coal exports as a % of total merchandise exports; and (iii) the change in the metallic minerals, metals and coal export contribution since 2009. In this third edition of the MCI, mineral rents as a % of GDP has been added to the MCI index as a fourth component.

In preparing the third edition some additional structural analysis has been undertaken to test the properties of the index and the impacts of adding additional indicators. The analysis considers the following perspectives of data correlation:

- **Homogeneity and unidimensionality:** all the components used to construct the index are chosen to measure essentially the same thing, ie the contribution of the mining sector to the national economy. For the index to succeed in doing so, the components need to be correlated to some extent and we need to assess whether or not they are.
- **Internal consistency,** or the degree to which the different items that make up the index are inter-correlated: internal consistency

is a necessary but not a sufficient condition of unidimensionality and hence, internal consistency also needs to be assessed.

- **The attenuation paradox:** increasing correlation between the components of the MCI may reduce the contribution of the extra information that is obtained by adding additional indicators. Strongly correlated items are arguably redundant, and including highly correlated components offers very little, if any, incremental information.

The MCI calculation presented a dilemma given the above perspectives. Perfect correlation among the four components would mean that all are pointing in the same direction (unidimensional) – but if that were the case the MCI would not need four indicators, as any one indicator would suffice to indicate mining's contribution to an economy and enable us to rank countries. New indicators should bring to the equation some new information – that is, they should not be fully correlated with the other indicators – while pointing in the same overall direction. In short, there should be some degree of correlation between the components of the MCI, but this should not be too high. There are no clear standards regarding what degree of correlation is considered acceptable in a 'good' index. However, Briggs & Cheek (1996) suggest that the correlation coefficients between component variables should ideally lie between 0.15 and 0.50.

Results

In assessing the MCI from these perspectives, the analysis has been divided into three component parts.

1. Components of the MCI and the MCI Index

- Our tests show that the correlation between the four components of the MCI (including mineral rents) and the overall MCI index ranges between 0.5 and 0.7, with the correlation being highest for export contribution (0.71), and lowest for change in export contribution (0.5). This means that all the components of the MCI have substantial predictive power, given that having high/low scores on any of the individual components would influence the overall MCI index score as well.

2. Correlation between the different individual components of the previous editions of MCI (ie between export contribution, change in export contribution and production value, without mineral rents)

- In order to assess if the components of the MCI are effectively measuring the same thing (unidimensionality), but are also adding additional information to the overall index (attenuation paradox) we also calculated the inter-correlation between individual components of the MCI index.
- We find that for all the years, export contribution and production value are

highly correlated, with the correlation coefficient ranging between 0.7 and 0.75. Given that the coefficient should ideally lie between 0.15 and 0.5, this raises a question over the incremental information added by including both of these variables in the Index.

- c. For the inter-correlations between export contribution and the change in export contribution, and production value and the change in export contribution, we find that the correlation coefficient varies widely between the years but is always below 0.3. For export contribution and the change in export contribution the correlation coefficient lies between 0.12 and 0.3, whereas for production value and the change in export contribution it lies between 0.02 and 0.26. So, as expected, the inclusion of the change in export contribution does add new information to the Index.
- d. For 2012 and 2016, the correlation coefficient for production value and the change in export contribution falls below the threshold of 0.15 suggested by Briggs and Cheek (1996), which raises a question about the degree of unidimensionality of the index. However, it should be noted that the change in export contribution was included in the index in order to capture some information about dynamic changes, and hence would be expected to have a relatively lower correlation with the other components, which are more static in nature. In short, the change in export contribution adds information but does not point in quite the same direction as the other indicators in terms of measuring mining's contribution to an economy.

3. Does the addition of mineral rents to the calculation of the 2016 MCI index add incremental information?

- a. In order to analyse the value addition of mineral rents to the MCI index, we calculated the inter-correlation of mineral rents with the other three components of the MCI (ie export contribution, change in export contribution and production value, as well as the overall MCI index).²
- b. We find that the mineral rents component has substantive predictive power over the MCI index, with the correlation coefficient ranging between 0.49 and 0.58. This implies that a high/low value for mineral rents would also influence the overall MCI index score: ie it improves the Index.
- c. In the context of inter-correlations, we find that mineral rents and production value are highly correlated, with the correlation coefficient ranging between 0.78 and 0.86. This is much higher than the range of 0.15 to 0.50 proposed by Briggs and Cheek (1996), and raises a question about the incremental information added by mineral rents (if the production value variable is also included) OR about the incremental information provided by production value (if the mining rents variable is also included).
- d. For the inter-correlation with export contribution and change in export contribution, we find that the correlation coefficient ranges between 0.65-0.66 and 0.04-0.20 respectively.

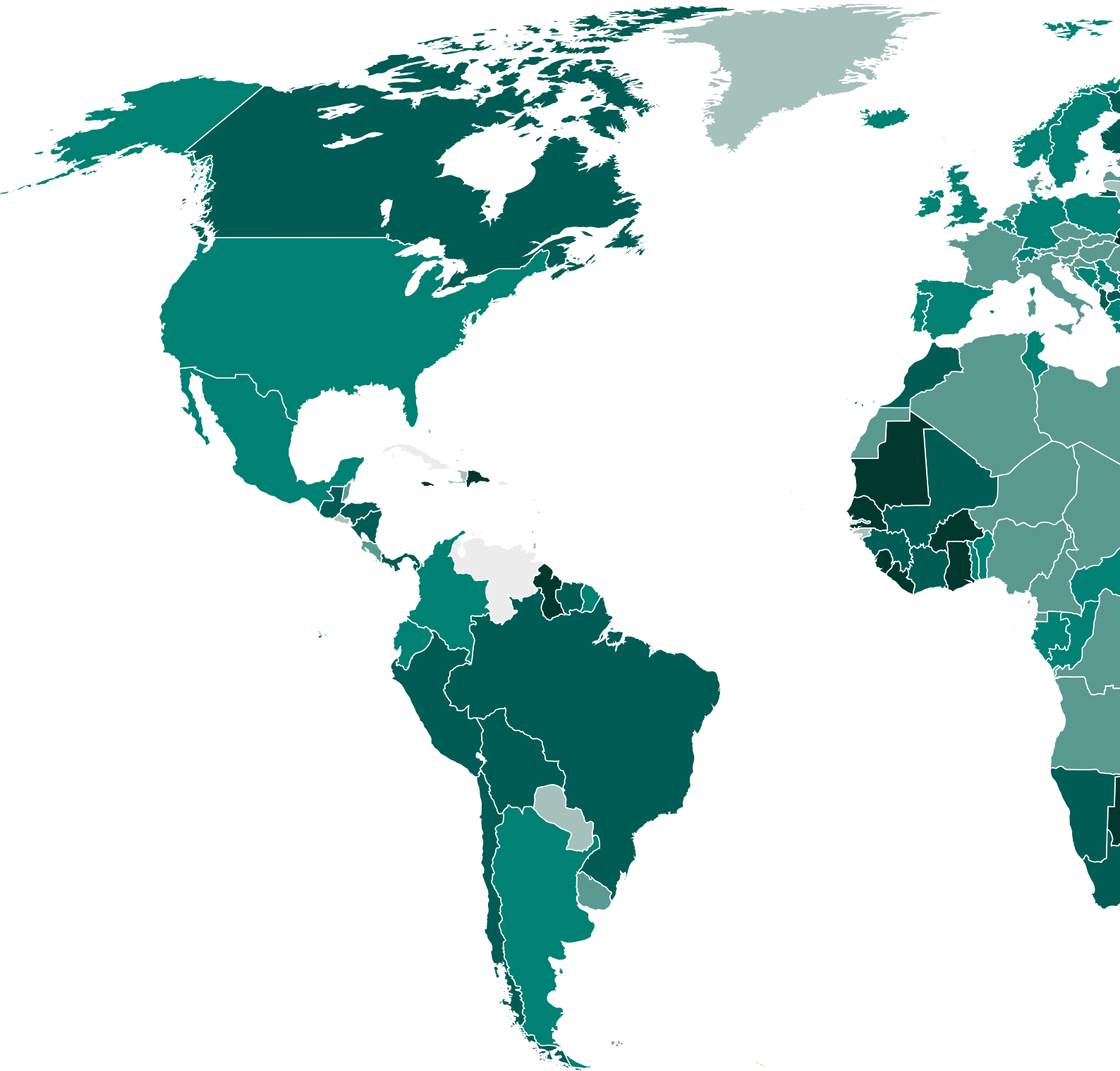
Conclusions

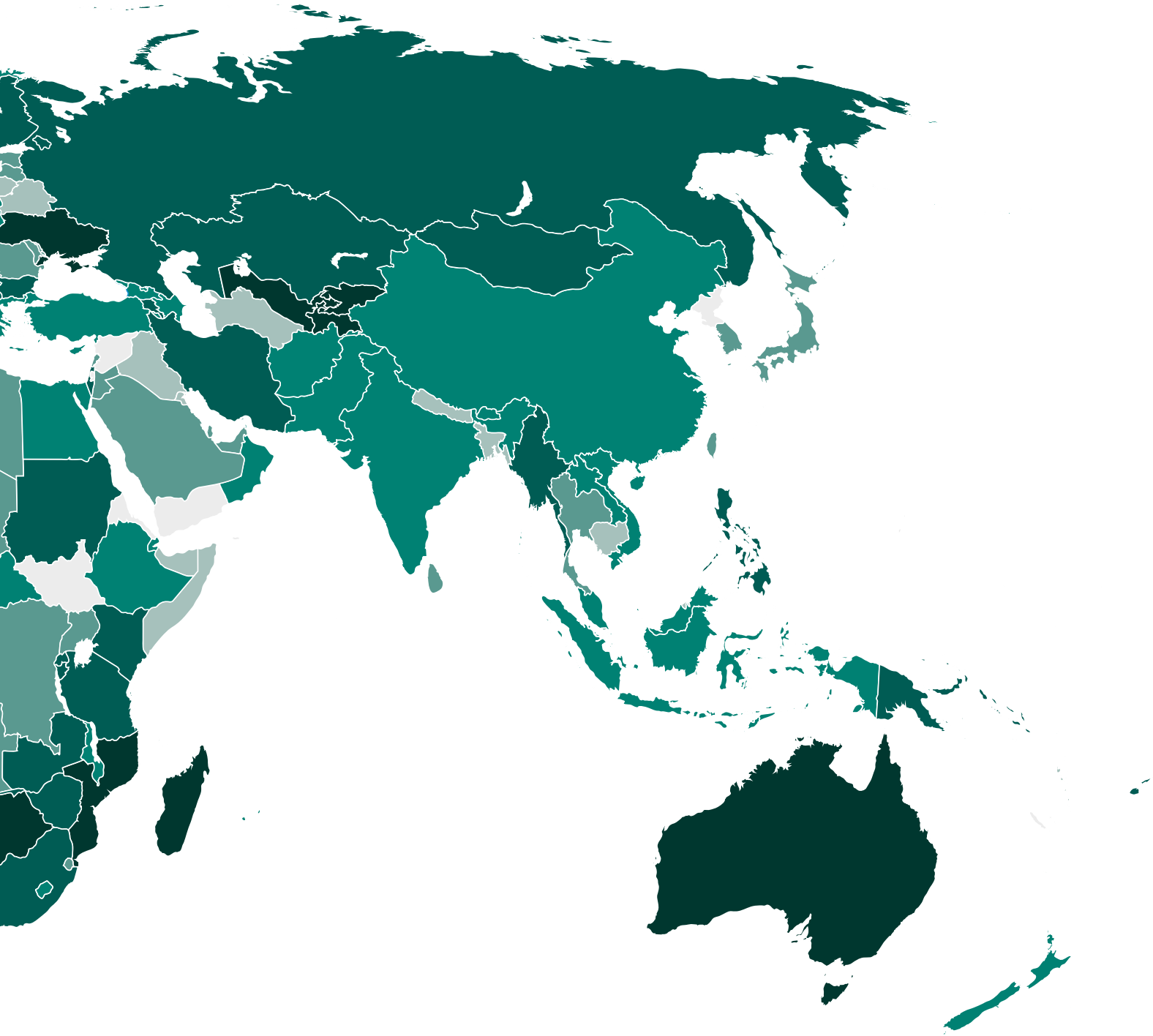
The analysis overall suggests that the MCI is a reasonably well constructed index in terms of the three specific properties that have been identified. Although the main report acknowledges that there are other indicators (such as employment) that would ideally be added to the index, the four indicators that are currently included all perform a useful function. The science of indices is not a precise one. But based on the tests that we have so far conducted we see that the degrees of positive correlation between the component parts of the MCI are not such as to constitute a case for the elimination of any one component. The biggest question mark here relates to the relatively high degree of correlation between production value and mineral rents.

Although the main report acknowledges that there are other indicators [...] that would ideally be added to the index, the four indicators that are currently included all perform a useful function.

2. This exercise is done for the years for which the MCI is calculated, ie, 2010, 2012 and 2014.

Mining Contribution Index (MCI) 2016





80+

Above 80

60+

Above 60,
less than 80

40+

Above 40,
less than 60

20+

Above 20,
less than 40

0+

Zero to 20

Mining Contribution Index (MCI) 2016

1	2	3	4	5	6	7	8	9	10	11	12
2016 MCI Rank	Country (* indicates non-UN country)	2016 MCI score	Metallic mineral, metals and coal export contribution 2014	Change in min. exp. contr. 2009-14 (perc. points)	Metallic mineral and coal production value 2014 (as % of GDP)	Mineral rent 2014 (as % of GDP)	Metallic mineral and coal production value 2014 (USD bn)	Human Dev't Index 2014	GDP per capita (USD) 2014 [(x)/(y)]	2014 MCI Rank	2012 MCI Rank
1	Congo, Dem. Rep.	96.2	78.3%	5.6 pp	27.5%	20.07	9.00	0.43	437.8	4	10
2	Mauritania	95.6	58.8%	4.8 pp	25.4%	28.11	1.38	0.51	1371.0	1	5
3	Burkina Faso	94.0	49.7%	24.4 pp	13.4%	8.12	1.68	0.40	713.5	8	16
4	Madagascar	91.7	33.6%	26.4 pp	17.0%	3.33	1.87	0.51	467.1	37	37
5	Botswana	90.7	92.1%	18.3 pp	6.5%	1.84	1.04	0.70	7153.4	9	59
6	Guyana	90.6	51.5%	2.0 pp	20.5%	14.43	0.63	0.64	4028.2	3	11
7	Uzbekistan	89.8	35.5%	26.0 pp	6.2%	5.64	3.90	0.68	2052.6	25	42
8	Liberia	89.0	43.4%	40.3 pp	14.3%	0.84	0.29	0.43	457.9	11	19
9	Kyrgyz Republic	88.8	25.9%	13.4 pp	10.2%	7.25	0.76	0.66	1279.8	33	68
10	Tajikistan	87.0	48.5%	19.5 pp	4.1%	1.29	0.38	0.62	1113.4	81	111
11	Australia	84.5	56.7%	0.9 pp	7.8%	5.13	112.91	0.93	61995.8	13	22
12	Mozambique	84.0	50.8%	24.4 pp	38.1%	0.02	6.46	0.42	622.6	17	99
13	Jamaica	83.7	48.1%	12.6 pp	2.7%	1.05	0.38	0.72	5119.2	87	88
14	Ghana	83.2	20.9%	1.8 pp	10.1%	6.48	3.91	0.58	1441.6	62	27
15	Sierra Leone	83.1	45.9%	3.1 pp	53.6%	0.16	2.68	0.41	792.6	52	89
16	Senegal	82.0	16.5%	7.2 pp	5.8%	1.54	0.91	0.47	1067.1	30	47
17	Dominican Republic	81.9	20.1%	15.0 pp	2.6%	1.82	1.68	0.72	6147.3	53	58
18	Ukraine	80.6	11.3%	3.0 pp	8.9%	3.76	11.73	0.75	2905.6	39	51
19	Rwanda	79.4	45.2%	7.6 pp	3.0%	0.17	0.24	0.48	697.6	77	114
20	Armenia	78.1	47.3%	0.2 pp	5.3%	2.98	0.61	0.73	3873.5	19	33
21	Mongolia	77.7	80.4%	-2.9 pp	33.9%	16.31	4.14	0.73	4201.7	14	9
22	Sudan	77.2	25.2%	-	2.8%	1.08	2.04	0.48	1875.8	42	98
23	Nicaragua	76.8	8.5%	3.1 pp	2.9%	2.39	0.34	0.63	1960.5	32	61
24	Chile	75.5	57.0%	-3.0 pp	18.1%	14.47	46.92	0.83	14566.1	50	12
25	Myanmar	75.1	19.7%	14.3 pp	1.9%	0.30	1.24	0.54	1203.8	16	75
26	Philippines	74.3	7.7%	2.9 pp	2.8%	1.92	8.08	0.67	2872.5	76	44
27	Brazil	73.6	16.3%	2.9 pp	1.5%	1.38	35.78	0.76	11728.8	36	34
28	Zambia	73.6	69.2%	-7.7 pp	20.0%	13.21	5.38	0.59	1715.1	48	1
29	Macedonia, FYR	73.0	5.2%	2.1 pp	4.7%	2.89	0.53	0.75	5453.3	55	159
30	South Africa	72.2	38.3%	-1.6 pp	14.0%	3.16	48.86	0.67	6472.1	59	31
31	Guinea	72.2	53.1%	-19.9 pp	21.8%	9.64	1.44	0.41	539.6	7	53
32	Papua New Guinea	71.2	38.7%	-14.8 pp	20.3%	16.49	3.44	0.51	2268.2	15	3
33	Mali	71.1	47.1%	-7.3 pp	13.7%	9.58	1.97	0.42	842.1	60	7
34	Cote d'Ivoire	70.9	5.8%	3.4 pp	2.1%	1.20	0.71	0.46	1545.9	45	153
35	Bolivia	70.7	27.2%	-0.5 pp	9.0%	2.02	2.98	0.66	3124.1	23	20
36	Israel	70.5	31.2%	5.6 pp	0.9%	0.06	2.86	0.89	37206.2	97	113
37	Peru	70.3	53.8%	-8.1 pp	11.4%	6.36	23.09	0.73	6549.4	54	21
38	Russian Federation	70.2	8.7%	0.5 pp	4.3%	1.08	88.01	0.80	14121.7	82	104

1	2	3	4	5	6	7	8	9	10	11	12
2016 MCI Rank	Country (* indicates non-UN country)	2016 MCI score	Metallic mineral, metals and coal export contribution 2014	Change in min. exp. contr. 2009-14 (perc. points)	Metallic mineral and coal production value 2014 (as % of GDP)	Mineral rent 2014 (as % of GDP)	Metallic mineral and coal production value 2014 (USD bn)	Human Dev't Index 2014	GDP per capita (USD) 2014 [(x)/[y]]	2014 MCI Rank	2012 MCI Rank
39	Zimbabwe	69.2	19.5%	-4.1 pp	29.5%	4.17	4.19	0.51	931.2	31	64
40	Guatemala	69.1	8.1%	3.0 pp	2.4%	0.28	1.40	0.63	3666.6	61	60
41	Solomon Islands	69.0	3.5%	2.5 pp	1.8%	6.49	0.02	0.51	2024.2	20	181
42	Lao PDR	67.3	29.7%	-17.3 pp	12.0%	8.96	1.40	0.58	1751.4	66	15
43	Tanzania	67.3	32.9%	-1.8 pp	3.8%	2.64	1.84	0.52	926.8	24	30
44	Namibia	67.3	37.7%	-1.9 pp	4.3%	1.86	0.56	0.63	5342.9	21	25
45	Canada	65.7	11.4%	0.3 pp	2.2%	0.73	39.95	0.91	43248.5	116	49
46	Fiji	65.5	6.4%	1.2 pp	1.1%	1.02	0.05	0.73	5112.4	41	121
47	Suriname	65.5	23.4%	-16.1 pp	10.3%	6.37	0.54	0.71	9680.1	6	26
48	Iran, Islamic Rep.	65.1	5.6%	1.5 pp	1.2%	0.96	5.27	0.77	5442.9	73	80
49	Panama	64.7	5.5%	3.5 pp	-	0.16	-	0.78	12712.4	145	188
50	Honduras	64.4	6.9%	1.0 pp	1.7%	0.53	0.32	0.61	2434.3	71	56
51	Burundi	63.8	14.0%	3.0 pp	0.1%	0.35	0.00	0.40	286.0	83	130
52	Morocco	63.5	8.4%	0.3 pp	0.5%	1.81	0.54	0.63	3243.1	43	67
53	Bulgaria	63.2	14.8%	-0.3 pp	2.1%	1.48	1.17	0.78	7851.3	63	43
54	Kenya	62.1	4.6%	1.3 pp	2.5%	0.19	1.51	0.55	1368.5	95	70
55	Albania	62.0	7.6%	0.3 pp	2.1%	0.46	0.28	0.73	4588.6	104	69
56	Finland	61.5	5.7%	2.1 pp	0.6%	0.32	1.65	0.88	49864.6	78	87
57	Kazakhstan	61.1	10.1%	-4.4 pp	6.0%	2.58	13.54	0.79	13154.8	74	81
58	Indonesia	59.0	17.5%	-4.3 pp	3.1%	0.83	27.33	0.68	3499.6	27	50
59	Sweden	58.8	5.1%	0.9 pp	0.6%	0.37	3.31	0.91	58900.0	72	79
60	Cyprus	57.9	8.3%	2.4 pp	0.1%	0.09	0.02	0.85	20133.4	121	39
61	Argentina	57.9	6.0%	0.3 pp	0.8%	0.37	4.15	0.84	12751.4	65	90
62	Greece	57.6	7.9%	1.0 pp	0.2%	0.13	0.56	0.87	21627.4	100	107
63	Poland	57.3	5.3%	0.1 pp	2.1%	0.42	11.28	0.84	14337.2	69	108
64	Ecuador	56.7	4.7%	3.9 pp	0.1%	0.05	0.15	0.73	6345.8	114	142
65	Djibouti	56.5	17.3%	14.4 pp	-	0.00	-	0.47	1813.6	84	57
66	United Kingdom	55.1	11.4%	6.1 pp	0.0%	0.00	0.55	0.91	46278.5	105	85
67	Lesotho	54.9	37.8%	18.8 pp	0.1%	0.00	0.00	0.50	1034.2	10	120
68	India	54.6	11.7%	-4.4 pp	2.2%	0.65	44.03	0.61	1576.8	92	92
69	Hong Kong SAR, China*	54.3	14.7%	6.9 pp	-	0.00	-	0.91	40215.7	85	45
70	Colombia	53.9	16.6%	-6.5 pp	1.7%	0.63	6.56	0.72	7918.1	35	62
71	Bosnia and Herzegovina	53.5	11.4%	-2.6 pp	0.9%	0.69	0.18	0.73	4851.7	80	117
72	Malaysia	53.3	3.1%	1.1 pp	0.3%	0.27	0.98	0.78	11307.1	106	147
73	Mexico	53.0	4.0%	-0.3 pp	1.3%	0.67	16.66	0.76	10350.8	58	74
74	Central African Republic	53.0	44.8%	0.9 pp	0.0%	0.08	0.00	-	352.0	18	110
75	Georgia	52.5	12.2%	-12.4 pp	1.1%	1.00	0.19	0.75	4429.7	108	18
76	United States	51.8	6.2%	0.1 pp	0.5%	0.09	81.51	0.91	54398.5	67	94

Mining Contribution Index (MCI) 2016

1	2	3	4	5	6	7	8	9	10	11	12
2016 MCI Rank	Country (* indicates non-UN country)	2016 MCI score	Metallic mineral, metals and coal export contribution 2014	Change in min. exp. contr. 2009-14 (perc. points)	Metallic mineral and coal production value 2014 (as % of GDP)	Mineral rent 2014 (as % of GDP)	Metallic mineral and coal production value 2014 (USD bn)	Human Dev't Index 2014	GDP per capita (USD) 2014 [(x)/(y)]	2014 MCI Rank	2012 MCI Rank
77	Norway	51.3	5.5%	0.2 pp	0.8%	0.05	3.93	0.94	97429.7	139	133
78	Serbia	51.1	5.8%	-1.3 pp	0.9%	0.56	0.42	0.77	6200.2	40	54
79	Gabon	50.8	7.0%	0.0 pp	0.3%	0.12	0.05	0.68	10772.1	94	55
80	China	49.6	1.5%	0.0 pp	1.5%	1.21	159.04	0.73	7587.3	130	152
81	Benin	49.2	11.7%	3.4 pp	0.0%	0.01	0.00	0.48	903.5	51	36
82	Congo, Rep.	48.8	8.0%	3.8 pp	0.0%	0.03	0.00	0.59	3147.1	185	13
83	Spain	48.7	3.9%	0.7 pp	0.1%	0.04	1.53	0.88	29718.5	88	148
84	Turkey	48.5	6.1%	-1.5 pp	0.7%	0.30	5.82	0.76	10303.9	38	77
85	Luxembourg	48.2	8.1%	3.2 pp	0.0%	0.04	0.00	0.89	116612.9	161	101
86	Oman	47.2	4.6%	0.6 pp	0.3%	0.00	0.22	0.79	19309.6	68	52
87	Togo	46.3	17.9%	-0.5 pp	0.0%	1.54	0.00	0.48	630.0	12	38
88	Tunisia	46.1	1.8%	0.6 pp	0.1%	0.51	0.03	0.72	4328.9	125	157
89	Egypt, Arab Rep.	45.8	7.1%	-2.1 pp	0.3%	0.24	0.83	0.69	3365.7	57	76
90	Switzerland	45.2	27.0%	22.9 pp	0.0%	0.00	0.00	0.93	85610.8	112	66
91	Ethiopia	45.2	3.5%	-4.1 pp	0.9%	0.74	0.50	0.44	573.6	75	63
92	Montenegro	45.0	32.6%	-12.9 pp	0.4%	0.00	0.02	0.80	7378.0	70	4
93	New Zealand	44.8	3.8%	-0.9 pp	0.4%	0.27	0.78	0.91	44380.4	126	119
94	Ireland	44.7	1.5%	0.6 pp	0.3%	0.07	0.77	0.92	54321.3	142	158
95	Iceland	44.4	39.0%	3.9 pp	0.0%	0.00	0.00	0.90	52036.7	49	8
96	Vietnam	44.3	1.8%	-2.7 pp	3.1%	0.35	5.83	0.67	2052.3	131	116
97	Pakistan	44.1	1.8%	0.8 pp	0.1%	0.06	0.28	0.54	1315.3	111	124
98	Malawi	43.9	4.5%	3.6 pp	-	0.00	-	0.45	362.2	109	32
99	Belgium	43.7	7.5%	1.3 pp	-	0.00	-	0.89	47299.9	138	84
100	Afghanistan	43.2	19.2%	15.0 pp	0.0%	0.00	0.00	0.47	633.9	44	126
101	Germany	42.2	3.1%	0.3 pp	0.2%	0.00	9.18	0.92	47767.0	103	144
102	Azerbaijan	41.9	0.9%	0.5 pp	0.2%	0.10	0.12	0.75	7886.5	168	199
103	St. Vincent and the Grenadines	41.7	3.7%	3.3 pp	-	0.00	-	0.72	6672.8	129	96
104	Bhutan	41.4	16.6%	6.6 pp	0.0%	0.00	0.00	0.61	2560.5	64	35
105	Portugal	41.2	2.7%	-0.5 pp	0.3%	0.15	0.71	0.83	22124.4	96	115
106	Mauritius	40.2	4.6%	1.8 pp	-	0.00	-	0.78	10002.9	148	118
107	Lebanon	39.9	26.2%	2.1 pp	0.0%	0.00	0.00	0.77	8148.6	46	41
108	Austria	39.4	3.6%	0.0 pp	0.0%	0.03	0.14	0.89	51148.4	102	151
109	Italy	39.0	3.0%	0.5 pp	0.0%	0.00	0.44	0.87	35179.7	99	91
110	Niger	38.3	20.9%	-9.0 pp	0.0%	0.57	0.00	-	431.4	98	71
111	Slovenia	37.9	3.7%	0.6 pp	0.4%	0.00	0.18	0.88	24001.9	124	154
112	Tonga	37.8	3.2%	2.5 pp	-	0.00	-	0.72	4114.1	101	97
113	Thailand	37.7	3.8%	-1.8 pp	0.1%	0.05	0.42	0.73	5969.9	79	93

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114	France	37.3	2.5%	0.3 pp	0.0%	0.00	0.59	0.89	42546.8	143	127
115	Jordan	36.5	7.8%	-4.2 pp	0.0%	0.82	0.00	0.75	4831.0	29	125
116	Japan	36.3	3.5%	0.0 pp	0.0%	0.00	0.70	0.89	36152.7	122	137
117	Saudi Arabia	35.8	0.9%	0.1 pp	0.1%	0.05	0.80	0.84	24406.5	159	180
118	Sri Lanka	35.5	3.8%	-2.8 pp	0.2%	0.00	0.20	0.76	3852.9	147	139
119	Uruguay	35.5	1.3%	-0.3 pp	0.1%	0.08	0.07	0.79	16738.0	154	174
120	Nigeria	34.5	0.7%	0.4 pp	0.0%	0.03	0.11	0.51	3203.2	151	162
121	Hungary	33.9	1.7%	0.3 pp	0.0%	0.00	0.00	0.83	14021.9	119	173
122	Romania	33.2	2.7%	-0.9 pp	0.1%	0.03	0.11	0.79	10011.8	120	166
123	Cameroon	32.8	3.1%	-0.1 pp	0.0%	0.15	0.00	0.51	901.7	47	167
124	Korea, Rep.	32.3	2.2%	-0.5 pp	0.1%	0.00	0.86	0.90	27989.4	137	150
125	Angola	32.1	1.5%	0.0 pp	0.1%	-	0.08	0.53	5232.7	133	192
126	Marshall Islands	30.9	1.8%	1.7 pp	-	0.00	-	-	3529.7	200	165
127	Barbados	30.5	2.1%	0.9 pp	-	0.00	-	0.79	15366.3	160	140
128	Cabo Verde	30.3	3.6%	3.0 pp	0.0%	0.00	0.00	-	122.1	93	138
129	United Arab Emirates	30.1	14.6%	-2.3 pp	0.0%	0.00	0.19	0.84	43962.7	56	24
130	Dominica	29.7	7.5%	-0.4 pp	-	0.00	-	0.72	7251.8	153	40
131	Algeria	29.7	0.2%	-0.4 pp	0.1%	0.07	0.12	0.74	5484.1	167	103
132	Croatia	29.6	4.7%	1.1 pp	0.0%	0.00	0.00	0.82	13480.7	91	95
133	Equatorial Guinea	29.6	0.0%	0.0 pp	-	0.04	-	0.59	18918.3	190	143
134	Grenada	29.6	10.1%	-1.4 pp	-	0.00	-	0.75	8573.7	180	197
135	Macao SAR, China*	28.7	5.5%	-0.3 pp	-	0.00	-	-	96074.8	110	46
136	Netherlands	28.6	2.9%	0.5 pp	0.0%	0.00	0.05	0.92	52138.7	149	102
137	Chad	28.5	0.1%	0.0 pp	-	0.02	-	-	1024.7	195	190
138	Uganda	28.3	2.1%	-3.1 pp	0.0%	0.04	0.00	0.48	714.6	174	155
139	Swaziland	27.9	3.0%	-1.0 pp	0.7%	0.00	0.03	0.53	3477.1	107	186
140	Czech Republic	27.6	2.6%	-0.1 pp	0.2%	0.00	0.45	0.87	19502.4	89	136
141	Qatar	27.4	1.2%	0.9 pp	0.0%	0.00	0.08	0.85	96732.5	118	164
142	Denmark	27.1	1.6%	0.3 pp	0.0%	0.00	0.00	0.92	61330.9	170	132
143	Slovak Republic	26.7	2.4%	-0.2 pp	0.0%	0.02	0.00	0.84	18501.4	113	128
144	Costa Rica	26.5	1.0%	0.2 pp	0.0%	0.02	0.00	0.77	10415.5	189	187
145	Libya	25.0	2.2%	1.5 pp	0.0%	0.00	0.00	0.72	6573.4	157	156
146	St. Kitts and Nevis	24.9	0.9%	0.8 pp	-	0.00	-	0.75	15739.0	187	131
147	Seychelles	24.3	0.9%	0.6 pp	-	0.00	-	0.77	15563.8	179	183
148	Estonia	24.3	3.3%	-0.2 pp	-	0.00	-	0.86	20147.8	164	122
149	Timor-Leste	23.8	0.7%	0.7 pp	-	0.00	-	0.59	1131.2	199	195
150	Latvia	23.2	4.4%	0.1 pp	0.0%	0.00	0.00	0.82	15692.2	132	109
151	St. Lucia	23.0	3.4%	-0.4 pp	-	0.00	-	0.73	7647.5	172	100

Mining Contribution Index (MCI) 2016

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152	Bahrain	22.6	25.4%	-5.7 pp	0.0%	0.00	0.00	0.82	24855.2	117	29
153	Moldova	21.3	1.8%	0.7 pp	0.0%	0.00	0.00	0.69	2244.8	171	106
154	Gambia, The	21.0	6.5%	-7.7 pp	-	0.00	-	0.44	441.3	86	28
155	Maldives	20.7	1.9%	0.0 pp	-	0.00	-	0.71	7640.6	175	105
156	Belize	20.5	1.4%	0.1 pp	-	0.00	-	0.71	4884.4	192	196
157	Haiti	19.6	1.9%	0.3 pp	0.0%	0.00	0.00	0.48	830.2	181	112
158	Antigua and Barbuda	19.0	3.3%	-1.9 pp	-	0.00	-	0.78	13432.1	144	184
159	Trinidad and Tobago	18.8	1.5%	0.0 pp	-	0.00	-	0.77	21317.4	183	83
160	Iraq	18.5	0.2%	-0.4 pp	0.0%	0.00	0.00	0.65	6336.5	173	160
161	Samoa	18.4	2.4%	-0.7 pp	-	0.00	-	0.70	4172.2	165	178
162	Kuwait	18.4	0.4%	-0.2 pp	0.0%	0.00	0.08	0.82	43593.7	156	171
163	Vanuatu	18.3	0.3%	0.2 pp	-	0.00	-	0.59	3148.0	182	175
164	Singapore	18.1	2.0%	-0.4 pp	-	0.00	-	0.91	56007.3	188	123
165	Paraguay	17.7	1.1%	0.5 pp	0.0%	0.00	0.00	0.68	4712.9	128	189
166	Micronesia, Fed. Sts.	17.4	0.3%	0.2 pp	-	0.00	-	0.64	3057.1	194	210
167	Brunei Darussalam	17.4	0.5%	0.1 pp	-	0.00	-	0.86	40979.6	196	185
168	Lithuania	17.3	1.6%	0.2 pp	0.0%	0.00	0.00	0.84	16489.7	166	179
169	Sao Tome and Principe	16.6	1.3%	-0.2 pp	-	0.00	-	0.56	1810.7	163	193
170	Comoros	16.4	3.1%	-2.8 pp	-	0.00	-	0.50	810.1	146	177
171	Guinea-Bissau	15.9	0.4%	0.0 pp	-	0.00	-	0.42	615.9	191	168
172	Belarus	15.0	0.9%	0.2 pp	0.0%	0.00	0.00	0.80	8025.3	123	170
173	Nepal	13.9	3.3%	-2.2 pp	0.0%	0.00	0.00	0.55	701.7	169	163
174	Greenland*	13.5	2.3%	-3.3 pp	0.0%	-	0.00	-	43364.9	184	48
175	Tuvalu	13.3	3.0%	-6.0 pp	-	0.00	-	-	3826.9	193	169
176	Bangladesh	12.9	0.5%	0.1 pp	0.0%	0.00	0.00	0.57	1086.8	162	176
177	El Salvador	12.6	2.0%	-0.9 pp	0.0%	0.00	0.00	0.67	4102.1	135	72
178	Bahamas, The	12.4	1.8%	-0.8 pp	0.0%	0.00	0.00	0.79	22217.5	141	135
179	Palau	11.2	1.0%	-1.6 pp	-	0.00	-	0.78	11892.7	158	198
180	Turkmenistan	10.2	0.5%	-0.3 pp	0.0%	0.00	0.00	0.69	8193.7	152	134
181	Kiribati	9.3	0.2%	-0.9 pp	-	0.00	-	0.59	1509.5	198	209
182	Cambodia	8.7	2.1%	-5.4 pp	0.0%	0.00	0.00	0.55	736.7	155	86
183	Somalia	1.8	0.5%	-23.7 pp	0.0%	0.00	0.00	-	542.6	201	14

The following countries have two or less data points available and have therefore been omitted from the main data table and rankings

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MCI Rank	Country (* indicates non-UN country)	2016 MCI score	Metallic mineral, metals and coal export contribution 2014	Change in min. exp. contr. 2007-14 (perc. points)	Metallic mineral and coal production value 2014 (as % of GDP)	Mineral rent 2014 (as % of GDP)	Metallic mineral and coal production value 2014 (USD bn)	Human Dev't Index 2014	GDP per capita (USD) 2014. [x]/[y]	2014 MCI Rank	2012 MCI Rank
	French Polynesia*	94.4	72.9%	17.3 pp	-	-	0.00	-	-	90	6
	Korea, Dem. Rep.	88.9	49.9%	15.3 pp	-	-	0.54	-	-	5	141
	Aruba*	94.4	37.8%	35.4 pp	-	-	-	-	-	140	73
	Eritrea	86.1	35.7%	34.6 pp	-	-	0.67	-	-	2	146
	New Caledonia*	80.6	35.7%	11.6 pp	-	-	3.05	-	-	26	23
	Cayman Islands*	69.4	14.1%	11.1 pp	-	-	-	-	-	176	161
	Cuba	58.3	19.5%	1.6 pp	-	-	1.20	0.77	-	127	17
	Guam*	58.3	7.8%	3.1 pp	-	-	-	-	-	34	212
	Northern Mariana Islands*	58.3	9.2%	2.2 pp	-	-	-	-	-	22	2
	Turks and Caicos Islands*	58.3	5.3%	4.2 pp	-	-	-	-	-	28	78
	Andorra	47.2	5.0%	1.7 pp	-	-	-	0.84	-	197	211
	American Samoa*	25.0	4.9%	-1.8 pp	-	-	-	-	-	186	149
	Malta	25.0	0.8%	0.2 pp	-	-	0.00	0.84	-	150	129
	Syrian Arab Republic	25.0	2.0%	-0.6 pp	-	-	0.00	0.59	-	115	65
	Yemen, Rep.	25.0	2.5%	-1.6 pp	-	-	0.00	0.50	-	136	182
	Bermuda*	25.0	1.1%	-0.3 pp	-	-	-	-	-	177	82
	Faeroe Islands*	19.4	0.2%	0.1 pp	-	-	-	-	-	178	172
	Venezuela, RB	11.1	1.0%	-2.2 pp	-	-	0.87	0.76	-	134	145
	Channel Islands*	-	-	-	-	-	-	-	-	202	200
	Curacao*	-	-	-	-	-	-	-	-	203	N/A
	Isle of Man*	-	-	-	-	-	-	-	-	204	201
	Kosovo*	-	-	-	-	1.23	-	-	4073.8	205	202
	Liechtenstein	-	-	-	-	-	-	0.91	-	206	203
	Monaco	-	-	-	-	-	-	-	-	207	204
	Puerto Rico*	-	-	-	-	-	0.00	-	-	208	205
	San Marino	-	-	-	-	-	-	-	-	209	206
	Sint Maarten (Dutch part)*	-	-	-	-	-	-	-	-	210	N/A
	South Sudan	-	-	-	-	-	-	-	1115.1	211	N/A
	St. Martin (French part)*	-	-	-	-	-	-	-	-	212	N/A
	Virgin Islands (U.S.)*	-	-	-	-	-	-	-	-	213	207
	West Bank and Gaza*	-	-	-	-	0.00	-	0.68	2960.8	214	208

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