



# RESOURCE RENTS IN THE DIAMOND INDUSTRY

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[www.rmgconsulting.org](http://www.rmgconsulting.org)

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## Resource Rents in the Diamond Industry<sup>1</sup>

**Abstract:** The paper discusses the resource rents in the diamond industry 2010-2019. The diamond mining industry represents a relatively small part of the extractive industry; however, it is very important for certain emerging economies. Economic rent can be defined as: *Economic rent = total income - total costs*. Depending on whether resource rents are analysed in the short run or over a long run period they will display different characteristics. In the short run resource rents can be very high, while they can disappear completely in the long run. In the long-term all costs should be included when calculating a sustainable rent, the pure rent. In the mining industry these would include operating costs, cost of capital, exploration costs, overhead costs, and closure costs.

In conclusion, only pure rent can be taxed without changing the economic behaviour of an investor. Thus, to ensure continuous investments into the industry and a continuous production flow it is important not to over-estimate the rent – or the taxable space – and levy too high taxes. Companies need to make a profit, but it is also important to keep in mind that mineral wealth under most jurisdictions belong to the state/ country/ people. Governments hence have the responsibility to make sure that an optimal part of the rent created by its national mineral patrimony is returned to the state through a royalty and other taxes.

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<sup>1</sup> This technical note was prepared by Anton Löf of RMG Consulting for the first Angola International Diamond Conference (<https://aidc2021.com/>) held in Saurimo Angola on the 25-26 of November 2021 where Anton Löf presented it as the keynote presentation. It takes as its starting point the report *Resource rents in the diamond industry 2014–19: Rents, issues, methods, and data availability* (Löf et al. 2021) researched and written by RMG Consulting for UNU-WIDER (United Nations University – World Institute for Development Economics Research). Where possible figures have been updated to reflect the latest developments in the diamond industry.

RMG Consulting is a global mineral economics and policy/strategy advisor. RMG Consulting, and its predecessor Raw Materials Group, has established itself as a reputable and independent supplier of data and advice on the world's mining industry. The experience of RMG Consulting dates back more than 30 years.

Questions and comments: [anton.lof@rmgconsulting.org](mailto:anton.lof@rmgconsulting.org)

[www.rmgconsulting.org](http://www.rmgconsulting.org)

Stockholm, Sweden.

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# 1 Resource rents in the diamond industry

## 1.1 The resource industry and economic progress

The extractive industries are a means to an end. Countries need minerals and metals, to develop their societies and increase the standard of living for their populations. This holds for both producing and consuming countries.

The traditional indicator of economic progress is growth of gross domestic product (GDP). This can however be misleading for countries with extractive sectors as these countries can grow their GDP by diminishing their stocks of non-renewable resources. Without new investments into the sector and a balanced tax regime stocks of non-renewable resources will be gradually depleted, and the sector will slowly die out (Otto et al., 2006).

However, there are ways to get around this problem. The economic concept *wealth*<sup>2</sup> that includes a value of existing resources not yet developed, on a country level, can be an alternative which can be used to understand and plan for a sustainable economic growth.

The World Bank in the report series *The Changing Wealth of Nations* (World Bank 2011 & Lange et al. 2018), takes wealth into account when discussing the ability of countries to develop economically. The link between the mineral resource sector and economic development is further discussed by Magnus Ericsson and Olof Löf (2017 and 2019). It is estimated that around 20 percent of the wealth in developing nations are attributed to natural resources (World Bank, 2011). The report series stresses the important role of natural capital<sup>3</sup> in building wealth and suggests that governments should pay closer attention to their natural capital.

To use the concept of wealth inevitably means analysing the future flow of rents that a sector can sustain in the future, thus it becomes necessary to understand and calculate economic rents.

## 1.2 Resource rents

Economic rent can be defined as those payments to a factor of production that are in excess of the minimum payment necessary to have that factor supplied. Or as Philip Crowson (1998) argues; economic rent is that portion of value added which exceeds the costs of all the factors of production including return on capital. Otto et.al. (2006) defines it as a payment or monetary return to the owner of a factor of production or to a firm (which controls a bundle of factors of production) that does not alter its economic behaviour. From a taxation point of view, economic rent can be defined as “a surplus of income that can theoretically be taken away from an investor without altering its economic behaviour” (Otto 2017 p. 1).

Schematically it can be visualized as the difference between the opportunity cost and price at each given output (see figure 1). It is important to understand that these costs should include a competitive return on invested capital. Rents arise only when supply is somewhat inelastic. In the mineral resource sector such constraints can for example be geological, technical or geographical.

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<sup>2</sup> Wealth includes produced capital, natural capital, and human social, and institutional capital. Changes in wealth can be used to measure the sustainability of development. (World Bank, 2011).

<sup>3</sup> Natural capital is defined in the World Bank report as agricultural land, protected areas, forests, minerals, and energy.

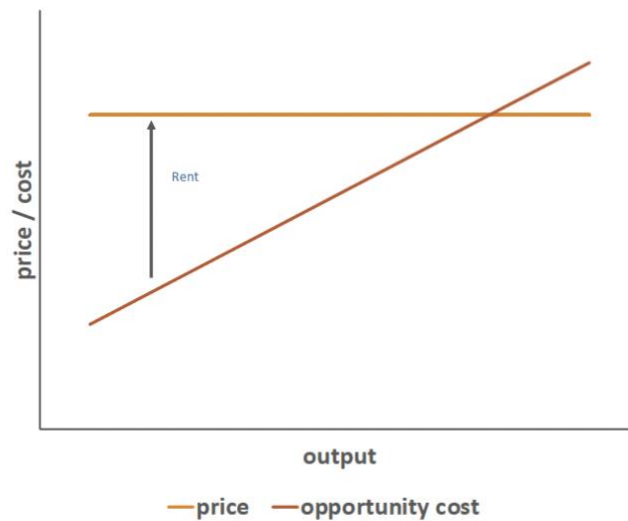
*Economic rent = total income - total costs*

“economic rent is that portion of value added which exceeds the costs of all the factors of production including return on capital”

Philip Crowson

“a payment or monetary return to the owner of a factor of production or to a firm (which controls a bundle of factors of production) that does not alter its economic behaviour”

James Otto



**Figure 1. Resource rent a schematical representation.**

Source: RMG Consulting 2021.

Calculating resource rents can however be difficult. Depending on whether resource rents are analysed in the short run or over a long run period they will display different characteristics. In the short run resource rents can be very high, while they can disappear completely in the long run (Crowson 1998).

Economic rent can be defined as:

$$\text{Economic rent} = \text{total income} - \text{total costs}$$

Total income can be defined as:

$$\text{Total income} = \text{total production} * \text{average price}$$

For most minerals and metals a price series and production volumes are available, which facilitates the calculation of an average total income of an industry.

Total cost is however much more difficult and complicated. In the long-term all costs should be included when calculating a sustainable rent, the pure rent. In the mining industry these would include operating costs, cost of capital, exploration costs, overhead costs, and closure costs. For practical reasons however all costs are seldom included in resource rent calculations. Most calculations of resource rents take as a starting point individual mines and their operating cost. Other costs particular to mining as well as cost of capital are often omitted. For example, within the World Bank series *The Changing Wealth of Nations* discussed above cost of capital, overhead costs,<sup>4</sup> closure costs and exploration are not considered. In the mining industry costs can be divided into costs linked to individual mine, other costs linked to mining but outside of the individual mine (such as for example corporate headquarters, sales departments, greenfield exploration etc.), and a cost of capital (see figure 2). What is left after all costs, including the return to capital would then be the pure rent.

<sup>4</sup> Overhead costs refer to the ongoing business expenses not directly attributed to creating a product.

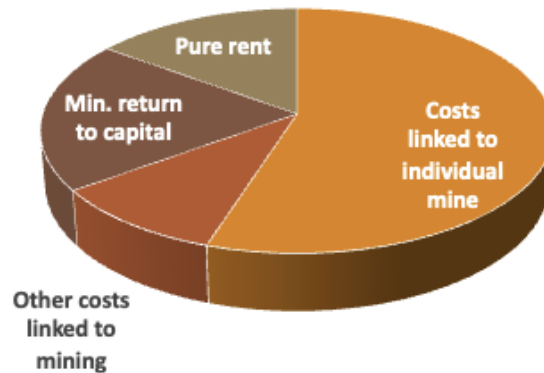
## Theoretical costs of mining

Pure rent is what is left when all costs are deducted from the price of a commodity.

From a taxation point of view, economic rent can be defined as

“a surplus of income that can theoretically be taken away from an investor without altering its economic behaviour”

James Otto



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**Figure 2. Theoretical costs of mining.**

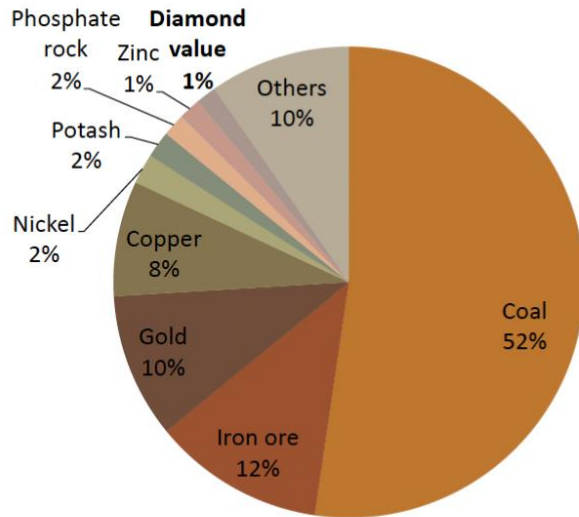
Source: RMG Consulting 2021.

Rent that does not consider all costs are not sustainable over the long term. Such a calculation would overestimate the potentially taxable space and could lead to little investments in sustaining operations and closed down mines, all detrimental for a country that relies on income from the extractive sector for its societal building.

### 1.3 The diamond industry

The diamond mining industry is interesting, even if it represents a relatively small part of the extractive industry, as it is very important for certain emerging economies such as Botswana, Lesotho, Namibia, Sierra Leone, and Angola. See figures 3 and 4. All these countries derive significant revenue streams from the diamond industry. For these countries, a better understanding of the diamond rent is crucial to establishing a sustainable tax regime while retaining a fair share of the value of the extractives sector.

Relative value at mine stage of the diamond industry (%).



**Figure 3. Relative value at mine stage of the diamond industry (%).**

Source: RMG Consulting 2021.

Diamond industry contribution to GDP in individual countries 2019 (%).

Country	Diamond value as % of GDP
Botswana	9.23
Lesotho	4.84
Namibia	4.17
Sierra Leone	1.54
Angola	0.72

**Figure 4. Diamond industry contribution to GDP in individual countries 2019 (%).**

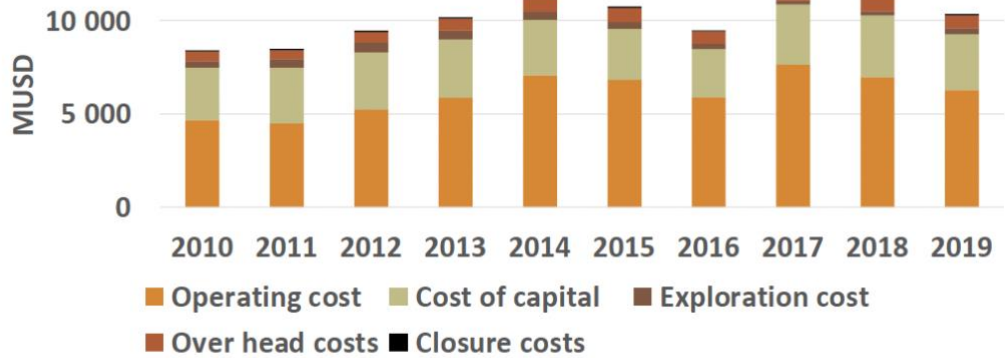
Source: RMG Consulting 2021.

#### 1.4 Rents in the diamond industry

The Kimberley Process gives access to production volumes and average production values on a national level. Thus, total income could be calculated. However, there are no data on costs publicly available. By using the structured approach discussed above a method is established taking all costs into account. More or less all public data on a global level was consulted in the process. These sources included for example annual and quarterly reports by companies as well as other reports on the industry by various sources. Cost of capital in the diamond industry over the

last decade was determined using real interest rates. From these data the average costs of the diamond industry were calculated on a global level. These costs were recalculated as a cost, in US dollars, per carat. See figure 5 and 6.

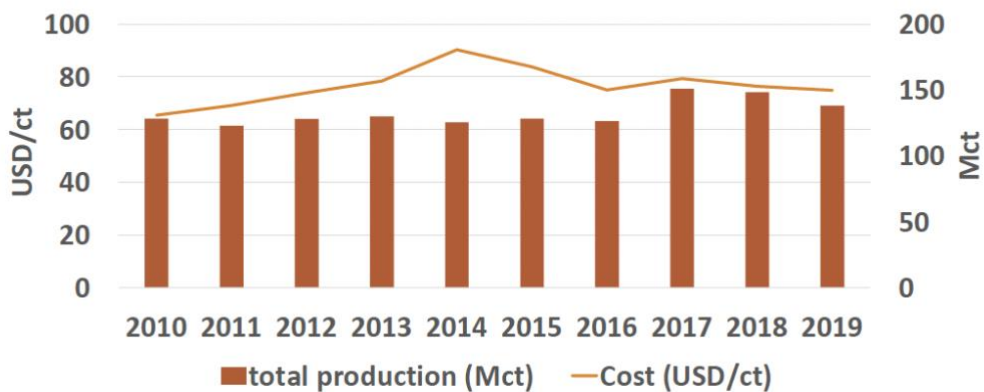
## Total costs per component 2010-2019 (MUSD).



**Figure 5. Total costs per component 2010-2019 (MUSD).**

Source: RMG Consulting 2021.

## Total costs per carat & total production 2010-2019 (USD/ct & Mct).



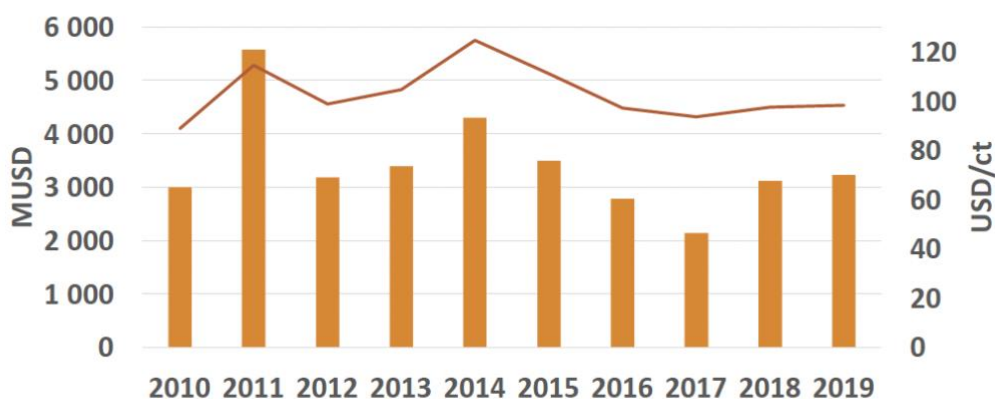
**Figure 6. Total costs per carat & total production 2010-2019 (USD/ct & Mct).**

Source: RMG Consulting 2021.



Applying these steps and remembering that  $\text{rent} = \text{total income} - \text{total costs}$  we could calculate the global diamond rent. See figure 7.

## Diamond rent & average value of raw diamond 2010-2019 (MUSD & USD/ct).

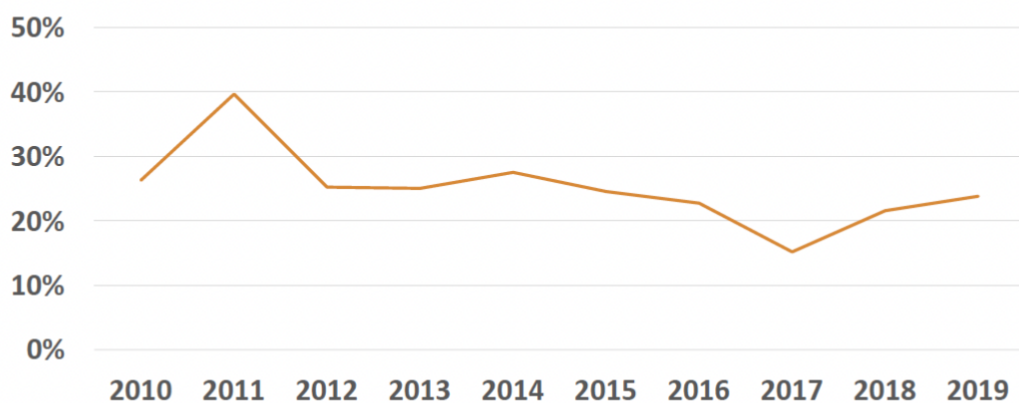


**Figure 7. Diamond rent & average value of raw diamond 2010-2019 (MUSD & USD/ct).**

Source: RMG Consulting 2021.

Diamond rent as a percentage of total production value of the diamond industry have decreased over the period 2010-2019, see figure 8. This can to a large extent be explained by increasing costs shown above.

## Diamond rent as percentage of total value of diamond industry 2010-2019 (%).



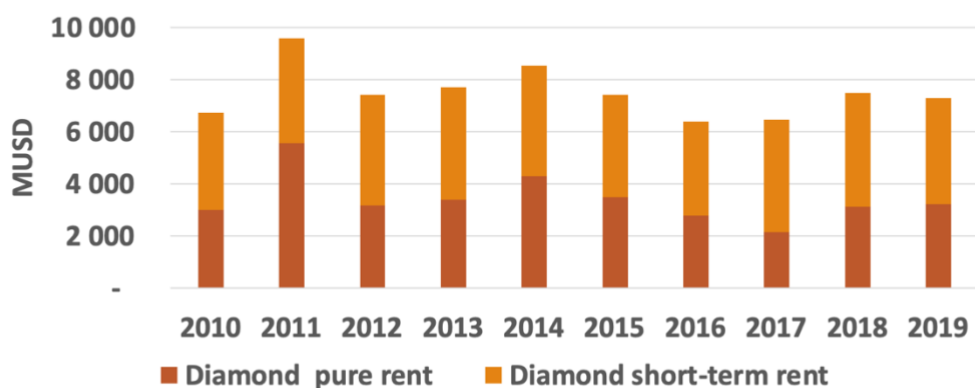
**Figure 8. Diamond rent as percentage of total value of diamond industry 2010-2019 (%).**

Source: RMG Consulting 2021.

If not all costs are deducted the rent will be over-estimated (see figure 9). Pure rent, the sustainable rent over a long term, will be lower than a rent calculated on only the production costs of a mine. These rents can be thought of as a short-term rent as in the short run these can be taken away without a change in economic behaviour from the investor. But, as discussed above, in

the long run this will lead to low investments and without new investments into the sector, stocks of non-renewable resources will be gradually depleted and the sector will slowly die out.

## Diamond rent, pure and short-term, 2010-2019 (MUSD).



**Figure 9. Diamond rent. Pure and short-term, 2010-2019 (MUSD).**

Source: RMG Consulting 2021.

### 1.5 Conclusions

In conclusion, only pure rent can be taxed without changing the economic behaviour of an investor. Thus, to ensure continuous investments into the industry and a continuous production flow it is important not to over-estimate the rent – or the taxable space – and levy to high taxes. Direct taxes and royalties are also just a part of what the industry brings to a country – job opportunities, workforce education and income taxes are also important parts. The industry’s ability to operate over the long-term thus hinges on a well-balanced tax policy and an understanding of the rent created by the industry. Companies need to make a profit, but it is also important to keep in mind that mineral wealth under most jurisdictions belong to the state/ country/ people. Governments hence have the responsibility to make sure that an optimal part of the rent created by its national mineral patrimony is returned to the state through a royalty and other taxes. Taxes should create and maintain a sustainable win-win situation. Companies get an educated workforce, infrastructure, public institutions etc. while the country gets, its fair share of its natural wealth.

The study *Resource rents in the diamond industry 2014–19: Rents, issues, methods, and data availability* established a global diamond rent, however, the study was not intended to give figures for individual countries. Diamonds come in many shapes and qualities and understanding rents in a specific diamond mining country was beyond the scope of the study. The study collected as much general data as possible and applied global or regional averages to any mine where data was lacking. Thus, a global average could be calculated. But on a country-by-country level the figures might be too high or too low. However, the study did establish a method and that method can be applied to any country. Because, as the World Bank suggests, governments should pay closer attention to their natural capital because its importance in building wealth and economic progress. Resource rents can in this case be seen as an indicator that can give an understanding of the total tax burden an industry can manage without jeopardizing its long-term future.

Thus, the conclusion, and the point of this discussion, is that countries should calculate national resource rent, for economically important minerals that are produced locally, as a means to plan ahead and effectively levy taxes.

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