

An Analysis of the Commercial Potential of Ethiopia's Coloured Gemstone Industry



June 2016

By Dr. Yolande Kyngdon-McKay, Angela Jorns, Barbara Wheat and Tom Cushman, with contributions from Anna Barker, Estelle Levin Nally and Sileshi Nemomissa

Disclaimer:

The findings, interpretations, and conclusions expressed herein are those of the author(s). The findings, interpretations and conclusions expressed in this paper do not necessarily reflect the views of the International Bank for Reconstruction and Development/ The World Bank and its affiliated organizations or the Executive Directors of the World Bank or the governments they represent. The World Bank, and the donors of the Extractive Industries Technical Advisory Facility (EI-TAF) Multi-Donor Trust Fund do not guarantee the accuracy of the data included in this work. The boundaries, colors, denominations and other information shown on any map in this work do not imply any judgement on part of the World Bank Group concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

Copyright Statement:

The material in this publication is copyrighted. Copying and/or transmitting portions or all of this work without permission may be a violation of applicable law. The International Bank for Reconstruction and Development/ The World Bank encourages dissemination of its work and will normally grant permission to reproduce portions of the work promptly.

For permission to photocopy or reprint any part of this work, please send a request with complete information to the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA01923, USA, telephone 978-750-8400, fax 978-750-4470, <http://copyright.com>.

All other queries on rights and licenses, including subsidiary rights, should be addressed to the Office of the Publisher, The World Bank, 1818 H Street NW, Washington, DC 20433, USA, fax 202-522-2422, email: pubrights@worldbank.org.

About Estelle Levin Ltd.

Estelle Levin Ltd. (ELL) is a specialist consultancy dedicated to responsible mining and sourcing. Working from concept to implementation, in all cases we help our clients transform their ideas, businesses and operations into something more sustainable not just for them, but for their stakeholders too. We provide world-class research, advisory and capacity-building services to leading brands and small businesses from along the value chain (mining, trading, manufacture, retail), governments, aid agencies, and NGOs. We stand amongst the world's foremost development consultancies with expertise on Artisanal and Small-scale Mining (ASM) and developing highly tailored and context-specific responsible sourcing systems for artisanal minerals, especially from fragile economies. Precious minerals have been a core specialism for ELL since 2004; we investigate the issues, design the initiatives addressing them, educate stakeholders on these, and support companies in implementing precious minerals management systems. You can find out more about us at www.estellelevin.com and www.asm-pace.org.

Authorship

This report was researched and written by Dr. Yolande Kyngdon-McKay, Angela Jorns, Barbara Wheat and Tom Cushman, with contributions from Anna Barker, Estelle Levin, and Sileshi Nemomissa.

Acknowledgements

The authors would like to thank representatives from the Ministry of Mines, Petroleum and Natural Gas, the Coordinator of the South Wollo Zone Mining Bureau, the representative of the Delanta Mining Bureau and other officials for their generous contributions to this research, and The World Bank for assisting with the coordination of meetings in Addis Ababa and Kombolcha. We would especially like to thank the local jewellers, lapidaries and exporters in Addis Ababa, the Dean of the Polytechnical College in Kombolcha, the lapidaries, brokers, and miners in Kombolcha and Delanta, the international gem traders in Hong Kong and Bangkok, and all of the gem industry stakeholders in Afghanistan, Australia, Brazil, Madagascar, Nigeria, Sri Lanka and Tanzania who donated their valuable time to our research. We would also like to thank the following country experts for generously donating their time to reviewing select case study analyses: Christopher Prior (Afghanistan); Stuart Pool (Sri Lanka); Ruy Lima (Brazil); and Patrick Ojeka (Nigeria). Sincere thanks to Felix Hruschka for reviewing the final report on behalf of The World Bank.

Disclaimer from Estelle Levin Ltd.

This report is prepared from sources and data that Estelle Levin Limited believes to be reliable, but Estelle Levin Limited makes no representation as to its accuracy or completeness. The report is provided for informational purposes and is not to be construed as providing endorsements, representations or warranties of any kind whatsoever. The authors accept no liability for any consequences whatsoever of pursuing any of the recommendations provided in this report, either singularly or altogether. Opinions and information provided are made as of the date of the report issue and are subject to change without notice.

About this report

This is the final iteration of this report. It is our understanding that it will be used by The World Bank and Ethiopia's Ministry of Mines, Petroleum and Natural Gas to help inform their strategies for developing Ethiopia's coloured gemstones sector.

Cover Photos – ©Estelle Levin Ltd, photo credit Yolande Kyngdon-McKay: a woman polishing Ethiopian green amber; and an assortment of low-grade, polished Wello opal, Addis Ababa, Ethiopia, 2015.

Contents

Contents.....	v
Acronyms and Abbreviations	vii
Executive Summary.....	ix
1. Introduction	1
1.1. Background.....	1
1.2. Purpose of Report.....	9
1.3. Research approach / methodology	10
1.3.1. Scope	13
2. Commercial Situational Analysis.....	14
2.1. Supply Chain.....	14
2.2. Value Chain and Commercial Challenges.....	15
2.2.1. Overview	15
2.2.2. Miners.....	16
2.2.3. Gemstone Brokers.....	18
2.2.4. Lapidary training centres: Kombolcha.....	19
2.2.5. Lapidaries and Exporters.....	22
2.2.5.1. Addis Ababa.....	22
2.2.5.2. Kombolcha and Delanta	29
2.3. Recommendations.....	32
3. Governance	37
3.1. Government Policy.....	37
3.2. Regional Government and Domestic Beneficiation	39
3.3. Key Challenges	40
3.4. Recommendations.....	42
4. Markets.....	45
4.1. International Market.....	45
4.1.1. Demand.....	45
4.1.1.1. Quality and Competitiveness	46
4.1.1.2. Key Challenges.....	46
4.2. Domestic Market.....	49
4.2.1. Demand.....	49
4.2.2. Key challenges	51
4.3. Recommendations.....	54

5. Country Case Studies of Gemstone Sector Development.....	56
5.1. Afghanistan.....	56
5.2. Australia.....	62
5.3. Brazil.....	72
5.4. Madagascar.....	78
5.5. Nigeria.....	85
5.6. Sri Lanka.....	88
5.7. Tanzania.....	94
6. Summary of Recommendations.....	98
BIBLIOGRAPHY	104

Acronyms and Abbreviations

AKDN	Aga Khan Development Network
APEX-Brasil	Brazilian Trade and Investment Promotion Agency
ASI	Adam Smith International
ASM	Artisanal and small-scale mining
CETEM	Center of Mineral Technology
CIBJO	International Confederation of Jewelry
CIDA	Canadian International Development Agency
DFID	Department for International Development
EDB	Export Development Board
FBAO	Future Brilliance Afghanistan Organisation
FDI	Foreign Direct Investment
FGA	Fellow of the Gemmological Association
GEA	Gemstone Entrepreneurial Association
GFA	GFA Consulting Group
GIA	Gemmological Institute of America
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GJA	Gem & Jewellery Association
GJRTI	Gem and Jewellery Research and Training Institute
IBGM	Instituto Brasileiro de gemas e metais preciosos
IGM	Institute de Gemmologie de Madagascar
ICA	International Colored Gemstone Association
KYC	Know-Your-Customer
KYP	Know-Your-Product
MME	Ministry of Mining and Energy
MoMPNG	Ministry of Mines, Petroleum and Natural Gas
MMSD	Ministry of Mines and Steel Development
MMVCDD	Mineral Market and Value Chain Development Directorate
NaWi	Sustainable Economic Development in Northern Afghanistan project
NGJA	National Gem and Jewellery Association
NSW	New South Wales
OECD	Organisation for Economic Cooperation and Development
OECD DDG	Organisation for Economic Cooperation and Development Due Diligence Guidance
PGRM	Projet de gouvernance des ressources minerales

PNM	National Mining Plan 2030
SA	South Australia
SEAMIC	Southern and Eastern African Mineral Centre
SEBRAE	Brazilian Service of Support for Micro and Small Enterprises
SME	Small and Medium-scale Enterprise
SMMRP	Sustainable Management of Mineral Resources Program
TAFE	Technical and Further Education
TAMIDA	Tanzania Mineral Dealers Association
USAID-ASMED	Small and Medium Enterprise Development Project
USAID	United States Agency for International Development
USGS	United States Geological Survey
WWF	World Wildlife Fund

Executive Summary

I. Introduction

Ethiopia is home to significant and diverse mineral resources, including deposits of over 40 coloured gemstone varieties; of these, opals are the most significant in terms of trade.

Opal was first discovered in Ethiopia in the mid-1990s, in the Shewa Province. These opals were soon discovered to be of a poor quality when compared to Australian opal, which had dominated the market for over a century. However, in 2008, a second large-scale discovery of opal was made in North Wello Delanta—a white opal variety with a beautiful play-of-colour and broad colour variations. Wello opal, as it would come to be known, was found to rival, and in some cases surpass, Australian opal in terms of quality. Wello opal's characteristics quickly saw a marked increase in opal exports out of Ethiopia to major manufacturing and consumer markets, including India, China, Europe and the USA.

The vast majority of coloured gemstone mining in Ethiopia, and around the world, is performed by miners in the artisanal and small-scale mining (ASM) sector; workers who are defined by their predominate use of rudimentary technology, such as picks and shovels, to mine for minerals that are typically found in shallow (alluvial) deposits.¹ In Ethiopia, opal mining is performed solely by the ASM sector. In North Wello Delanta, for example, it is a source of employment for 3,800 (registered) ASM workers, according to official government figures.

In 2013, Ethiopia's Ministry of Mines, Petroleum and Natural Gas (MoMPNG) proposed the introduction of a law that would prevent the export of rough opals out of country; all opals would instead have to be cut and polished prior to export. This was motivated by the recognition that the export of rough opal to be manufactured overseas was limiting growth opportunities in the domestic lapidary sector, and undermining the Ministry's goal to build Ethiopia's foreign currency reserves at a faster pace. However, this proposed law was ultimately withdrawn because of the following:

- The inability of many exporters to access the necessary finance to establish robust lapidary businesses;²
- A lack of recognition of the fact that Ethiopia simply did not have enough people trained in gemstone lapidary to provide exporters with the necessary workforce to establish functional lapidary businesses, or out-source large volumes of rough

¹ Cross, J. S. van der Wal, E. de Han. 2010. Rough Cut: Sustainability Issues in the Coloured Gemstones Industry. Retrieved 20/11/2015 from http://www.somo.nl/publications-en/Publication_3418

² Araya, E. 2013, August 4.

to external lapidaries, and thus maintain their previous export levels;³

- A lack of recognition of how much time is required to develop high-level lapidary skills, particularly when they have to be internationally competitive against doyens of this practice, like India;⁴
- A lack of recognition of the fact that the lapidary skills that did exist in the country when the law was introduced, which were primarily products of training provided in the Amhara region, were not of a high enough calibre to compete with countries like India. This meant that the comparatively poorly cut stones coming out of Ethiopia would not have been well received on the international market, and thus would have commanded lower prices anyway (a problem that is still occurring, as this report will show);⁵
- The fact that the government was not doing enough to nurture the development of domestic lapidary businesses either prior to the law's introduction, or in its direct aftermath;⁶ and
- A lack of recognition of the law's creation of a huge incentive to simply smuggle rough opals out of Ethiopia's porous borders—a practice that the government is still struggling to control.⁷

After the proposed law was dropped, exporters were subsequently required to export a minimum of 10% of their opal as cut and polished and a maximum of 90% as rough. Between 2013 and 2015, this was gradually increased to 20:80, and then to 40:60, where it resides now.

II. Purpose of the study:

Having recognised the importance of the coloured gemstones sector for the inclusive economic development of Ethiopia, the MoMPNG requested the World Bank's assistance to understand:

- The present state of the industry, primarily in commercial and social development terms;

³ Araya, E. 2013, August 4.

⁴ Interview 13/11/2015a

⁵ Interview 13/11/2015a; Interview 10/11/2015b

⁶ Sintayehu, T. N.d. Value Addition on Gemstones and its Impact on Ethiopian Economy. Orbit Ethiopia Plc. Presentation at Ethiopia Extractives Industry Forum, Addis Ababa, Ethiopia, October 7th 2014. Retrieved 13/09/15 from

http://www.worldbank.org/content/dam/Worldbank/Event/Africa/Ethiopia%20Extractive%20Industries%20Forum%202014/4c_ORBIT.pdf.

⁷ Interview 09/11/2015a; Interview 11/11/2015

- Which features of the industry and its governance are either improving or limiting its commercial success, and why; and
- The key 'lessons learned' from what other gemstone producing countries around the world have done to commercialise this industry, and how they could be constructively applied to the Ethiopian context.

A clearer understanding of the commercial realities of this sector and how it is governed will improve the Ethiopian government's ability to realise its objectives under the Second Growth and Transformation Plan ('GTP-2') for this important industry. While this study focussed primarily on the opal industry, given its dominance in Ethiopia's coloured gemstone sector, these recommendations are largely relevant to all of the 40-plus gemstone varieties mined in the country.

The MoMPNG may use these recommendations to help inform the development of Ethiopia's coloured gemstone sector. The recommendations could also inform other research (including that which has been suggested in this report) into options for developing the gemstone sector to ensure that it has a resilient future. This information could form the basis of a new strategic plan for the sustainable development of the sector, which should be drafted in consultation with all relevant industry stakeholders. It is also recommended that the Ministry's five-year plan for the mining industry be revised accordingly.

III. Methodology:

The methodology used for this study included semi-structured interviews and site visits in Ethiopia and abroad, and document analyses and expert reviews. Case studies of seven other gemstone-producing countries, including Afghanistan, Australia, Brazil, Madagascar, Nigeria, Sri Lanka and Tanzania, were also conducted to identify the ways in which they have worked to establish functional coloured gemstone industries and improve their commercialisation. This study was limited by a short timeframe. In recognition of this, many of the recommendations that have arisen out of the study's findings include calls for further research into specific issues.

IV. Findings

The findings of this research indicate that the Ethiopian coloured gemstone sector has enormous potential, but its growth and efficiency are being constrained by numerous challenges throughout the supply chain. The country case studies also found that lessons can be learned from how these countries have realised, or struggled to realise, their coloured gemstone sector goals.

Below is a summary of a selection of the study's findings on Ethiopia's coloured gemstone sector (the findings from the country case studies are detailed in Chapter 5):

1. Gemstone Supply Chain:

- The typical supply chain of gemstones in Ethiopia as reported to the researchers is Miners' Association—Broker—Lapidary—Exporter (the latter two stages are often encapsulated in a vertically integrated company). This is likely to be a contracted version of what actually exists,⁸ excluding the additional trading that typically takes place between miners and miners' cooperatives, miners' cooperatives and brokers, and brokers and lapidaries/exporters.⁹
- Miners: Opal miners see their lack of mining tools and equipment as their biggest challenge, which they prioritize above receiving additional training in mining techniques. They also expressed concerns about exposure to significant health and safety risks. The miners reported being self-financing in the majority of cases, and bore their own business risks.
- Brokers: Some rough opal brokers expressed a desire to also trade cut and polished opal, which is currently prohibited by law. Brokers were also reported as often making inflated profits due to the following factors in the upstream sector of the supply chain: (i) asymmetric information about the true value of the rough (miners often lack basic knowledge about what they are selling);¹⁰ (ii) extreme poverty amongst miners (the mining motivation is often survival, not profit);¹¹ and (iii) the existence of a buyers' market, due to the over-supply of opal.
- Lapidaries: To operate a lapidary legally in Addis Ababa, one must be a citizen of Ethiopia and obtain the necessary licence from the MoMPNG. Licenced lapidary holders are by law allowed to buy gemstone cutting and polishing machinery duty-free; however, this law needs to be communicated more effectively by the government to the lapidary operators. In contrast to the ease with which lapidaries can meet legal requirements, setting up an operational lapidary business was reported as being extremely challenging. The most commonly

⁸ Foreign Affairs, Trade and Development Canada. 2014. Ethiopian Gemstones. Maximising Potential—Summary Report. (There can be anywhere between five and 15 actors in a typical gemstone supply chain [one that is not vertically integrated, like those of Gemfields, Tiffany & Co., De Beers, etc.], and potentially more depending on the gemstone and where it is mined.)

⁹ Foreign Affairs, Trade and Development Canada. 2014. Ethiopian Gemstones. Maximising Potential—Summary Report. (There can be anywhere between five and 15 actors in a typical gemstone supply chain [one that is not vertically integrated, like those of Gemfields, Tiffany & Co., De Beers, etc.], and potentially more depending on the gemstone and where it is mined.)

¹⁰ See: Akerloff, G.A. 1970. The Market for "Lemons" : Quality Uncertainty and the Market Mechanism. *The Quarterly Journal of Economics*. Vol. 84, No. 3, pp. 488-500.

¹¹ Foreign Affairs, Trade and Development Canada. 2014.

reported challenge was finding sufficiently trained staff for cutting and polishing gemstones, and then further training them in order to bring their skill levels up to an internationally competitive standard. The second most commonly mentioned challenge raised by interviewees in relation to establishing a successful lapidary business was accessing the necessary finance.

- Lapidary Training Centres: Originally, seven lapidary training centres were established in the Amhara Region in 2009, each embedded in the local Polytechnical Colleges. However, in the past three years, the Kombolcha Polytechnical College has been the only one offering this type of training. There is a lack of qualified (Ethiopian) teachers with the necessary practical experience and skills to teach lapidary courses in gemstone cutting and polishing. The employability of the lapidary training graduates also remains a challenge. Budget constraints also affect the lapidary college.
- The lapidary training conducted by the Polytechnical Colleges has resulted in some encouraging developments. The three lapidaries interviewed in Kombolcha and Delanta stated that they had traded gemstones illegally previously, but decided to register and formalise their lapidary businesses after receiving short-term training in the Polytechnical Colleges in Kombolcha and Bahir Dar respectively.
- Exporters: The main challenge cited by exporters was that the MoMPNG has set a minimum exporting price for rough opal (depending on its weight, and perceived size, colour and quality—attributes that are assessed by the MoMPNG), which has the following impacts on the market:
 - The minimum export price is often too high—far above what is commanded on the international market;
 - Because of the high prices often put on lower quality goods, for most exporters it is only profitable to export the highest quality opal (at least formally), which means that there is almost no (formal) market demand for the lower quality material; and
 - Since high quality opal makes up only approximately 1% of total production, a large proportion of opal is rejected by buyers, or sold through illegal channels.¹²
- Exporters also lamented the scale of gemstone smuggling and tax evasion by other industry stakeholders, which impacts their ability to flourish.

¹² Interviews, Delanta 2015.

- Some exporters claimed to find it extremely difficult to access the necessary financing to grow their businesses.
- Exporters also argued that the presence of very large, internationally funded exporters reduces competition in the industry and makes it difficult for smaller companies to operate.

2. Governance:

- The achievement of the MoMPNG's goals for the mining sector, as outlined in its five-year plan released in January 2015, will require the addressing of capacity constraints, as well as coordination issues.
- The MoMPNG faces challenges in enforcing licensing requirements, and managing gemstone smuggling due, in part, to a high staff attrition rate. Smuggled gemstones have the following adverse impacts on the market for Ethiopian gemstones:
 - The market is flooded with Ethiopian gemstones, especially opal, which reduces their value;
 - Local traders observe (at international trade fairs) international sellers of Ethiopian opal pricing it more cheaply than they can, because they have not had to incur costs associated with legitimate business operations (taxes, licences, minimum wages, etc.); and
 - Smuggled gemstones are more likely to eventually have undisclosed treatments (smoking, dyeing, heating) applied to them, which give Ethiopian opal a bad reputation on the international market.¹³

3. Gemstone Markets:

International Markets:

- Demand is increasing for Ethiopian opal, and the largest buyers are from China and the USA. However, misinformation is being spread about Wello opals on the internet, which incorrectly states that it has the same characteristics as Shewa opal. This is contributing to the lower prices commanded by Wello opal on the international market.
- The most commonly reported problem faced by those buying opals directly from Ethiopia was the government's 40:60 rule for exporting polished and rough

¹³ This link can be ascribed to the fact that if you're willing to break one law, you're also likely to be willing to break other laws and/or social contracts (i.e. the requirement/expectation to disclose gem treatments prior to sale).

opals.¹⁴ The quality of opal cutting and polishing in Ethiopia is not up to the standards of some international traders, and so this rule places a burden on them to buy poorly cut stones at a higher price when they could be cutting and polishing in their own facilities and getting better results.

- In relation to local Ethiopians working in lapidary, some Indian traders said they have cutting facilities in Ethiopia, but because of the poor skills of the locals they must send cutters from Jaipur to do some of the work. They thus view the 40:60 rule as forcing them to spend money on inferior cutting when they have access to better cutters outside the country.
- The Ethiopian government places much emphasis on the size of the rough or cut stones, without considering other key factors that determine their quality, i.e. their 'play-of-colour' and opacity, and, in the case of fire opals, their clarity. This means that the government's valuations are often too high—far above actual market prices.
- The export process in Ethiopia is unappealing; foreign currency must be transferred into a specified account in Ethiopia before the export process can begin. Currently, the bank advice expires within one year, so if the stones are not exported within that time, the money cannot be transferred back to its country of origin, nor can it be used to export stones after the expiration date.

4. Domestic Market:

- Some of the lapidaries and exporters interviewed in Ethiopia argued that the domestic market for their gemstones is almost non-existent. The meagre usage of coloured gemstones in Ethiopia's own jewellery sector was witnessed first-hand by the study's researchers.
- There are two main issues at play here: a lack of domestic skills in relation to jewellery manufacturing, and a lack of domestic knowledge regarding natural gemstones (those found both within Ethiopia and without) amongst both consumers and retailers.

¹⁴ Interview 7: Hong Kong and Bangkok; Interview 3: Hong Kong and Bangkok;

V. Recommendations:

Based on the study's complete findings (which can be found in the main body of the report), a set of recommendations was developed for the MoMPNG's consideration. These are summarised below, under relevant themes. They have also been labelled in terms of short-to-medium or long-term strategy; recommendations falling under the former category are appropriate for an immediate action plan, while those under the latter are suited to a more extended time horizon.

1. Support for gemstone miners

Short-to-medium term:

- Train gemstone miners to use commercially sensitive mining techniques;
- Offer Operational Health and Safety (OH&S) and safe mining practices training to gemstone miners; and
- Educate gemstone miners about the value and characteristics of opal (and other gemstones)

Long-term:

- Provide adequate business training for any future gemstone mining cooperatives to educate the miners about how to build resilience into their activities, and help them to mine and commercialise more productively.

2. Support for exporters and lapidaries

Short-to-medium term:

- Research how best to improve access to financing for smaller lapidaries and exporters to increase their viability and competitiveness; and
- Develop a strong marketing plan that communicates the attributes of natural Ethiopian opal, with the goal to educate domestic and international consumers

Long-term:

- Promote and assist exporters in selling cut and polished stones directly to global markets like the US and Europe, once lapidary skills reach an internationally competitive standard;
- Possibly also oversee the development of certain specialisms that give the sector a cutting edge over established 'do-it-all' competitors;
- Provide more support in creating international market access, market linkages, and developing marketing and sales skills within the lapidary and export sectors; and

- Integrate lapidary/gemstone cutting and polishing training with small business development initiatives and training (e.g. business management, financial and accounting skills, etc.).

3. Cutting and polishing training

Short-to-medium term:

- Encourage close collaboration between existing lapidary training centres and the gemstone industry, particularly the downstream;
- Work with lapidaries and exporters to create and improve domestic cutting and polishing skills (perhaps by subsidising in-house training programmes);
- Allow gemstone brokers to trade in cut and polished stones, thus improving access to the market for trained lapidaries and reducing the appeal of the black market for such stones; and
- Increase funding to lapidary training institutes, in order to supply sufficient quantities of rough for the students to practice on, thus increasing the currently minimal numbers of highly trained cutters and polishers entering the market

Long-term:

- Introduce a 'train the trainer' model, which has proven to be a valuable long-term strategy in other countries;
- Encourage training schools to teach students to cut for beauty instead of weight, thus shifting focus to technique, in turn improving the quality of their cutting and polishing; and
- Support training centres that they cannot self-fund, concentrating on the skills development goal of the programme, not the profits.

4. Supporting the jewellery industry

Short-to-medium term:

- Conduct further research into the jewellery making stage of the gemstone supply chain in Ethiopia, to illuminate its potential and the challenges that are preventing its steady growth;
- Engage with lapidaries attempting to build domestic demand for jewellery set with Ethiopian gemstones;
- Analyse domestic consumer attitudes (locals, tourists, expats) towards jewellery set with gemstones, to identify why this style of jewellery is currently so rare in

the domestic market and how that could be changed moving forward;

- Pinpoint the unique 'story' that Ethiopian jewellery has, which could be used to help market it internationally; and
- Engage meaningfully with all key supply chain actors in the industry, from miners to jewellers, to establish this provenance

Long-term:

- Research whether locally produced gold could be used in designs for further value adding.

5. Gemstone marketing

Short-to-medium term:

- Market Ethiopian opal internationally, to foster demand, improve global sales and permanently address/disprove residual concerns about its stability, quality and value; and
- Allocate a sufficient budget, or consider other sources of funding, in order to realise the proposed gemstone marketing centre detailed in the Ministry's five-year plan.

Long-term:

- Consider international branding of one high-end iconic stone, such as opal, and thus enhance the overall image of the gems and jewellery sector.

6. Illegal activities

Short-to-medium term:

- Research illegal gemstone supply chains in Ethiopia, to ascertain the typical structure and common actors, their geographical profile, the loopholes (and vulnerable actors [miners, underpaid officials, etc.]) they exploit, and what motivates people to engage in this illegal trade; and
- Tackle illegal lapidary businesses, which are limiting economic growth and undermining legitimate operators, potentially forcing them out of business

Long-term:

- Develop an appropriate framework for systematically addressing illegal gemstone supply chains in Ethiopia, based on the abovementioned research;
- Seek to use diplomatic channels to require improved customs control at the

point of import in India;

- Encourage its neighbours, particularly Kenya and Djibouti, to exercise vigilance with regards to the export of opal, which neither of these two countries mine domestically; and
- Explore the utility of a implementing a nation-wide supply chain quality assurance mechanism, like MineralCare¹⁵.

7. Taxes and export prices

Short-to-medium term:

- Introduce market-based incentives in order to reduce the size of Ethiopia's gemstone black market;
- Reconsider its policy of minimum export prices for rough opal, in order to disincentivise engagement in the black market for lower quality gemstones;
- Seek input from key supply chain actors to enable a stronger degree of industry buy-in for such changes; and
- Review the 40:60 rule, in cooperation with stakeholders, to ascertain whether, and to what extent, it is incentivising smuggling.

Long-term:

- Explore options for removing import taxes on rough stones, in order to provide additional material for the infant domestic cutting and polishing sector, and reduce its reliance on domestically produced stones.

8. Infrastructure

Short-to-medium term:

- Consult with all major industry stakeholders to determine the key desired features and functions of said gemmological institute; and
- Encourage partnerships with the private sector to help link trained lapidaries in this region to buyers, and improve the calibre of training on offer (by identifying key areas of weakness from a private sector perspective)

Long-term:

- Ensure that the MMVCDD tries to utilise the existing cutting and polishing, bead

¹⁵ For more information, see: <https://idcare.eu>

drilling and faceting machinery in lapidary training institutes in the Amhara region (and beyond), the vast majority of which is currently lying idle; and

- Improve major arterial roads in Ethiopia, to increase the efficiency of transportation between mines and major trading hubs.

9. Governance

Short-to-medium term:

- Study the challenges associated with staff retention in the Ministry, and explore how they could be addressed

Long-term:

- Address the dearth of knowledge of the coloured gemstones industry within the Ministry;
- Undertake a facilitating rather than a steering role in the industry, working in close collaboration with all relevant representatives of the private sector; and
- Establish a national authority responsible for the regulation, supervision and promotion of the whole gemstone and jewellery sector.

10. Policy

Short-to-medium term:

- Build a domestic cutting and polishing sector by first focussing on lower value gemstones, where skill levels do not need to be as high and the barriers of entry are low; and
- Focus efforts and support where domestic processing, cutting, polishing or jewellery making is already happening (including in the private sector), and where skills can be 'upgraded' instead of being built from scratch.

Long-term:

- Embed any activities designed to develop cutting and polishing training into a larger strategy or policy;
- Consider 'softer' policies differentiated by gemstone types, values and markets (i.e. tax reduction on export of cut gemstones) as alternatives to a ban on the export of rough gemstones, until/unless it can be implemented gradually and partially (based on existing skill levels and market needs), concurrent with the development of a domestic cutting and polishing industry;
- Initiate a wider macro-economic strategy and activities, since a domestic cutting

and polishing industry cannot be built through a sole focus on lapidary training activities; and

- Embed donor funded activities in a larger economic or sectorial strategy by the government, and receive committed and long-term support and guidance by the government.

This study demonstrates that Ethiopia's coloured gemstone industry, when effectively governed and supported, has the potential to make an important contribution to the state's economic growth and social development. The key challenges currently undermining this potential are explored in this report, along with practical recommendations as to how they could be addressed.

1. Introduction

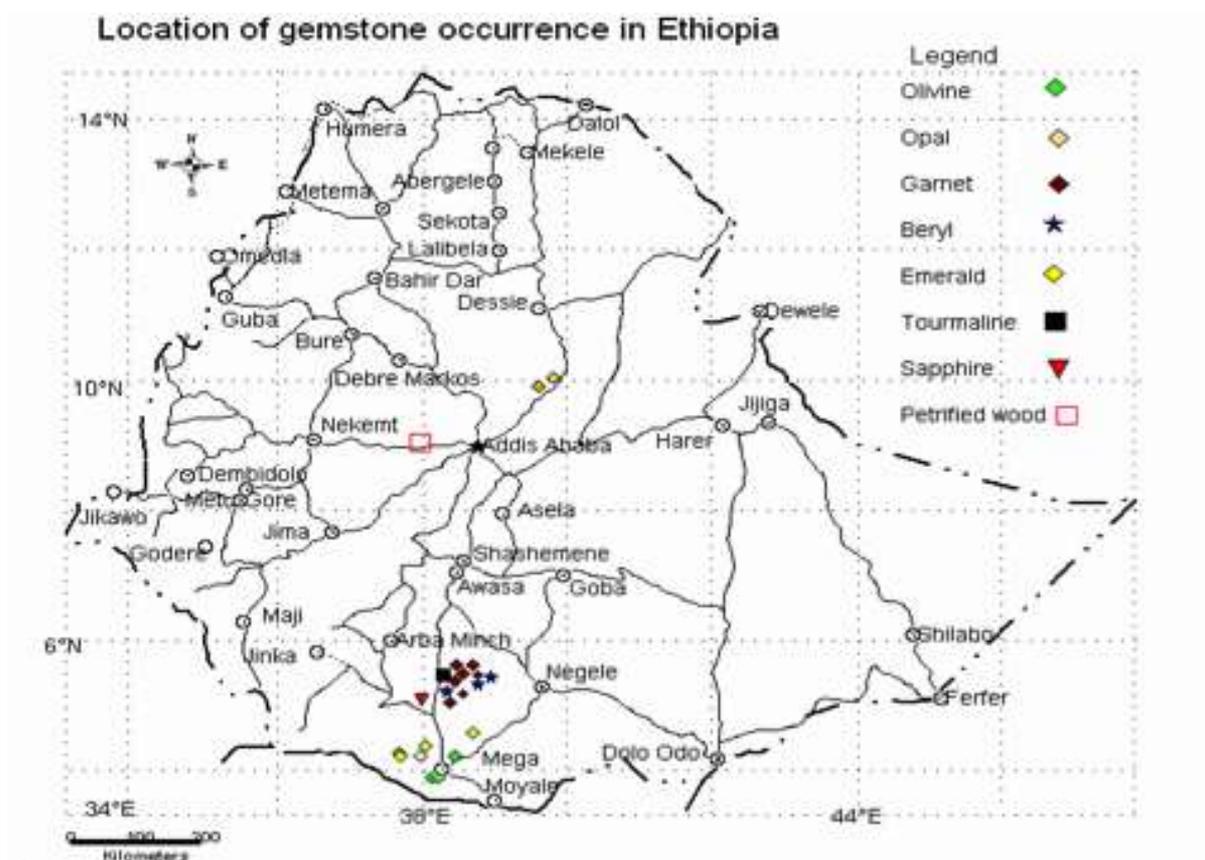


Figure 1 Location of some known gemstone deposits in Ethiopia¹⁶

1.1. Background

Ethiopia is a land-locked federal republic located in Eastern Africa, sharing its borders with numerous conflict-affected states, including Eritrea, Somalia and South Sudan. Despite the region's instability, Ethiopia's economy has seen significant expansion in the past ten years, during which GDP growth averaged the impressive double-digit figure of 10.8% per annum.¹⁷ Ethiopia remains, however, an emerging economy; its GDP per capita is among the lowest in the world at only USD1600,¹⁸ and 30% of its

¹⁶ Map sourced from Geological Survey of Ethiopia. 2009. Opportunities for Gemstone resources development in Ethiopia. Retrieved 13 September 2015 from <http://www.gse.gov.et/phocadownload/PromotionDocs/Gemstone%20Potential%20of%20Ethiopia.pdf>

¹⁷ The African Development Bank Group. N.d. Ethiopia Economic Outlook. Retrieved 16 January 2016 from <http://www.afdb.org/en/countries/east-africa/ethiopia/ethiopia-economic-outlook/>

¹⁸ The Central Intelligence Agency. 2015, November 4. Africa: Ethiopia. The World Factbook. Retrieved 20 November 2015 from <https://www.cia.gov/library/publications/the-world-factbook/geos/et.html>. Poverty is defined as living on less than USD2 per day.

almost 100 million people live below the poverty line.¹⁹

While its primary exports are coffee and gold,²⁰ Ethiopia is also home to other significant and diverse mineral resources, including tantalum, potash, nickel, salt, gemstones, phosphate, soda ash, marble, limestone gypsum, pumice, dolomite, silica sand and natural gas. The country has deposits of over 40 varieties of coloured gemstones, including emerald, tourmaline, opal, aquamarine, jasper, agate, chrysoprase, peridot and amethyst.²¹ While it is one of the few countries in the world to have this diversity of gemstone deposits within its borders, the calibre of many of its coloured gems tends to be at the lower end of the scale; only a few deposits produce stones that can compete with those of known international industry leaders, one of those being opal.²²

The vast majority of coloured gemstone mining around the world is performed by miners in the artisanal and small-scale mining (ASM) sector; workers who are defined by their predominate use of rudimentary technology, such as picks and shovels, to mine for minerals that are typically found in shallow (alluvial) deposits.²³ The coloured gemstone mining taking place in Ethiopia is no different, with ASM controlling production. For example, government figures report that there are 3,800 ASM workers involved in opal mining in the region of North Wello Delanta, out of which 3,668 are male and 132 are female.²⁴ Ethiopia is known to be the second largest producer of opal in the world, next to Australia. In 2012 and 2011, Australia produced an estimated USD41 million and USD40 million of rough opal respectively.²⁵

Figures from the United States Geological Survey (USGS) estimate that in 2012 Ethiopia produced 14,000kgs of opal, and 13,839kgs in 2011. It attributes 750kgs of

¹⁹ The World Bank Group. 2015. Ethiopia Poverty Assessment 2014. Retrieved 10/02/2016 from <https://openknowledge.worldbank.org/handle/10986/21323>

²⁰ The Central Intelligence Agency. 2015, November 4.

²¹ Yager, T. 2014. 2012 Minerals Yearbook: Ethiopia. The US Geological Survey. Retrieved 20/11/2015 from <http://minerals.usgs.gov/minerals/pubs/country/2012/myb3-2012-et.pdf>

²² Interview 3/11/15; Interview 4/11/15a; Interview 10/11/2015b

²³ Cross, J. S. van der Wal, E. de Han. 2010. Rough Cut: Sustainability Issues in the Coloured Gemstones Industry. Retrieved 20/11/2015 from http://www.somo.nl/publications-en/Publication_3418

²⁴ Statistics provided by the Ministry of Mines, 19/11/2015.

²⁵ Tse, P-K. 2014. The Mineral Industry of Australia. United States Geological Survey. Retrieved 13/09/2015 from <http://minerals.usgs.gov/minerals/pubs/country/2012/myb3-2012-as.pdf> . Production figures are not available.

production in 2012 to one ASM location alone, Wegel Tena.²⁶ Official figures provided by the Ministry of Mines, Petroleum and Natural Gas (hereafter Ministry of Mines, or MoMPNG) state that 194.53kgs of value-added opal was exported out of Ethiopia in the 2014-2015 financial year.²⁷ Based on a conservative estimate of opal production levels for this period being the same as 2012—14,000kgs, and accounting for the standard opal cutting and polishing attrition rate of two-thirds, these figures would suggest that the government's 40:60 rule on opal exports, which requires 40% of total exports to be cut and polished domestically, is not being met. Based on these figures, only 4.8% of the opal that was mined in Ethiopia in the 2014-2015 financial year was cut and polished in the country prior to export—a deficit of more than 35%. Furthermore, as the government states that 4545kgs of opal were exported out of Ethiopia in 2014-2015,²⁸ this suggests that almost two-thirds of the country's opal is not going through official export challenges. These gaps can likely be explained by two problems plaguing the industry: the scale of rough opal smuggling that is said to take place in East Africa; and the significant financing and capacity issues faced by lapidaries operating in Ethiopia. These challenges will be examined in depth in this report.

Opal was first discovered in Ethiopia in the mid-1990s, in the Shewa Province. The scale of the deposit and the rough's pretty play-of-colour meant that it quickly received international attention, and the gem was soon available on global markets. At the same time, efforts were made to determine the nature of Shewa opal, and, ultimately, whether or not it could compete with the beautiful, robust, and hitherto dominant, Australian opal. Analyses performed by the Gemological Institute of America (GIA) found that, unlike Australian opal, Shewa opal was hydrophane (porous), and more prone to cracking and 'crazing'—where opals develop multiple cracks that can grow over time.²⁹ It was relatively unstable and extremely difficult to cut and polish, and set into jewellery. Unsurprisingly, reports began trickling in of customers around the world returning jewellery set with Shewa opal because the stone/s had suddenly cracked, or changed colour after exposure to water.³⁰ Therefore, despite the beauty of the stone, it fell out of favour with many,

²⁶ Yager, T. 2014. The Mineral Industry of Ethiopia. United States Geological Survey. Retrieved 13/09/2015 from <http://minerals.usgs.gov/minerals/pubs/country/2012/myb3-2012-et.pdf>

²⁷ Official figures provided by the MoMPNG.

²⁸ Official figures provided by the MoMPNG.

²⁹ Johnson, M., R.C. Kammerling, D. G. DeGhionno, and J. I. Koivula. 1996. Opal from Shewa Province, Ethiopia. *Gems and Gemology*, Vol. 32, No.2.

³⁰ Interview 3/11/15; Interview 4/11/15a; Interview 10/11/2015b

but by no means all, international buyers. The dominance of Australian opal remained unchallenged.

In 2008, a second large-scale discovery of opal was made in North Wello Delanta—a white opal variety with a beautiful play-of-colour and broad colour variations. It was automatically assumed by many that Wello opal would have the same characteristics as Shewa opal. However, it is important to note that an analysis performed by the GIA on a large sample of Wello opal found that 35% of the stones tested had no hydrophane characteristics. This demonstrates that hydrophaneity is not uniform for Ethiopian opal, as many critics of the stone tend to argue (see the Australia case study in Chapter 5 for further analysis of this issue). The GIA also found that the samples were very strong, being able to withstand falls from considerable heights. The authors of the GIA study wrote that from their own extensive experience with Wello opal, it crazed in only a very small minority of cases; it was seen in only three stones out of the 3,000 they had personally sold.³¹ Wello opal was thus seen to be extremely robust—more robust than many of the Australian opals tested, for example.³²

International buyers responded quickly to this new discovery and the GIA's authority on the opal's quality. Addis Ababa, Ethiopia's main gemstone trading hub, was soon visited by gem traders from around the world who were looking to establish a supply of this gem for their cutting and polishing factories in India, China and elsewhere.³³ Opal quickly became Ethiopia's largest gemstone export, accounting for more than 90% of all gems exported out of the country (by value).³⁴ Demand quickly grew in the primary market of the US, and also in Europe, China and Japan.

In January 2013, the MoMPNG declared that it would be banning the export of rough opal from the commencement of the fiscal year 2013/2014; all gemstone exporters from that point onwards would have to cut and polish rough opal prior to export.³⁵ This proposed law, despite appearing to have come out of nowhere for some, was the result of strong lobbying carried out by the members of a committee that had

³¹ Rondeau, B. et al. 2010. Play of Colour Opal from Wegel-Tena, Wollo Province, Ethiopia. *Gems & Gemology*, Vol. 46, No. 2, pp.90-105.

³² Ibid.

³³ Interview 13/11/2015a; Interview 10/11/2015c

³⁴ Statistics provided by the Ministry of Mines, 19/11/2015.

³⁵ Araya, E. 2013, August 4. Rough Cut Ban U-Turn in Bid to Boost Mining Revenue. *Addis Fortune*. Retrieved 07/09/2015 from <http://addisfortune.net/articles/rough-cut-ban-u-turn-in-bid-to-boost-mining-revenue/>

been established within the MoMPNG in the previous year. This committee had members from both the public and private sectors, including MoMPNG officials, and large-scale gemstone exporters. They were brought together by a shared belief that Ethiopia was effectively sacrificing potential economic development by allowing rough opal to be exported out of the country to major gemstone manufacturing hubs, like India, China and Thailand, to be cut and polished, and sold onto the international market. To these committee members, every kilo of exported rough represented a loss of potential value adding, and in turn, job creation in Ethiopia.³⁶

The lower price garnered for rough on the international market also meant that exporting rough opal, as opposed to the more expensive polished opal, was preventing Ethiopia from building its foreign currency reserves at a faster pace. This latter point was of particular significance to the MoMPNG, whose advertised mandate includes working to ensure that Ethiopia's minerals industry increases by tenfold (from 2015) its contribution to the nation's foreign currency reserves by 2020 to 2023 (see Figure 2³⁷).



Figure 2 The Ministry of Mines' vision

³⁶ Interview 10/11/2015b; Interview 09/11/2015a

³⁷ Photo credit, Yolande Kyngdon-McKay, Ministry of Mines, Addis Ababa, Ethiopia 2015.

The law was thus designed to bring about a swift end to the exporting of value adding business opportunities by indirectly forcing exporters to cut and polish their rough inside Ethiopia, whether by establishing their own lapidary businesses, or out-sourcing the job to independent lapidaries. The proposed law was, however, delayed indefinitely in August 2013 as officials became concerned that gemstone exports would plummet were it introduced.³⁸ The short-lived nature of the proposed law, and the serious impact it would likely have had on the ASM sector³⁹ and official gemstone exports, was a product of several things, including:

- The inability of many exporters to access the necessary finance to establish robust lapidary businesses;⁴⁰
- A lack of recognition of the fact that Ethiopia simply did not have enough people trained in gemstone lapidary to provide exporters with the necessary workforce to establish functional lapidary businesses, or out-source large volumes of rough to external lapidaries, and thus maintain their previous export levels;⁴¹
- A lack of recognition of how much time is required to develop high-level lapidary skills, particularly when they have to be internationally competitive against doyens of this practice, like India;⁴²
- A lack of recognition of the fact that the lapidary skills that did exist in the country when the law was introduced, which were primarily products of training provided in the Amhara region, were not of a high enough calibre to compete with countries like India. This meant that the comparatively poorly cut stones coming out of Ethiopia would not have been well received on the international market, and thus would have commanded lower prices anyway (a problem that is still occurring, as this report will show);⁴³
- The fact that the government was not doing enough to nurture the development of domestic lapidary businesses either prior to the law's introduction, or in its direct aftermath;⁴⁴ and

³⁸ Araya, E. 2013, August 4.

³⁹ Some members of ASM sector would have likely found it extremely challenging to sell their output, as exporters struggled to meet the requirement for cutting and polishing and in turn reduced their purchases of rough.

⁴⁰ Araya, E. 2013, August 4.

⁴¹ Araya, E. 2013, August 4.

⁴² Interview 13/11/2015a

⁴³ Interview 13/11/2015a; Interview 10/11/2015b

⁴⁴ Sintayehu, T. N.d. Value Addition on Gemstones and its Impact on Ethiopian Economy. Orbit Ethiopia Plc. Presentation at Ethiopia Extractives Industry Forum, Addis Ababa, Ethiopia, October 7th 2014.

- A lack of recognition of the law’s creation of a huge incentive to simply smuggle rough opals out of Ethiopia’s porous borders—a practice that the government is still struggling to control.⁴⁵

Therefore, while the introduction of the law was motivated by a desire to encourage the organic development of a domestic gemstone cutting and polishing industry that could add value to Ethiopia’s opals prior to export, it lacked the necessary planning and associated institutional capacity building to enable this industry to properly establish itself and thrive.

After the proposed law was dropped, exporters were subsequently required to export a minimum of 10% of their opal as cut and polished and a maximum of 90% as rough. Between 2013 and 2015, this was gradually increased to 20:80, and then to 40:60, where it resides now (hereafter referred to as the 40:60 rule). Thus, the government is still keen on promoting domestic value adding for Ethiopia’s opal exports, but understands that capacity to do this will take time to develop.⁴⁶ (Table 1 shows the volumes of Ethiopia’s recent cut and polished opal exports).

Table 1 Total exports of cut and polished opal financial years 2013-15⁴⁷

Polished opal		
Year	Kg	USD million
2013/14	114.457	2.49
2014/15	194.52	4.827

Opinions are mixed, however, on the efficacy of the 40:60 rule; some stakeholders believe it encourages domestic beneficiation,⁴⁸ whereas others argue it simply further incentivises rough opal smuggling, which is estimated to be greater than official exports.⁴⁹ As this report will show, the costs of setting up a lapidary business and finding adequately skilled cutters and polishers remain significant hurdles for exporters to overcome. It is simply more profitable to smuggle rough to major

Retrieved 13/09/15 from

http://www.worldbank.org/content/dam/Worldbank/Event/Africa/Ethiopia%20Extractive%20Industries%20Forum%202014/4c_ORBIT.pdf.

⁴⁵ Interview 09/11/2015a; Interview 11/11/2015

⁴⁶ Interview 09/11/2015a

⁴⁷ Statistics provided by the Ministry of Mines, 19/11/2015. Export values were not provided.

⁴⁸ Interview 10/11/2015b; Interview 13/11/2015a

⁴⁹ Interview 2: Hong Kong and Bangkok. This point was also made a couple of times during a roundtable discussion with stakeholders from civil society, government and industry held on 10/11/2015 in Addis Ababa.

manufacturing hubs like Jaipur, India where skilled labour already exists in abundance—no investment thus has to be made in hiring and training staff, or buying the necessary equipment. The suggested scale of gemstone smuggling has also no doubt been enabled by the government’s abovementioned lack of capacity in the policing of its borders.⁵⁰ (See the supply chain and international market analyses in Chapters 2 and 4 respectively for further analysis of these important issues).

Gemstones other than opal are also mined by the ASM sector in Ethiopia, which produced almost 58,000kgs of these gems in 2014/15.⁵¹ Based on these figures, and the estimated number of miners in the opal sector, the non-opal ASM sector is likely to be greater than 15,000 people (accounting for the lower prices that are typically commanded for the high volume, low value gems like jasper, agate, etc., which will attract fewer people to the industry). Table 2 shows government figures for opal and non-opal gemstone exports over the past five years, indicating that they have grown significantly during that time.

Table 2 Gemstone exports⁵²

All gemstones		
Year	Kg	USD million
2013/14	34320.332	14.23
2014/15	62235.26	16.293
Opal		
2013/14	4545.0	10.14
2014/15	4372.9	8.626
Non-opal		
2013/14	29774.48	0.48
2014/15	57926.75	0.95

According to official figures, in 2014/2015, total exports of coloured gemstones, including rough opal, polished opal and non-opal gemstones equalled USD16.293million.⁵³ To put this figure into context, in 2007 all coloured gemstone

⁵⁰ Interview 09/11/2015a; Interview 11/11/2015

⁵¹ Statistics provided by the Ministry of Mines, 19/11/2015.

⁵² Official figures provided by the MoMPNG.

⁵³ Official figures provided by the MoMPNG.

exports out of Africa totalled approximately USD152 million.⁵⁴ While this figure is likely to have grown,⁵⁵ Ethiopia is nonetheless a significant player in the African coloured gemstone industry today.

1.2. Purpose of Report

This scoping study of Ethiopia's coloured gemstones industry was commissioned by The World Bank to shed light on the following:

- The present state of the industry, primarily in commercial and social development terms;
- Which features of the industry and its governance are either improving or limiting its commercial success, and why; and
- The key 'lessons learned' from what other gemstone producing countries around the world have done to commercialise this industry, and how they could be constructively applied to the Ethiopian context.

The study was motivated by The World Bank's recognition of the MoMPNG's desire to further develop its coloured gemstone sector, and the five-year plan it launched in January 2015 with that goal in mind. A clearer understanding of the commercial realities of this sector and how it is governed will improve The World Bank's ability to potentially work with the MoMPNG to help it realise its objectives for this important industry.

This report's case study analyses of Afghanistan, Australia, Brazil, Madagascar, Nigeria, Sri Lanka and Tanzania identify the ways in which these countries have worked to establish functional coloured gemstone industries and improve their commercialisation. Like Ethiopia, some of those countries are developing, while others have long histories of strong economic performance. Positive and negative lessons can be learnt from these case studies in terms of how these countries have realised, or struggled to realise, their goals, and both are valuable for illuminating the path that Ethiopia could potentially take.

The World Bank and the MoMPNG may use this study to help inform the development of Ethiopia's coloured gemstone sector. It may also be used to inform a larger study into options for developing Ethiopia's gemstone sector, noting the relatively small size of this study. This report provides as much information as is reasonably possible within time and budgetary limitations, but importantly, where it

⁵⁴ Cross, J., S. van der Wal, and E. de Haan. 2010.

⁵⁵ Particularly given the success of Gemfields' operations in Africa, and the growing demand for coloured gemstones globally.

cannot fill an information gap, it gives a view on what measures could be taken to fill noted information gaps in any subsequent research projects.

1.3. Research approach / methodology

The methodology used for this study included document analyses, semi-structured interviews, site visits and expert reviews.

Relevant laws, government-provided statistics, previous studies, and journal and newspaper articles were consulted for background information on Ethiopia's coloured gemstone industry. Semi-structured interviews were carried out in person with gem traders in Bangkok and Hong Kong; government officials, lapidary license holders, and gem exporters in Addis Ababa; and government officials, the Dean of the Kombolcha Polytechnical College responsible for lapidary training and lapidary training graduates, opal brokers and miners in the Amhara Region (Kombolcha, Dessie and Delanta). The goal of these interviews was to gain insights into the nature of the current operating environment in Ethiopia's coloured gemstones sector, and the government's policies and plans for this industry (Table 3 demonstrates the stakeholder mapping process utilised in the research planning stage).

In total, the following number of Ethiopian gemstone industry stakeholders were formally interviewed in person: two government officials from the MoMPNG; eight lapidary licence holders/exporters in Addis Ababa; 13 Ethiopian opal traders in Bangkok and Hong Kong; one broker in Delanta, two lapidarists in Delanta, one lapidarist in Kombolcha, one government official in Dessie, two government officials in Delanta, plus a group of ca. 15-20 opal miners in Delanta. The researchers also discussed Ethiopia's coloured gemstones industry with numerous experts from civil society and the private sector to gather background information and additional insights.

In addition, tours of the main jewellery district in Addis Ababa, and a field visit to the lapidary training facilities in Kombolcha, as well as an opal mine site and lapidary businesses in Delanta were carried out to observe the type of jewellery being sold to the local market, and the state and operation of the mines and training facilities.

Table 3 Stakeholder mapping

Stakeholder	Contribution to industry	Relevance (High, Medium, Low)	Influence	Necessity of involvement in study
Government	Development of relevant laws, policy; provision of financial support	High	High level of influence over the entire gemstone sector, including all domestic beneficiation efforts	High
Exporters	Engage with international gemstone buyers	High, given their requirement to cut and polish 40% of their exports	High level of influence over international buyers, and the rest of the supply chain; medium level of influence over government	High
Local lapidaries	Provide cut and polish services to industry, enable exporters to meet 40:60 requirements	High, given their necessary existence re: 40:60 rule	Medium level of influence over other stakeholders, as their skills are often below international standards and can be replaced by international imports (of labour)	High, as it is necessary to build their capacity to international standards if beneficiation is to work in the country
Traders / Brokers	Act as (financial) intermediaries between miners and exporters; parcel rough; travel to mine sites	Medium, as while they act as intermediaries, their value-adding is minimal (beyond sorting and transportation)	Medium, as they act as intermediaries between the upstream and downstream	Low, as the main focus is on downstream for this project
Jewellers (local)	Manufacture jewellery for local and tourist populations, and	Medium, as they currently buy very few gemstones, but this could be	Low, as they currently have little role in the gemstone supply	High, as they could provide a new market for Ethiopian

Stakeholder	Contribution to industry	Relevance (High, Medium, Low)	Influence	Necessity of involvement in study
	international clientele	changed	chain	gemstones, particularly for tourists
Miners	Mine the gemstones	High, as they provide the product, and can also influence its value (mining techniques)	Medium, as they are quite separate from the downstream	Medium, as the study's main focus is on the downstream
Lapidary trainers	Are typically brought in from international gem hubs (Jaipur, etc.) to train local cutters and polishers	High, as they appear to be commonly used by exporters facing 40:60 requirements	Medium, as they must agree to come to Ethiopia, but they are replaceable	High, as they could be encouraged to develop stronger training relationships with local lapidaries, particularly with government support
Gem institute developers	Train local gem cutters and polishers	High, as they play a key educational role	High, as they play a key educational role which could be enhanced	High

The questions developed by the researchers sought to determine the following:

- The numbers involved in this industry in Ethiopia;
- The thought that goes into, and the motivations behind, the government's regulation of, and plans for, this sector;
- The realities of the business opportunity in the downstream gemstone sector;
- The quality of, and motivations behind, value-addition that occurs in-state, and who performs it; and
- What lapidaries and exporters would like to see changed at macro and micro levels to aid in the growth of their businesses.

All interviews were triangulated and anonymised (to promote frank and full disclosures) and de-identified as required (to protect study participants). In instances

where researchers were not able to triangulate statements made by interviewees, but those statements were nonetheless believed to contain relevant insights into the gemstone industry in Ethiopia, they have been clearly presented in this report as being attributable to only one interviewee. They should be viewed through that lens.

The country case studies (Afghanistan, Australia, Brazil, Madagascar, Nigeria, Sri Lanka, Tanzania) were chosen on account of each country's experience with domestic gemstone production, and associated beneficiation efforts. They shed light on the experiences of other states in relation to the promotion of domestic gemstones, the development of necessary skills and capacity within domestic gemstones manufacturing industries, and how long that process can take, and the common challenges associated with the growth of such industries. Each of the country case studies was either written by a country expert, or reviewed by one prior to publication. Country experts from these countries were also consulted during the research stage.

1.3.1. Scope

This study's focus is largely on the downstream sector of Ethiopia's gemstone supply chain, including lapidaries and exporters. It briefly explores the upstream mining sector, the symbiotic relationship between upstream and downstream, and how that inter-dependency is currently functioning. It also examines the MoMPNG, the ministry responsible for the licencing of exporters and lapidaries, and the Sub-Regional Mining Bureaus of the South Wollo Zone and the Delanta Woreda. Given the prominent role that opals have in Ethiopia's gem industry they are the focus of the study and the state's other gemstones feature only briefly in the analysis. Nonetheless, the study's findings in relation to opal are largely applicable to other gemstones produced in the country, and the issues surrounding their commercialisation.

The study's examination of the development path that other nation-states have pursued to maximise value from their opal sector (Australia) and coloured gemstone sector (Afghanistan, Brazil, Madagascar, Nigeria, Sri Lanka, Tanzania) is designed to provide examples for Ethiopia on actions it could take to help foster the development of a resilient coloured gemstone industry.

2. Commercial Situational Analysis

2.1. Supply Chain

The typical supply chain of gemstones in Ethiopia as reported to the researchers is Miners' Association—Broker—Lapidary—Exporter (the latter two stages are often encapsulated in a vertically integrated company). This is likely to be a contracted version of what actually exists; excluding the additional trading that typically takes place between the miners and the miners' cooperatives, the miners' cooperatives and the brokers, and the brokers and the lapidaries/exporters.⁵⁶ Miners are also known to sell direct to exporters who set up temporary buying offices near mine sites and surrounding towns, so creating even shorter supply chains.⁵⁷ Opal mine locations include Dima Shenga, Gelbate, Koke Weha, Minch, Beskea Giorgia and Alehuwat.

The profits made on rough by traders and brokers can be enormous. For example, it was reported by one exporter that traders and brokers would regularly buy a kilo of rough opal from miners or miners' associations for ETB2000 (USD95) and would sell in Addis Ababa for ETB80000 (USD3800)—a gross profit of 3900%.⁵⁸ It is important to note that this was only one interviewee that reported such inflated profits, however researchers were often told that miners are severely underpaid by brokers. Although transporting the rough to Addis Ababa can take up to three days due to the very poor quality of the roads (a trip that should take no more than eight hours),⁵⁹ this burden alone does not account for the brokers' alleged inflated profits. Instead, they are likely to be enabled by the existence of the following in the upstream sector of the supply chain:

1. Asymmetric information about the true value of the rough;⁶⁰
2. Poverty (the mining motivation is often survival, not profit);⁶¹ and
3. A buyers' market, due to the over-supply of opal.

⁵⁶ Foreign Affairs, Trade and Development Canada. 2014. Ethiopian Gemstones. Maximising Potential—Summary Report. (There can be anywhere between five and 15 actors in a typical gemstone supply chain [one that is not vertically integrated, like those of Gemfields, Tiffany & Co., De Beers, etc.], and potentially more depending on the gemstone and where it is mined.)

⁵⁷ Interview 3: Hong Kong and Bangkok; Interview 4: Hong Kong and Bangkok

⁵⁸ Interview 13/11/2015a

⁵⁹ Interview 12/11/2015a

⁶⁰ See: Akerloff, G.A. 1970. The Market for "Lemons" : Quality Uncertainty and the Market Mechanism. *The Quarterly Journal of Economics*. Vol. 84, No. 3, pp. 488-500.

⁶¹ Foreign Affairs, Trade and Development Canada. 2014.

To elaborate, researchers found that the miners often do not know the true value of what they are selling, and their poverty and the abundance of opal on the market do not afford them the luxury of demanding larger payments—buyers can always go elsewhere to find cheaper rough. (This is in direct contrast to the situation in opal mining communities in Australia, as is explored in Chapter 5). The struggles experienced by the ASM sector and their limited knowledge of what they are selling will be further explored below. The issue of the oversupply of opal will be analysed in the sections of this report that examine gemstone smuggling out of Ethiopia (Chapters 2, 3 and 4), and the role of large companies in gemstone buying, cutting and polishing, and exporting (Chapters 2 and 4).

Ethiopia's key trading and exporting hub is Addis Ababa, which, on account of the 40:60 rule, is also the country's main cutting and polishing area. According to government records, to date the MoMPNG has issued 203 precious mineral export competence certificates. The Amhara region is the second largest lapidary hub; to date, 68 and 20 lapidary licenses have been issued by the MoMPNG and Amhara regional mining bureau, respectively. 70 opal brokerage licenses have also been issued by Amhara regional mining development bureau.⁶²

2.2. Value Chain and Commercial Challenges

2.2.1. Overview

The gemstone value chain in Ethiopia begins at the miners, who add value by extracting the minerals from the ground, and washing and sorting them. Researchers were told by one exporter in Addis Ababa that the way in which miners mine the opal, using shovels and picks, breaks the rough into smaller pieces that are worth less; thus, they require training on the use of commercially sensitive mining techniques.⁶³ However, one gem trader in Asia argued that the miners are getting better at identifying quality rough.⁶⁴ (This issue will be explored further in the recommendations at the end of this chapter.) The traders and brokers add value by further sorting the rough, and transporting it to buying hubs, like Addis Ababa. The lapidary centres add value by sorting, and cutting and polishing, while the exporters further sort both polished and rough, find markets for the gemstones, and ship them internationally. All of the exporters with whom researchers spoke had their own lapidary factory; however, it is also common for exporters to buy cut and polished

⁶² Statistics provided by the Ministry of Mines, 19/11/2015.

⁶³ Interview 3: Hong Kong and Bangkok

⁶⁴ 13/11/2015a

goods from standalone lapidary businesses in order to meet their 40:60 obligations. (The threats posed to the industry by illegal [unlicensed] lapidary workshops will be explored below).

Jewellery manufacturing that includes the use of Ethiopian gemstones is currently limited in Ethiopia; the majority of jewellery stores sell gold and silver jewellery that is not set with gemstones. However, the small number of jewellers that do work with Ethiopian gemstones add value by setting them in silver and gold pieces, for sale locally or internationally. The majority of added value in the form of jewellery manufacturing takes place in India, China and Thailand, where Ethiopia's gemstones are set in gold or silver, and sometimes in cheaper metals, such as stainless steel and amalgamated tin, before being sold on the international market.

The following analyses the coloured gemstone value chain (with a particular focus on opal), and the commercial potential thereof, as assessed by the study's researchers during their time in Ethiopia.

2.2.2. Miners⁶⁵

One opal mine site close to Delanta was visited to get an indicative view of opal production as the basis of value addition further down the supply chain. The mine site is operated legally by a cooperative, which was founded and formalised in 2012. It started with 350 members, and has grown to 430 members today. The large majority of members, if not all, are inhabitants of Delanta (all of them male).

The mine is situated in the side of a steep mountain wall, at an elevation of around 2,800 meters above sea level. It is accessible from Delanta by a 30-45 minute walk along a small mountain path. The cooperative currently operates 25 tunnels, dug horizontally into the mountain wall. Each tunnel is worked by a team of 10 members and can be up to 100 meters long. It takes the miners around two years to dig a tunnel that long. The miners use very basic, non-mechanised tools such as shovels and small picks. There is no degree of mechanisation, as not even generators or pumps/fans (for oxygen and fresh air) are used. All tools are self-made.

The miners see their lack of mining tools and equipment as their biggest challenge and stated that first and foremost, they need more and better equipment and technology, rather than training. They also mentioned that they expose themselves to high risks, such as tunnel collapses, and would like to improve their situation in terms of health and safety.

⁶⁵ The information presented here is based on a focus group with around 20 miners of a cooperative at their mine site.

The miner teams work on their own money and business risk; if they do not find any opal, they go without payment. According to them, they do not receive pre-financing either from the brokers or the cooperative. This creates difficulties especially for the period when the miners remove the overburden, which takes an investment of around ETB10,000-15,000 (USD468-702) according to the miners. They usually use the money from previous sales to open new tunnels. The cooperative is apparently not used as a savings mechanism, and the miners state that they do not benefit from the cooperative structure except that it allows them to operate legally and receive receipts for their sales. They also mentioned that there were issues with the cooperative management, which result from the Government's current plan to transit the cooperatives into SMEs. (The government stated in its review of this report that it is working to establish these cooperatives as a means of "creating a system to manage and control illegal mining activities." Recommendations for further research into the efficacy of this model are explored at the end of this chapter.)

The miners state that production is currently not as good as it used to be, and that they have to advance deeper and deeper into the mountain to find the mineralised layer. The accessed deposits appear now to have been almost depleted, but when the miners started, they were able to produce around 2-3kg of rough opal (of various qualities) per tunnel per month (a total of ca. 50-75kg per month). The miners have started looking for a new site and stated that they know of a mine with good production in the vicinity, but that this site is operated informally, and by people from a neighbouring area who do not allow them to mine there.

When the miners find opal, the team leader collects the stones and takes them to the cooperative's office in Delanta. Once the rough is sold on to brokers in Delanta, the team leader distributes the proceeds according to his team members' shares. The miners usually conduct basic sorting before selling the rough. They stated that they assess the quality of the opals by sorting them according to colour and size (no other features like play-of-colour, clarity, weight, or hydrophaneity were mentioned). The miners did not seem to find that they get unfair prices for their products, and stated that their situation is better since there are some legal brokers (they did not say whether this is related to their financial situation or other factors). However, this could simply be a case of their not recognising that they are being exploited. The Mining Bureau Coordinator of the South Wollo Zone stated that miners often lack the knowledge of what they are selling and thus do not earn good prices.

Furthermore, he argued that brokers and exporters typically hold most of the bargaining power in trading relationships.⁶⁶

2.2.3. Gemstone Brokers⁶⁷

There have been encouraging developments in the trading segment of the industry in the last few years, as a number of gemstone brokers have decided to formalise their businesses. The trader interviewed in Delanta stated that he had worked illegally before, but decided to get a license when the government introduced this possibility six years ago. The broker buys and sells only rough gemstones, as the brokerage license only allows trade in rough. This seems to be a gap in the legal framework; this licencing restriction forces lapidaries to sell their product directly to the exporters in Addis, which is far from their business location.

The broker interviewed is not pre-financed by exporters or other traders, and uses his own capital to buy the rough. He stated that he travels to Addis twice a month to sell his stones. His business seems to be going well, and the government benefits from it too: the broker indicated that he paid ETB270,000 income tax in 2013, and ETB200,000 in 2014. Given that the Ethiopian income tax is a maximum of 35%, the broker's yearly income could be at least ETB771,429 (USD36,735), a figure that is well above the national average of USD1,600.⁶⁸

Nevertheless, the broker mentioned several challenges that are hindering the growth of his business. Firstly, the MoMPNG has set a minimum exporting price for rough opal (depending on its weight, and perceived size, colour and quality—attributes that are assessed by the MoMPNG), which has the following impacts on the market:

- The minimum export price is often too high—far above what is commanded on the international market;
- Because of the high prices often put on lower quality goods, for most exporters it is only profitable to export the highest quality opal (at least formally), which means that there is almost no (formal) market demand for the lower quality material; and
- Since high quality opal makes up only approximately 1% of total production, a large proportion of opal is rejected by buyers, or sold through illegal channels.

⁶⁶ South Wollo Zone Office

⁶⁷ The information provided here is based largely on an interview with a legal gemstone broker based in Delanta.

⁶⁸ GDP per capita is a recognized representation of average annual income.

These issues can result in wasted market potential. It is thus unsurprising that the MoMPNG's opal pricing policy was a common grievance raised by various supply chain actors during the study, including brokers, exporters, and international gem traders (buyers), the latter two of which will be explored in greater detail below.

A second challenge for brokers is the taxation requirements, and tax evasion by other industry stakeholders. According to the broker, opal miners often do not put the correct price on the receipt when they make a sale, because taxes are leveraged based on the figures contained in their receipts. This will leave the broker with a much higher profit on paper than he actually makes, which in turn means he has to pay more taxes. For example, if he buys rough opal from the miners for ETB70,000, they might give him a receipt for ETB20,000. When he then sells the rough to the exporter for ETB90,000, he will have made a profit of ETB70,000 on paper (while in reality it is only ETB20,000), on which he is required to pay taxes. The broker argued that there was not much he could do about this; refusing to engage with the miner/s who use these tactics would likely mean that they would just sell their rough to other brokers (who mostly operate illegally), restricting his market access.

It could be the case that in relation to the illegal sector, it is a buyer's market, as they are freer to operate without the necessary paperwork. For brokers trying to act legally, it is a seller's market, as miners can always go elsewhere (i.e. sell to people who do not demand accurate receipts). This broker also admitted that this is the reason why he often sells to exporters without a receipt, in an arrangement where the exporter agrees not to issue a receipt, in return for a 10% reduction of the sale price to the broker. This is an issue that needs to be addressed urgently, as it appears to force even legal actors into illegality. This will be further explored in the recommendations.

Another challenge for brokers is competition from illegal traders and brokers, who appear to account for the majority of actors in the segment of the supply chain. Lastly, the broker faces difficulties in cash flow, as he often sells to exporters on credit and they apparently do not pay him back in time. In the broker's view, this is an issue of trust. He explains that most of the exporters in Addis are Indian (and are well-financed) and that he cannot sell to Ethiopian exporters (whom he would implicitly trust more to pay him back on time).

2.2.4. Lapidary training centres: Kombolcha

Originally, seven lapidary training centres were established in the Amhara Region in 2009, each embedded in the local Polytechnical Colleges. According to the Dean of the Kombolcha Polytechnical College, however, all the other colleges have stopped

running lapidary courses, and in the past three years, the Kombolcha Polytechnical College has been the only one offering this type of training. The College in Kombolcha provides vocational education on 10 different professions to a total of 2,000 students taught by 150 teachers.

Since lapidary training in Kombolcha was established in 2009, a total of 300 students have graduated. The training includes two types of courses: a standard course with three levels that takes up to 1.5 years to complete, provided to students who are selected on a competitive basis; and a short-term course which is designed to provide around 30-45 days of vocational training for the unemployed in order to facilitate their entry into the labour market. The short-term course is operated by the Ministry for Small- and Medium-Scale Enterprises, which also allocates course to the short-term students.

The curriculum for the Standard Course includes the following modules:

- Acquiring and identifying gemstones (based on physical properties)
- Operating basic machines and equipment
- Gemstone slabbing
- Gemstone tumbling
- Gemstone polishing
- Cabochon making
- Bead making
- Faceting
- The students would graduate by finishing a final project (e.g. the cutting of a specific shape) and presenting on it.

The lapidary workshop at the Kombolcha College fits approximately 40 students and is equipped with basic cutting and grinding machines, as well as polishing machines with three types of polishing blades. The polishing machines and blades are imported, while some of the cutting machines are produced by the College's own machinery and mechanics department. Significant value addition to the overall economy can come from enhancing both the forward links, like cutting and polishing, and the backward links, like the domestic production of equipment and technology (both for mining and for lapidary). This needs to be regarded as a long-term process, as the machinery and technology needs to be fit for purpose and continuously improved upon to reach internationally competitive levels.

The lapidary training at the Kombolcha Polytechnical College is currently not operational because the current teacher 'fell sick', which could not be confirmed. The training had been provided by only one teacher—one of the biggest challenges

has been finding qualified teachers for such courses. The TVT is currently trying to find a replacement for the previous teacher, but this recruitment process is not without difficulties. When the lapidary courses were established at the Polytechnical Colleges, the teachers were recruited from universities, often with an academic background in related subjects such as geology, physics, and geography. They were then given an introductory lapidary course in Bahir Dar, the Amara regional capital, which they had to pass in order to become teachers at the Colleges. This highlights the bigger challenge of a lack of qualified (Ethiopian) teachers with the necessary practical experience and skills to teach lapidary courses in gemstone cutting and polishing. This will be further explored in the recommendations at the end of this chapter.

The employability of the lapidary training graduates remains a challenge. According to the Dean of the Kombolcha Polytechnical College, a few of the 300 graduates have opened their own lapidary businesses in their home regions after finishing the training course, but detailed statistics on post-training employment rates are not available. The South Wollo Zone Mining Bureau Coordinator stated that after graduating from the lapidary training, some of the graduates had tried to formalise and establish their business, but did not have enough finance to build a business, acquire opal or other semi-precious stones, and continue working in this profession.⁶⁹ However, over the past few years, the Dean of the Polytechnical College has noted an increase in demand for the lapidary graduates, which he ascribes to the Government's 40:60 rule, which may have resulted in some of the graduates finding employment with the Addis based exporters (though statistics or evidence of this are not available).

Another significant challenge for the Kombolcha Polytechnical College and its lapidary training courses is budget constraints,⁷⁰ which manifests itself in several ways. First, the lapidary training centre is not able to acquire the necessary high quality machines and technology. Second, it does not have the financial means (nor the knowledge and networks) to acquire the necessary training materials, as opal is too expensive. Therefore the training centre is forced to use semi-precious and low-value stones for the training, which in turn means that the students do not acquire

⁶⁹ South Wollo Zone Office

⁷⁰ The budget for the Polytechnical College is allocated by the Regional Government. Within the College, there is no clear percentage allocated to each of the professions (according to the Dean, it is done 'based on need'). For the lapidary training, there is a cost-sharing arrangement with the students of the long-term course; they pay ETB40 per month for their training. Short-term students do not pay fees for the course.

skills in cutting and polishing opal, which is more precarious and difficult to handle than other stones. This means, in effect, that the training currently provided does not build the skills necessary to aid in the realisation of the government's 40:60 policy in the opal sector. How these problems could be overcome is explored in the recommendations at the end of this chapter.

2.2.5. Lapidaries and Exporters

2.2.5.1. Addis Ababa

To meet the legal requirements for establishing a lapidary business in Addis Ababa, one must be a citizen of Ethiopia and obtain the necessary licence from the MoMPNG. This is a relatively simple process, according to all interviewees. Licenced lapidary holders are by law allowed to buy gemstone cutting and polishing machinery duty-free. However, three of the lapidaries researchers interviewed did not seem to be aware of this allowance. This could be because they had not taken the time to make themselves familiar with the laws that govern their sector, or that they were not actually in possession of a lapidary licence and were operating illegally, and were thus unable to access this tax break. Either way, this incentive is perhaps not being communicated effectively by the government, to ensure that established legal businesses are better able to grow, and illegal operators recognise the financial benefits of formalisation. Regardless of whether or not they had utilised this tax break, all of the lapidary licence holders with whom the researchers spoke about machinery said that the costs of such equipment were very high, averaging USD4,000 per piece.⁷¹

It is important to note that foreigners who nominally export gemstones legally are usually married to Ethiopian citizens who actually hold the required licences to export the goods. A less common practice is foreigners 'leasing' export licences from Ethiopian citizens.

⁷¹ 10/11/2015b; 12/11/2015c; 12/11/2015a; 13/11/2015a



Figure 3 Gemstone bead drilling in Addis Ababa⁷²

In contrast to the ease with which lapidaries can meet legal requirements, setting up an operational lapidary business was reported as being extremely challenging by all interviewees. The most commonly reported challenge was finding sufficiently trained staff for cutting and polishing gemstones, and then further training them in order to bring their skill levels up to an internationally competitive standard. It was a common complaint of interviewees that the cutters and polishers they have hired are not producing to a high enough standard, even though the majority have received training in the Amhara region's gemstone cutting and polishing training centres.

In relation to the business challenges that they have experienced, two lapidary licence holders said that their international customers had complained about the poor quality of the cutting and polishing performed on the stones they had bought. Some of their customers had even gone so far as to re-cut and polish the goods they bought prior to re-sale on the international market.⁷³ (This issue was reinforced in interviews with traders in Hong Kong and Bangkok, several of whom complained about the quality of finished gemstones coming out of Ethiopia, the fact that they often had to recut them, and how they would prefer to simply cut and polish rough

⁷² Photo credit: Yolande Kyngdon-McKay, Addis Ababa 2015.

⁷³ Interview 12/11/2015c; Interview 13/11/2015b

opal in their own factories in India).⁷⁴ When cutting and polishing is sub-par international buyers typically want to pay less for the stones; they may be more difficult to sell on the market, or if they wish to have them re-cut they must incur additional costs. This can result in financial losses for the exporter. The impact of this can be exacerbated if buyers want to renegotiate prices after the sale has been completed (and they have seen the sub-par gemstones). Considering the current foreign currency requirements for international sales (as further explored below), this can put lapidaries/exporters in a difficult financial situation.

The MoMPNG has identified "market access problems for value added gemstones which can affect the export earning (sic)" as a key challenge in its five-year plan for the minerals sector.⁷⁵ It is unclear, however, as to whether this refers to the limited market access that can be caused by sub-par value adding, or the challenge of finding new international buyers for cut and polished gemstones to replace former rough customers. Regardless, the MoMPNG does not outline a specific plan to overcome these market access problems, but, as abovementioned, does speak of its desire to establish a gemstone training institute. This issue will be further explored in the recommendations at the end of this chapter.

The second most commonly mentioned challenge raised by interviewees in relation to establishing a successful lapidary business was accessing the necessary finance.⁷⁶ This is required in order to: i) buy sufficient rough to cut and polish; ii) buy the required machinery, such as cutting and polishing wheels, bead drilling machines, and faceting machines; and iii) hire international cutting and polishing trainers, especially from Jaipur, India, to teach their staff how to manufacture stones to an internationally competitive standard.

The issue of being able to afford to buy enough rough underpins two major problems faced by some lapidaries in Ethiopia. Firstly, if they cannot afford to buy enough rough they cannot provide their cutters and polishers with sufficient gemstones to practice on and thus improve their skill levels. As the case study on the Australian opal industry will show, the key to developing capacity to cut and polish opal to a high standard is having a large enough volume to practice on: quantity is key. Thus, lapidary licence holders who struggle to access financing can also struggle to improve the quality of the cut and polished gemstones they sell to clients. In turn,

⁷⁴ Interview 3: Hong Kong and Bangkok; Interview 6: Hong Kong and Bangkok; Interview 7: Hong Kong and Bangkok

⁷⁵ Ministry of Mines. 2015.

⁷⁶ Interview 10/11/2015b; Interview 12/11/2015c; Interview 10/11/2015a

unless they can find a client who is happy to consistently buy sub-par goods, they will likely find it challenging to maintain steady relationships with international buyers. And secondly, if lapidaries cannot afford to buy regular parcels of rough to manufacture, they cannot provide clients—whether international or local—with a reliable source of goods. This is not conducive to fostering strong client relationships, or promoting business growth.

Another issue associated with accessing sufficient rough was raised by both lapidaries and exporters in Addis Ababa, and one gem trader in Asia. They explained that larger exporters operating in Ethiopia often enjoy an advantage as they are typically from large, established companies in India and have no problem accessing sufficient financing.⁷⁷ This means that they not only can afford to buy more rough, but also more of the higher quality rough. Smaller companies and sole traders without this financial freedom can thus find it harder to establish relationships with brokers and secure steady supplies of rough. This issue can also prevent/disincentivise the entry of new businesses into the industry, in turn limiting competition and further bolstering the larger exporters' grip on the industry.⁷⁸

Further exacerbating this problem is the fact that some exporters fund expeditions to mine sites to buy straight from the miners.⁷⁹ This not only reduces their costs of business (by taking middlemen out of the supply chain) and further increases their buying power, but it also gives them better access to sources of rough. The dominance of select exporters was also argued by some interviewees to be the key reason why so much value adding is 'exported' out of Ethiopia to places like Jaipur, India.⁸⁰ The impact this is also argued to have on the prevalence of treatments made to Ethiopian opals will be discussed below.

Another financing issue that threatens the improvement of staff skill levels is the cost of hiring international trainers to improve cutting and polishing techniques. If lapidaries choose to bring in foreign trainers, they have to ask the MoMPNG to provide a letter of support to assist with the approval of the trainers' visas and work permits. All interviewees who have brought in international trainers said that the MoMPNG was very helpful in that regard. These international experts usually train staff at the lapidaries for two or three months at a time. Two of the lapidary owners

⁷⁷ Interview 12/11/2015b; Interview 12/11/2015c; Interview 2: Hong Kong and Bangkok;

⁷⁸ See: Kyngdon, Y. 2014. *From Ultimate Rent Seeker to Positive-Sum Stakeholder? An Ethical Analysis of the Modern Diamond Industry*. Unpublished doctoral thesis. Sydney, University of New South Wales, Australia.

⁷⁹ Interview 3: Hong Kong and Bangkok; Interview 4: Hong Kong and Bangkok

⁸⁰ Interview 10/11/2015b; 12/11/2015b; 12/11/2015c

argued that this amount of time was sufficient for bringing their staff's cutting and polishing skills up to an international standard,⁸¹ whereas one other argued that reaching that level of expertise would be an extremely long process, requiring up to 10 years of on-the-job training.⁸² Regardless, bringing in international trainers is an expense that several of the lapidaries interviewed for this study could not afford.

The high costs of cutting and polishing machinery also both limits the number of staff that lapidaries can hire, and their ability to expand their product offerings.⁸³ In relation to the first point, some interviewees spoke of a desire to hire more staff, but acknowledged that their inability to provide them with machinery would make this growth impossible.⁸⁴ This suggests that labour costs are a secondary concern to these businesses, demonstrating that the inability to buy the necessary machinery is potentially the key factor hindering job creation in the industry. In relation to the second point, the majority of lapidaries interviewed made minor variations on one style of polished gemstone: an oval-shaped cabochon that can be created with a standard cutting and polishing wheel. Their inability to buy other machinery, such as faceting machines or bead drilling machines, means that their product offerings are not very diverse. This impacts their ability to not only reach a broader international market, but also provide goods for the lower-end domestic market. Gemstones that are made into beads are typically of a lower quality, which is important to smaller lapidaries in Ethiopia for two key reasons: the rough is in turn cheaper to buy, and the potential domestic market is larger for cheaper bead jewellery (necklaces, bracelets) than it is for silver or gold jewellery set with larger cut and polished gemstones.

Gem treatments carried out within Ethiopia were said to be rare by all of the exporters and lapidaries with whom researchers spoke. Researchers witnessed only one case of gem treatments taking place, which was the heating of polished opal under a lamp to enhance the stones' colour (see Figure 4).

It was argued by several interviewees that there simply does not exist within Ethiopia the skills, expertise or technology required to treat gemstones on any meaningful scale. Instead, the gem treatments are typically carried out in India, the most

⁸¹ Interview 10/11/2015a; Interview 13/11/2015b

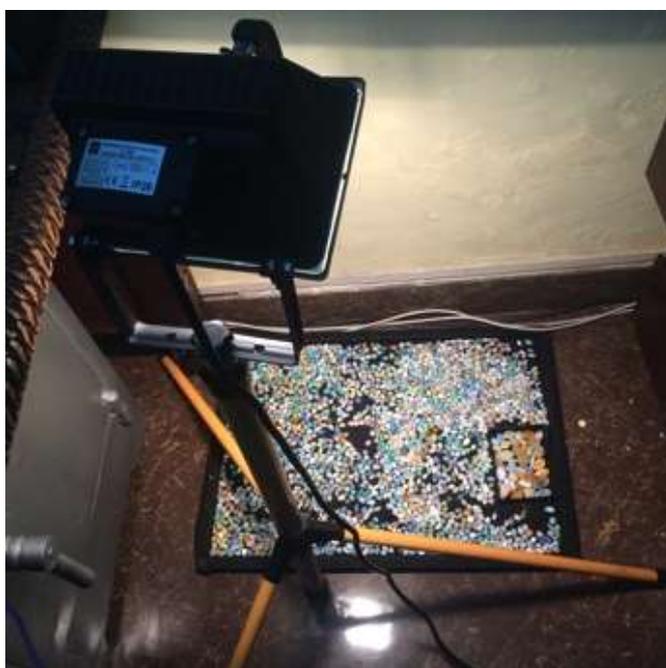
⁸² Interview 10/11/2015c

⁸³ Interview 10/11/2015b; Interview 12/11/2015b

⁸⁴ Interview 10/11/2015b; 12/11/2015b; 12/11/2015c

common being opal dyeing. (The fact that hydrophane opal is often highly absorptive makes it more likely to hold gem treatments such as dyeing).⁸⁵

It was argued by numerous stakeholders that these treatments are very bad for the reputation of Ethiopia's opal industry on the whole. When consumers buy opals that have undisclosed treatments and the colour fades, Ethiopian opals are consequently eschewed en masse by buyers. However, it was also argued that the market is becoming more aware of this issue, which is forcing Indian traders to change tactics. As buyers become more diligent in checking for undisclosed treatments and avoiding dyed stones, some Indian traders have realised the short-term nature of their behaviour and have reverted to selling natural, untreated stones only. This alleged change in behaviour amongst some Indian traders could not be



triangulated in interviews with international buyers or Australian opal experts; the former argued that undisclosed opal treatments are rare, while the latter said they were still common for Ethiopian goods. Nonetheless, it would seem logical that if demand for Ethiopian opal wanes because of fear of undisclosed gemstone treatments, those treatments would become less appealing to traders who are interested in maintaining strong client relationships.

Figure 4 Opal heating in Addis Ababa⁸⁶

It was argued by three of the exporters with whom researchers spoke that the level of control exerted by certain exporters over the gemstones industry in Ethiopia is a key reason why gemstone treatments are so prolific, and why the industry is struggling to flourish domestically.⁸⁷ Two exporters said that these exporters exercise a 'monopoly',⁸⁸ which is defined in economics as the dominance of one firm over

⁸⁵ Renfro, N., and S. F. McClure. 2011. Dyed Purple Hydrophane Opal. *Gems & Gemology*. Vol. 47, No. 4, pp. 260-70.

⁸⁶ Photo credit, Yolande Kyngdon-McKay, Addis Ababa, 2015.

⁸⁷ Interview 10/11/2015b; 12/11/2015b; 12/11/2015c

⁸⁸ Interview 12/11/2015c; Interview 12/11/2015b

an entire industry.⁸⁹ However, in reality what these exporters are describing is more like an oligopolistic industry structure, in which multiple large firms in an industry are sizeable enough that their individual actions can significantly affect the viability of their competitors.⁹⁰ In the case of the opal industry in Ethiopia, if large firms choose to smuggle gemstones, buy from unlicensed lapidaries, or sell opals with undisclosed gem treatments, their scale means that their actions will have a significant negative impact on the financial resilience of their competitors who choose to play by the rules. However, it is also important to note that even if all of the largest gem exporters in Ethiopia operated legally their financial strength would mean that they would still dominate the industry.

If the government is unable to adequately disincentivise illegal conduct by enforcing relevant laws, the scales will arguably be further tipped towards incentivising illegal business conduct in Ethiopia's coloured gemstones industry—companies who obey the law will find it increasingly difficult to remain competitive whilst doing so. One trader interviewed in Asia argued that violations of the 40:60 rule via gemstone smuggling could ultimately force the “good guys” to go underground with their exports, as they are rendered unable to compete while operating legally.⁹¹ For example, one exporter in Ethiopia argued that unless the industry is more fairly balanced in favour of local companies, he will be forced to either go bankrupt and close down, or engage in illegal activity like some of his peers in order to remain competitive.⁹² Another gem trader in Asia argued that the 40:60 rule was making it difficult for his company to operate legally in Ethiopia.⁹³ The dominance of well-funded exporters and their impact on the industry will be further explored in the international market analysis in Chapter 4, and in the recommendations at the end of this chapter.

The impact of undisclosed treatments on Ethiopia's opal sector arguably goes beyond dampening consumer interest in the stones; it can also impact the legitimacy of black opal deposits apparently discovered in the country. The researchers were shown by two gem traders in Addis Ababa what they were told was untreated black opal mined in Ethiopia (see Figure 5).⁹⁴

⁸⁹ Lee, D., V. S. Anthony and A. Skuse. 1968. *Monopoly*. London, Heinemann Educational Books Ltd., p.2.

⁹⁰ Friedman, J. W. 1983. *Oligopoly Theory*. Cambridge, Cambridge University Press, pp.1-2.

⁹¹ Interview 10: Hong Kong and Bangkok

⁹² Interview 10/11/2015b

⁹³ Interview 7: Hong Kong and Bangkok

⁹⁴ Photo credit, Yolande Kyngdon-McKay, Addis Ababa, 2015.



Figure 5 Polished black opals said to have been mined in Ethiopia

However, the pervasiveness of gem treatments arguably means that what could be legitimate black opal deposits (the researchers were not able to confirm if these opals came from the same deposit identified by the GIA in 2014⁹⁵) are almost by default presumed to be 'fraudulent' by some international buyers, and indeed, some members of Ethiopia's gemstones sector, despite the fact that locally-performed treatments are said to be rare. The prevalence of undisclosed gemstone treatments therefore effectively places a veil of uncertainty over the whole industry in relation to (potentially) new opal discoveries.

The scale of exports of Ethiopian gemstones to India, and the subsequent lack of control Ethiopia has over how its gemstones are treated and sold, was put forward by three exporters as another reason why Ethiopia should develop its capacity to cut and polish its stones domestically. They argued that doing so would enable the industry to ensure that fewer of its gems are treated (and sold undisclosed as such), thus enabling the market to be more confident in Ethiopia's output.⁹⁶ This point was also made by one Australian opal expert, as will be explored in Chapter 5. This is likely true to some degree, given the comparative rarity of gem treatments carried out within Ethiopia.

2.2.5.2. Kombolcha and Delanta

The lapidary training conducted by the Polytechnical Colleges has resulted in some encouraging developments. The three lapidaries interviewed in Kombolcha and Delanta stated that they had traded gemstones illegally previously, but decided to register and formalise their lapidary businesses after receiving short-term training in the Polytechnical Colleges in Kombolcha and Bahir Dar respectively. The lapidary based in Kombolcha received a loan of ETB7000 to start up his business (though with an interest rate of 16%)⁹⁷, while those based in Delanta opened their businesses with

⁹⁵ Keifert, L. et al. 2014. New Deposit of Black Opal from Ethiopia. *Gems & Gemology*. Vol. 50, No. 4. Retrieved 7th of June 2016 from <http://www.gia.edu/gems-gemology/winter-2014-gemnews-new-deposit-black-opal-from-ethiopia>

⁹⁶ Interview 12/11/2015a; Interview 13/11/2015a; Interview 10/11/2015b

⁹⁷ Kombolcha

their own capital.⁹⁸ However, all of them appeared disillusioned and frustrated; their progress has not resulted in increased business opportunities, and they seemed to be considering going back to their previous illegal activities (though no one stated this explicitly).

One of the lapidaries stated that his motivation for taking the training and entering into the legal economy was that he hoped to sell his value-added products (cut and polished stones, as well as jewellery with opal set in silver) for a higher price than his previous rough production.⁹⁹ This hope has not been fulfilled to date. As another lapidary stated, "I don't understand why my value-added cut and polished products sell for less than rough opal."¹⁰⁰

There seem to be several reasons for this. The first is that the lapidaries lack the finance and capital to acquire high-quality opal (or even any kind of gemstones). One lapidary stated that he does not have the finance and the networks to compete against traders and buyers who are based in Addis and buy directly from the mines, bypassing the local lapidaries in the region. Because of this, he sometimes goes without raw materials for 3 months.¹⁰¹ Two other lapidaries specified that it is especially the illicit supply chains from illegal mining sites to illegitimate traders that they cannot compete against, as these actors do not have to pay fees and taxes, and therefore buy more cheaply.¹⁰² (Apparently, the best grade of opal from Delanta can fetch up to ETB3,000 per gram.¹⁰³) The Delanta-based lapidaries usually try to acquire their stones directly from the miners, while the Kombolcha-based lapidary acquires his gemstones based on trust relationships, by sending friends to the mines without pre-financing, and reimbursing them once he has sold his products.¹⁰⁴

Exacerbating the financial challenge is the fact that the lapidaries do not seem to have enough knowledge about opals or gemstones to judge their quality. Even though gemstone identification is part of the training on offer, the lapidaries in Delanta stated that they do not have sufficient skills in identifying and assessing the quality of the opals they buy. They felt that this makes them vulnerable to losing out on high quality products to Indian traders and exporters.¹⁰⁵ One of the lapidaries

⁹⁸ Delanta 1 and 2

⁹⁹ Kombolcha

¹⁰⁰ Delanta 1 and 2

¹⁰¹ Kombolcha

¹⁰² Delanta 1

¹⁰³ Kombolcha

¹⁰⁴ Delanta 1

¹⁰⁵ Delanta 1

almost went bankrupt because he bought bad quality gemstones from the miners without realising, and when he cut and polished it, the stones broke.¹⁰⁶

Although only one lapidary mentioned this, they seem to lack the skills to cut and polish gemstones to a high enough quality.¹⁰⁷ As stated above, the training programme is currently not able to elevate skills to a competitive level, due to the lack of qualified teachers and the use of only semi-precious stones. All of these factors result in a low demand for the lapidaries' products. All of the interviewed lapidaries complained that there are no buyers, and one stated that sometimes the exporters offer such a cheap price for his products that he cannot even cover the costs of his journey to Addis.¹⁰⁸

Most of the time, the lapidaries still try to sell their products to exporters based in Addis, who send their representatives to the region to buy opal. They have no fixed commercial relationships and sell to whoever provides the best price.¹⁰⁹ The Kombolcha-based lapidary stated that he does not really have customers in Kombolcha, and that he only makes some sales at exhibitions; he had previously been invited by the Amhara Region SME Office to showcase his products in Addis.¹¹⁰ Organising such trade fairs for regionally based lapidaries in Addis could be a way to support them and to create more market demand for their products.

An additional challenge for the lapidaries is the cost of running a formalised business. One needs to be able to prove a capital reserve of ETB100,000 to be eligible for a license.¹¹¹ The license itself costs ETB5,000 (one off) plus the transport costs to Bahir Dar¹¹², where the Regional office issues the lapidary licenses. Additional business costs include ETB2,000-3,5000 per month for rent, electricity and water,¹¹³ as well as the expenses for the raw material. All three lapidaries invested in their own polishing machines (which cost them between ETB16,000 and ETB90,000), mostly using their own capital that they had acquired during their previous illegal trading activities.¹¹⁴ However, once a machine breaks, especially if it is an imported machine, they cannot find anyone with the right skills to fix it.¹¹⁵ To counter this challenge, in

¹⁰⁶ Delanta 2

¹⁰⁷ Kombolcha

¹⁰⁸ Delanta 2

¹⁰⁹ Delanta 1

¹¹⁰ Kombolcha

¹¹¹ Delanta 1

¹¹² Kombolcha

¹¹³ Kombolcha, Delanta 1

¹¹⁴ Delanta 1

¹¹⁵ Kombolcha

Kombolcha, the College's lapidary workshop sometimes lets former graduates use its machines (without requiring a fee), and loans the machines to the newly established lapidary cooperatives of its graduates.¹¹⁶ Offering the training centres as service centres to graduates and local cutters and polishers could be another means of support for the industry, as well as a way for the College to regain some of its expenses through small fees.

2.3. Recommendations

The following explores the key recommendations that have arisen from this study's findings on Ethiopia's coloured gemstones supply chain, and the challenges associated with value-addition therein. Each set of recommendations has been grouped according to its key theme.

These recommendations are designed to be a starting point for further discussion on the issues illuminated above.

Miners

It is advised that regional governments take steps to engage miners in programmes that educate them about the value and characteristics of opal, and commercially sensitive mining techniques. The GIA is in the process of drafting and trialling a coloured gemstones handbook for this very purpose, and Ethiopia may be a good location for a pilot study. This should be further explored.

Miners should also receive training on OH&S and safe mining practices, ideally under the advisory of qualified mining engineers. Although the miners interviewed for this study said that their lack of access to more tools was the key reason for their unsafe working conditions, training should also be provided alongside the provision of additional tools. The fact that miners may also be reducing the value of the rough by breaking it into smaller pieces would also not be addressed by the provision of additional tools, which would likely make their mining more destructive.

The government also has a plan to help organise mining cooperatives into SMEs. Further research should be conducted into why the government has chosen this goal, what its expected risks and outcomes are, and how it plans to manage these. Furthermore, any established mining cooperative would need adequate business training on how their form of organisation can help them build resilience into their activities, mine more productively, and commercialise effectively.

Cutting and polishing training

¹¹⁶ Kombolcha; South Wollo Zone Mining Bureau Coordinator

A potential solution to the challenges with cutting and polishing training could be the establishment of a close collaboration between the lapidary training centres and the gemstone industry. Given that the Government is determined to continue its policy of domestic value addition and enforce its 40:60 rule, exporters ultimately benefit from the lapidary training provided by the Polytechnical Colleges and thus could be asked to contribute to the building of domestic skills. Such collaboration would be in line with the policy of the Polytechnical Colleges, which states that 30% of the training should be at the school, while 70% should be acquired directly in the industry. However, according to the Dean of the Kombolcha College, the industry is usually reluctant to participate in such collaborations. He sees a need for the government to create a policy and enforce industry participation and contribution. Such arrangements for vocational training are common in many countries, where governments require companies to train people in certain professions and in return grant them benefits, such as tax reduction. Such arrangements could also be implemented by the Ethiopian government. For example, they could be enforced through the licensing process- in the process of obtaining a license, an exporter would have the option of formally agreeing to contribute (financially or otherwise) to domestic lapidary training, and in return receive certain benefits, including a reduction in the license fees, or a reduction in export tax.

Allowing gemstone brokers to trade in cut and polished stones might help improve market access for the lapidaries trained and established in the regions, and reduce the appeal of trading illegally. This would fuel job creation and develop domestic expertise in cut/polished trading. However, it could also make supply chain due diligence / controls even harder.

The struggle of lapidaries to find sufficiently skilled cutting and polishing teachers could be overcome via the implementation of a 'train the trainer' model. The experience of other countries (as will be explored) shows that foreign gemstone cutting experts are valuable for helping build capacity in this arena. Indian gemstone cutters could be hired to train a first generation of Ethiopian lapidaries, who would then in turn train further students at the Polytechnical Colleges. This way, a transfer of practical expertise and skill can be ensured, which over time would help Ethiopian lapidaries to become competitive internationally. This will require a long-term vision and strategy, since experience in other countries has shown that such skills building can require up to 25 years to come to fruition.

Lapidary training institutes require more funding so they can afford to buy sufficient rough for students to practice on. This would help to ensure that graduands are better trained, and thus more capable of producing goods that would be competitive

on the international market. The government also needs to ensure that it is considering the whole supply chain when it establishes lapidary training programmes. It is inadequate to funnel students into only one part of the industry (cutting and polishing) without considering the potential for training brokers/traders, or offering additional training to under-skilled lapidaries already working in Addis Ababa. There should also be a programme in place for systematising the introduction of students to actors downstream, to increase the likelihood of employment, and to make it easier to for lapidaries to find trained staff. Further research is required to determine how this would function.

Taxes

The government may want to reconsider its policy of allocating a minimum export price for rough opal, in order to disincentivise engagement in the black market for lower quality gemstones, which form the majority of total opal supply. Or alternatively, the government could invest in building lapidary skills for the manufacture of lower value stones which are more challenging and time consuming to work with; the limited availability of these skills is a key reason why cutting and polishing these goods overseas (namely, India) is currently so appealing for exporters.

The government should not rely solely upon miners' invoices in their determination of taxes payable. They should instead ensure that all copies of invoices—buyer, seller, government—match up, and if they do not, the person/business committing fraud should be dealt with in a way that would disincentivise their future engagement in such practices.¹¹⁷

Illegal activities

The government should regain control of its coloured gemstones industry from illegal exporters. Research should be carried out into illegal gemstone supply chains in Ethiopia, with the goal to identify their typical structure and common actors, their geographical profile, the loopholes (and vulnerable actors [miners, underpaid officials, etc.]) they exploit, and what motivates people to engage in this illegal trade. This information could then be used to develop an appropriate framework for systematically addressing this problem.

The government needs to tackle illegal lapidary businesses, as they limit economic

¹¹⁷ See: Winter, H. 2008. *The Economics of Crime: An Introduction to Rational Crime Analysis*. Oxon, Routledge; and Paternoster, R. and S. Simpson. 1996. 'Sanction threats and appeals to morality: Testing a rational choice model of corporate crime.' *Law & Society Review*. Vol. 30, No. 3: 549–583.

growth (via tax avoidance) and are undermining legitimate operators, which will potentially force them out of business. Exporters who are found to do business with unlicensed lapidaries should be fined at a level that is significant enough to disincentives this conduct.¹¹⁸ Furthermore, exporters who are found to use illegal lapidaries should automatically be investigated for involvement in gemstone smuggling, given their established proclivity for breaking the law.

Support for exporters and lapidaries

The dominance of certain exporters in Ethiopia's coloured gemstones industry should be addressed to enable the industry as a whole to flourish. Their dominance, which is largely enabled by their access to adequate financing, does the following:

- Reduces competition in the industry (on the aggregate);
- Increases the exporting of value-addition (and thus jobs); and
- Arguably increases undisclosed opal treatments, which give Ethiopia's largest coloured gemstone export an undeserved bad reputation.

However, it would be wrong to suggest that successful companies should be prevented from operating in the industry. They make an important financial contribution to the Ethiopian economy. It is instead recommended that research be carried out into how best to improve access to financing for smaller lapidaries and exporters, to enable their purchasing and manufacturing of rough.

Lapidary businesses often require better access to finance. Ethiopian businesses are continually at a disadvantage compared to their larger, more established counterparts as a result of this challenge. Research should be conducted into possible funding models for lapidaries, potentially using those trialled by banks for the ASM sector for inspiration.¹¹⁹

It is doubtful that Ethiopia can, in the short-medium term, control the occurrence of undisclosed opal treatments. It can, however, engage in better marketing to help communicate the attributes of natural Ethiopian opal with the goal to educate consumers, as will be further explored in the market analysis in Chapter 4, and in the Australian case study in Chapter 5. Nonetheless, it is important to note that if Ethiopia can develop sufficient cutting and polishing skills at home, it could eventually 'cut out the middle-man' (or a reasonable portion thereof) and sell directly to international markets like the US and Europe. This would not necessarily

¹¹⁸ Winter, H. 2008.

¹¹⁹ See: Mining in Malawi. 2014, April 23. Malawian Bank Partners with Government to Support Artisanal and Small Scale Miners. Retrieved 11th of July 2014 from <http://mininginmalawi.com/2014/04/23/malawian-bank-partners-with-government-to-support-artisanal-and-small-scale-miners/>.

prevent undisclosed gemstone treatments, but could reduce the rate at which the practice occurs.

Infrastructure

Major arterial roads in Ethiopia should be improved to increase the efficiency of transportation between mines and major trading hubs, thus reducing costs.

3. Governance

3.1. Government Policy

The MoMPNG is the key national agency that manages the coloured gemstone sector in Ethiopia. It carries out numerous tasks that are designed to govern and/or support the gemstone sector, including licencing exporters and lapidaries, pricing rough exports, approving visas for foreign trainers (cutting and polishing, and jewellery), and promoting Ethiopia's gemstones to the international market.

In addition to the 40:60 rule on opal exports, the MoMPNG has taken other steps to develop the coloured gemstone sector. In 2014, the Mineral Market and Value Chain Development Directorate (MMVCDD) was established within the MoMPNG. According to literature available on the MoMPNG website, the MMVCDD is tasked with developing Ethiopia's minerals market strategy, and general industry development throughout the mineral supply chain.¹²⁰ The specifics of how the MMVCDD is planning to achieve these goals is lacking in the available literature. However, interviews with the MoMPNG shed some light on what the government plans to do to fulfil its mandate.

According to government officials, the key component of the MMVCDD's minerals market strategy for Ethiopia is ensuring that all relevant licences are granted to exporters and lapidaries in a timely manner.¹²¹ Several of the exporters with whom researchers spoke stated that the Ministry's efficient licensing process was, in their experience, the key way in which the government supports the gemstone industry.¹²² In addition to fulfilling its legal obligations to the gemstone industry, government representatives stated that the MMVCDD is also planning to establish, within the next five to six years, a gemstone training/gemmological institute, and a gemstone marketing centre, both based in Addis Ababa.¹²³

¹²⁰ Ministry of Mines. N.d. MMVCDD Profile. Retrieved 02/11/2015 from www.MoMPNG.gov.et/upload/MMVCDD.pdf

¹²¹ Interview 09/11/2015a; Interview 11/11/2015

¹²² Interview 13/11/2015b; Interview 12/11/2015a

¹²³ Interview 11/11/2015

In January 2015, the MoMPNG released the final draft of its five-year plan for the mining sector. In relation to the coloured gemstone industry, this plan includes achieving the following by 2020:¹²⁴

- Increasing total gemstone exploration from 34km² to 289km²;
- Establishing pilot coloured gemstone marketing centres in mining regions to increase investment;
- Establishing a Gemmology Research Institute;
- Building a gemstones park (industrial);
- Supporting stakeholders involved in value-addition, including the ASM sector;
- Increasing the amount of value-addition for opal; and
- Doubling the production of gemstones other than opal.

The budget allocations of government are effective in illuminating where priorities lie in the implementation of policy. The best funded of the three goals that are directly referenced in the budget is gemstone exploration, which, according to the policy, will be assisted by airborne geophysical surveying, among other things. The second best funded is the establishment of the Gemmology Research Institute, which has the goal of increasing value addition in the country. However, in relation to the gemstone marketing centres the MoMPNG wants to establish, a mere ETB25,000 has been allocated to the project, or only USD1,200. This is an extremely small amount of money to allocate to such a considerable task. When the small budget for the gemstone marketing centres was raised with one MoMPNG official, no further information could be gleaned as to why this figure is so low. (By point of comparison, the Australian Opal Centre in Lightning Ridge, which is not government affiliated, is seeking to establish an opal marketing and education centre that it estimates will cost up to AUD4,000,000 (ETB61,327,824).¹²⁵) The specifics of how the MoMPNG will realise the goals laid out in the five-year plan are also unclear. No work plan has yet been developed.

In interviews with MoMPNG officials, it was stated that the MoMPNG wants to establish the gemmological institute in Addis Ababa as it would enable the training of cutters and polishers within the country's major gemstone trading hub. The institute would also potentially enable broader knowledge sharing about gemstones within industry and government.¹²⁶

¹²⁴ Ministry of Mines. 2015. Mining Sector Second Five Year Growth and Transformation Plan (2015/16-2019-20).

¹²⁵ Interview 4/11/15a

¹²⁶ Interview 09/11/2015a; Interview 11/11/2015

3.2. Regional Government and Domestic Beneficiation

Regional governments also play a role in the management of Ethiopia's coloured gemstone industry, particularly in relation to domestic beneficiation. The Delanta Woreda Mining Office's activities include keeping statistics on the licensees and calculating the royalties and taxes that need to be paid—information that is then passed on to the customs office. The Mining Office currently does not seem to provide extension services or technical support to miners, lapidaries or traders.¹²⁷

In general, representatives of the South Wollo Zone and Delanta Woreda Mining Offices were found to be much in favour of an increased focus on value addition in the gemstone sector. The South Wollo Zone Mining Bureau Coordinator mentioned the benefits that this could bring on several levels. It could help curb unemployment in the regions, provide revenue for the government and foreign currency for the economy, and help to curb illegality in the sector.¹²⁸

However, according to the Zone Office Coordinator, the government and the administration at the Zone level do not presently place much emphasis on value addition or the gemstone sector in general.¹²⁹ Delanta is currently the only Woreda where the administration works specifically on gemstones,¹³⁰ and there is a need for clear guidance across the government to prioritise the gemstone sector and value addition.¹³¹ This may be the reason why the Mining Bureaus do not currently provide many services in relation to value addition, other than issuing licenses. In the Amhara Region, there are currently 18 lapidary licenses (16 of which issued by the Regional Mining Office in Bahir Dar, two issued by the central Government), 46 licensed brokers, and 28 licensed opal mining cooperatives.¹³²

On the level of the Zone, the Mining Bureau's mandate also includes administrating the Woreda level Mining Bureaus (which are responsible for work on the ground), the organisation of training for Woreda level officials (e.g. regarding geology, mining techniques, etc.), and supervising the mining sector (e.g. ensuring that mining is done according to regulations.)¹³³ The Zone Bureau Coordinator is aware of the challenges faced by the lapidary training centres at the Polytechnical College in Kombolcha and its graduates, particularly their need for finance to establish a

¹²⁷ Delanta Mining Bureau

¹²⁸ Dessie

¹²⁹ South Wollo Zone Office

¹³⁰ South Wollo Zone Office

¹³¹ South Wollo Zone Office

¹³² Delanta Mining Office

¹³³ South Wollo Zone Office

business and acquire rough gemstones. He states that his Bureau is currently in discussion with the Polytechnical College to not only provide technical training (e.g. cutting and polishing), but also to support the students and graduates further, by training them in business management skills, money saving, etc.¹³⁴ This is a suggestion worth considering, but it is not clear how far advanced these discussions are.

3.3. Key Challenges

In interviews, the MoMPNG spoke about its challenges enforcing licensing requirements, and managing gemstone smuggling (which it has previously said is occurring at a high rate¹³⁵).¹³⁶ The main reason given for the first of these difficulties was the very high rate of attrition within the Ministry's staff; it was claimed that highly skilled staff (i.e. those with degrees in relevant fields) often stay in the job for only two to three months. The key reason they leave was said to be the poor rates of pay available within the public sector, which cannot compete with private sector pay scales. As a consequence, the MoMPNG sometimes finds itself unable to hold onto skilled staff, and any training provided to staff in relation to the gemstone sector is lost when they leave. This is also linked to a complaint made by several exporters that the MoMPNG would be better able to help develop the coloured gemstones industry if it had more staff who were trained in industry specifics.¹³⁷ This issue will be further explored below.

Ethiopia's expansive and relatively porous borders were reported as being in part responsible for the high rates of smuggling across borders into Kenya and Djibouti.¹³⁸ Several of the stakeholders spoken to during this research lamented the scale of gemstone smuggling out of Ethiopia. It was argued by three stakeholders that more gemstones are smuggled out of Ethiopia than are legally exported.¹³⁹ One interviewee said that he had been told by his contacts in India that 10 tonnes of

¹³⁴ South Wollo Zone Office

¹³⁵ Ministry of Mines. 2012. Artisanal Mining Activities in Ethiopia: Challenges and Opportunities. Powerpoint presentation. Retrieved 29/11/2015 from [http://www.globaldialogue.info/Artisanal%20Mining%20Activities%20in%20Ethiopia%20-%20Challenges%20and%20Opportunities%20\(Oct%202012\)%20-%20Abayneh%20Tilahun.pdf](http://www.globaldialogue.info/Artisanal%20Mining%20Activities%20in%20Ethiopia%20-%20Challenges%20and%20Opportunities%20(Oct%202012)%20-%20Abayneh%20Tilahun.pdf), slide 18.

¹³⁶ Interview 11/11/2015.

¹³⁷ Ibid.

¹³⁸ Ibid.

¹³⁹ Interview 13/11/2015a; Interview 12/11/2015c; Interview 12/11/2015b

rough opal that had been smuggled out of Ethiopia in the previous week alone had just arrived in Jaipur.¹⁴⁰

The exporters who held the view that gemstone smuggling is prolific in Ethiopia argued that this practice is extremely harmful to their own businesses, as it has the following commercial impacts:¹⁴¹

- The market is flooded with Ethiopian gemstones, especially opal, which reduces their value;
- They observe (at international trade fairs) international traders of Ethiopian opal who can sell it more cheaply than they can, because they have not had to incur costs associated with legitimate business operations (taxes, licences, minimum wages, etc.); and
- Smuggled gemstones are more likely to eventually have undisclosed treatments (smoking, dyeing, heating) applied to them, which give Ethiopian opal a bad reputation in the international market.¹⁴²

The MoMPNG argued that the main way it is seeking to combat gemstone smuggling is through an awareness-raising campaign at the mine level. The MoMPNG is going into ASM communities and telling miners that their mineral assets are extremely valuable, and once they are lost they cannot be replaced. This message is designed to encourage miners to sell to legitimate buyers.¹⁴³ However, it is questionable to as whether a message that requires a long-term economic outlook, and has potentially nationalist inclinations, can act as an effective incentive within impoverished mining communities in which a casino and/or hand-to-mouth mentality often reign(s) supreme.¹⁴⁴ Miners also may not be able to properly identify legitimate traders and/or brokers, and doing so would not necessarily prevent these middlemen from selling the goods they have bought to smugglers anyway. Furthermore, our research suggests that some licenced exporters also smuggle rough (or 'lease' their licences out to people who do), so it is questionable as to whether this approach could have any meaningful impact on current levels of smuggling. This will be further explored in the recommendations.

¹⁴⁰ Interview 13/11/2015a

¹⁴¹ Interview 13/11/2015a; Interview 12/11/2015c; Interview 12/11/2015b

¹⁴² This link can be ascribed to the fact that if you' re willing to break one law, you' re also likely to be willing to break other laws and/or social contracts (i.e. the requirement/expectation to disclose gem treatments prior to sale).

¹⁴³ Interview 09/11/2015a

¹⁴⁴ See: Cook, R., T. Healy. 2012. Madagascar Case Study: Artisanal Mining Rushes in Protected Areas and a Response Toolkit. Cambridge, Estelle Levin Ltd. and WWF at www.asm-pace.org

The Zone and Woreda level Mining Bureaus both face similar challenges in implementing their mandate. This includes mainly the lack of human, financial and logistical resources. The Offices do not have the personnel and the means of transport to supervise the sector effectively, and often they are unable to travel to mine sites or hold meetings with stakeholders on the ground.¹⁴⁵ In addition, they have difficulties providing technical support to their stakeholders in the sector, as they lack knowledge and capacity themselves. Both Offices stated a need for training and capacity building of officials in terms of geology, mining techniques, identification and valuation of gemstones, or the topic of value addition in general.¹⁴⁶

An additional challenge faced by both Woreda and Zone level Mining Offices is the continued presence of illegal mining and trading activities in the gemstone sector. They have difficulties monitoring and controlling these activities, since valuable gemstones are easily hidden, transported and smuggled out of the country.¹⁴⁷ The regional government representatives see a great need in tighter control of the sector and the supply chain, and suggest that better market linkages should be created between legal miners, brokers and exporters.¹⁴⁸

3.4. Recommendations

The following explores key recommendations that have arisen from this study's findings on Ethiopia's coloured gemstones supply chain, and the challenges associated with value-addition therein. Each set of recommendations has been grouped according to its key theme.

These recommendations are designed to be a starting point for further discussion on the issues illuminated above.

Gemmological institute

Given the goal of the MMVCDD, it is advised to utilise the existing cutting and polishing, bead drilling and faceting machinery in lapidary training institutes in the Amhara region (and beyond), the vast majority of which is currently lying idle. Partnerships with the private sector should also be explored to help link trained lapidaries in this region to buyers, and improve the calibre of training on offer (by identifying key areas of weakness from a private sector perspective).

Staff at the MoMPNG

¹⁴⁵ South Wollo Zone Office, Delanta Mining Office

¹⁴⁶ South Wollo Zone Office, Delanta Mining Office

¹⁴⁷ South Wollo Zone Office, Delanta Mining Office

¹⁴⁸ South Wollo Zone Office

Given the high rate of attrition within the MoMPNG it is advised that efforts also be made to study the challenges associated with staff retention, and explore how they could be addressed. Analysing the disparities between pay scales at the MoMPNG and those for comparable jobs within the private sector could be a key starting point. Surveying staff to identify key areas of workplace satisfaction and dissatisfaction is also important. There may be ways of improving staff retention without having to compete with the private sector's pay scales. Indeed, it is unusual for governments to compete with the pay scales of the private sector; staff retention is often facilitated by offering a better work/life balance (compared to the private sector), subsidised tertiary study and additional training. The workplace culture of the MoMPNG should also be assessed as part of this study.

The dearth of knowledge of the coloured gemstones industry within the MoMPNG also needs to be addressed as a matter of priority. An efficient way of building this capacity (and arguably improving staff retention) would be to organise a knowledge sharing partnership with the relevant government department of a country that is also a large-scale coloured gemstone producer (potential countries for consideration are explored in the case study analyses in Chapter 5). One or two week training seminars for relevant MoMPNG staff could be held by gemstone industry and governance experts from the country in question. In order to ensure the longevity of this training and its future replication, senior staff at the MoMPNG could also be trained in delivering such training, utilising a standard "train the trainer" model.

Budget allocations for five-year plan

The proposed gemstone marketing centre detailed in the MoMPNG's five-year plan does not yet have sufficient budget allocation to see it successfully realised. However, as will be further explored in the Australian case study, it is vital for the government to effectively market Ethiopian opal to international and domestic markets, to ensure not only that its properties are understood by gem labs and consumers, but also that its presence on the market (demand) is not ephemeral. It is therefore advised that the government consider other sources of funding for this goal, or responsibly re-allocate funding from other projects detailed in the five-year plan.

Illegal activities

The scale of smuggling and tax avoidance within the industry demonstrates a need for serious scrutiny of coloured gemstone supply chains within Ethiopia. It is advised that relevant industry actors start performing due diligence on imports of Ethiopian opal in line with the Organisation for Economic Cooperation and Development's

Due Diligence Guidance (OECD DDG), particularly in relation to tax avoidance. The improved supply chain transparency and accountability would help to disincentivise these practices.

Given the key role of India in the manufacture of Ethiopian opal, the dominance of Indian exporters and the high rates of gemstone smuggling, the government should seek to use diplomatic channels between the Indian government to encourage the state to require improved customs control at the point of import to monitor the legality of stones. If a parcel of Ethiopian opal does not have a valid export certificate from the Ethiopian government (and the Ethiopian government only) it should be refused entry into India. Likewise, the government of Ethiopia should encourage its neighbours, particularly Kenya and Djibouti, to exercise vigilance with regards to the export of opal, which neither of these two countries mine domestically. Akin to India, these exports should only be allowed if a valid export certificate from the Ethiopian government can be furnished. As previously argued, a reduction in the incentive to smuggle gemstone would also likely occur if the government's minimum export prices for rough were more in line with market realities (further research would be required to determine what these prices should be). It is also advisable that the government review the 40:60 rule in cooperation with stakeholders to determine if the requirement to cut and polish 40% of exports is too high, and thus also incentivising smuggling. Both of these points will be further explored in Chapter 4.

It is also advised that the government explore the utility of a implementing a nation-wide supply chain quality assurance mechanism, like MineralCare,¹⁴⁹ which can enable due diligence on all transactions, including Know-Your-Customer (KYC) and Know-Your-Product (KYP) measures, so enhancing legality, formality, revenues, and responsible business practices.

¹⁴⁹ For more information, see: <https://idcare.eu>

4. Markets

The following considers the international and domestic markets for Ethiopia's opal and other coloured gemstones, and the challenges faced by the key players therein. It closes with an overview of recommendations as to how Ethiopia can better market its coloured gemstones both domestically and internationally.

4.1. International Market

To collect information on the international market for Ethiopia's opals and the experiences of international buyers in sourcing from, and manufacturing in, Ethiopia, semi-structured interviews were conducted with opal exhibitors at the Bangkok Gems & Jewelry Fair (September 10-13, 2015) and the Hong Kong Jewellery & Gem Show (September 16-18, 2015).

Several of the interviewees said that they are directly involved in opal mining in Ethiopia, and are thus vertically integrated examples of companies operating in this sector. Others travel to Ethiopia to sit in opal brokerage offices and buy from local miners who stop in to sell their rough. Others simply buy direct from dealers in Jaipur who have their own cutting facilities in India. The dominance of Jaipur as an opal manufacturing and trading hub is also supported by the study's interviews with Ethiopian exporters.

4.1.1. Demand

All of the traders interviewed for this study said that demand is increasing for Ethiopian opal, and the largest buyers are from China and the US. The economic slowdown in China is presently a concern, but the US market is bolstered by the television shopping networks that advertise and sell a lot of Ethiopian opal. Some of the traders said that they see Europe as a growing market for Ethiopian opal, but many felt that there needs to be more awareness created about the beauty and durability of the stone in order to increase global demand. The exporters interviewed in Ethiopia largely supported these findings, saying that the US was the largest market, followed by China. However, they also regularly spoke of exporting to Japan, and countries in Europe, including Germany and Holland.

4.1.1.1. Quality and Competitiveness

Two dealers expressed concern that misinformation about Ethiopian opal had been spread online in order to discourage people from buying it.¹⁵⁰ Some complained that the negative information was also keeping prices down. Despite some people online arguing that Ethiopian opal cracks easily and that almost all of it is resin treated (without differentiating between Shewa and Wello deposits), none of the traders had any resin-treated opal in their showcases, and none had ever seen any in the market. One trader commented that the Ethiopian opal is relatively cheap and thus it is not feasible to add resin treatment: this process would not increase the value of the stone, but merely add additional costs.¹⁵¹ The majority of exhibitors interviewed sell natural opal, while some had dyed and smoked opals as well. All treatments were disclosed when asked.

In terms of the marketability of the Ethiopian opal, all of the traders interviewed in Hong Kong and Bangkok argued that the stone has great potential. Much of it is equally as beautiful as Australian opal. The most appealing characteristics of Ethiopian opal are the intense play-of-colour that can be seen in high-quality white opals, and the relatively low price point they typically have in comparison to other sources in the world. The play-of-colour in Ethiopia's white opal is particularly appealing given that the previously dominant Australian white opal is commonly more subdued, and less variable in terms of colour. Australian white opal is not hydrophane, which may be a key reason why prices are higher internationally. However, it was also argued by a couple of traders that Ethiopian opal is under-priced on the international market, given its durability and beauty.¹⁵² This is likely due to a mix of over-supply, the presence of undeclared treated stones on the market, and residual concerns about Shewa opal. What Ethiopia can do to better market its opals on the international market will be outlined in the Australian case study in Chapter 5, and in the recommendations at the end of this chapter.

4.1.1.2. Key Challenges

The most commonly reported problem faced by those buying opals directly from Ethiopia was the government's 40:60 rule for exporting polished and rough opals.¹⁵³ Most companies interviewed in Hong Kong and Bangkok said the quality of opal cutting and polishing in Ethiopia is not up to their standards, and so this rule places a

¹⁵⁰ Interview 1: Hong Kong and Bangkok; Interview 9: Hong Kong and Bangkok

¹⁵¹ Interview 9: Hong Kong and Bangkok

¹⁵² Interview 5: Hong Kong and Bangkok; Interview 9: Hong Kong and Bangkok

¹⁵³ Interview 7: Hong Kong and Bangkok; Interview 3: Hong Kong and Bangkok;

burden on them to buy poorly cut stones at a higher price when they could be cutting and polishing in their own facilities and getting better results. This aligns with abovementioned comments made by some opal lapidaries/exporters in Ethiopia, who noted complaints made by international clientele, and the fact that many re-cut stones after purchase prior to sale on the international market.

In relation to local Ethiopians working in lapidary, some Indian traders said they have cutting facilities in Ethiopia, but because of the poor skills of the locals they must send cutters from Jaipur to do some of the work. They thus view the 40:60 rule as forcing them to spend money on inferior cutting when they have access to better cutters outside the country. Only a few traders said that they have trained local cutters in order to improve their skill level, and they argued that these efforts have shown good results. This finding indicates that there can be value in investing in training for local cutters and polishers, and further research should be carried out into what incentives can be used to encourage more lapidaries to do this. However, it was also clear from conversations with traders in Bangkok and Hong Kong that not everyone who trades in Ethiopian opal is equipped, or prepared, to establish cutting centres in the country. This could be due to the fact that Indian importers fiercely defend the retention of Indian jobs, understanding the country's unemployment issues and the importance of this as a priority for diamond manufacturers in Gujarat.¹⁵⁴

The Ethiopian government's role in determining opal export values was also a common complaint of the international opal traders interviewed for this study. They argued that the government places too much emphasis on the size of the rough or cut stones, without considering other key factors that determine their quality, i.e. their 'play-of-colour' and opacity, and, in the case of fire opals, their clarity.¹⁵⁵ This means that the government's valuations are often too high.¹⁵⁶ Interviews with exporters in Ethiopia also showed that they often simply wear these losses; if a parcel is only worth a fraction of the minimum price at which they must export it, they have no option but to comply with the law (or, it can be assumed in some cases, smuggle the parcel out of the country). Although one Ethiopian exporter (interviewed in Addis Ababa) stated that he had occasional success in negotiating with the government to

¹⁵⁴ For more information, see: <http://in.reuters.com/article/india-diamonds-idINKCN0R72AN20150908>

¹⁵⁵ Schumann, W. 2013. Gemstones of the World. Fifth Edition. Sterling Publishing, Toronto,, p.166.

¹⁵⁶ Interview 6: Hong Kong and Bangkok

have the value of rough reduced prior to export because of its poor quality (despite its size),¹⁵⁷ this was not the norm.

Several traders in Hong Kong and Bangkok also said that the export process in Ethiopia is unappealing; foreign currency must be transferred into a specified account in Ethiopia before the export process can begin. Currently, the bank advice expires within one year, so if the stones are not exported within that time, the money cannot be transferred back to its country of origin, nor can it be used to export stones after the expiration date. As argued by one trader, the Ethiopian government “quotes 3 to 5 times higher than the real value that we buy and send in an official bank transfer. If we don't use the full amount, then we cannot use rest of money and cannot send it back to our country either.”¹⁵⁸ This process introduces additional risk into doing business in Ethiopia. It also likely further incentivises gemstone smuggling, as buyers may be inclined to seek relationships with exporters who engage in this practice and therefore do not need the formal selling process to be respected. Suggestions as to how this process could be simplified to encourage legal trading activities will be explored in the recommendations.

The issue of gemstone smuggling was also raised by one gem trader in Asia who exports out of Ethiopia. He argued that the competition from the larger buyers who buy rough opals directly from the miners is harmful to his business. He said that many of the larger buyers smuggle this rough through Kenya and Djibouti, estimating that they export 30% legally and 70% illegally (in other words, only roughly 10% of what they export is cut and polished as is legally required, representing value-addition and foreign currency losses for the country). He argued that the Ethiopian government should do more to help local people like him to “build financial capacity” —a point also made by exporters interviewed in Addis Ababa, as explored in Chapter 2. He also called for the government to be stricter with the larger buyers/exporters, suggesting that there should be more regulations for companies buying directly from the mines.¹⁵⁹ These issues will be further explored in the recommendations.

¹⁵⁷ Interview 13/11/2015a

¹⁵⁸ Interview 6: Hong Kong and Bangkok

¹⁵⁹ Interview 2: Hong Kong and Bangkok

4.2. Domestic Market

4.2.1. Demand

Lapidaries and exporters interviewed in Ethiopia sometimes complained that the domestic market for their gemstones is almost non-existent.¹⁶⁰ The meagre usage of coloured gemstones in Ethiopia's own jewellery sector was witnessed first-hand by the study's researchers. A tour of the main jewellery district in Addis Ababa (approximately 40 shops) illuminated three key features of Ethiopia's jewellery industry, as follows:

1. There is very little jewellery (approximately <5%) that is set with coloured gemstones of any description, with the majority being just gold or silver (or a mix of the two metals);
2. The jewellery is predominately of the filigree, mass-produced, laser soldered variety, which is common in the manufacturing hubs of Hong Kong, China and Thailand;
3. When jewellery is set with a coloured gem, it is almost always a cheap, plastic, neon-coloured 'stone' that looks almost comically out of place, particularly in 22ct gold.

In relation to point one, the only shop that sold a notable assortment of jewellery with coloured gemstones in the jewellery district had only a single piece that contained a gemstone that the owner said had been sourced from Ethiopia (an issue that will be further explored below). The majority of the jewellery in this shop was also made overseas. In relation to the second point, the dearth of 'smithery' skills in Ethiopia—jewellery making skills—was lamented by several of the stakeholders researchers spoke to, two of whom argued that it would take roughly 10 years for Ethiopia to develop sufficient skills in this arena to be able to compete internationally.¹⁶¹ Thus, the current preference is to import jewellery that does not appear to have much of a local flavour to it.¹⁶² The final point about overtly fake looking gemstones indicates a couple of different features of Ethiopia's largely imported jewellery culture—that gemstones are rarely, if ever, the 'hero' of a piece of jewellery, and natural looking, genuine gemstones are either not known about, or are not prized above those that are obviously fake.

¹⁶⁰ Interview 10/11/2015b; Interview 12/11/2015b; Interview 10/11/2015a

¹⁶¹ Interview 10/11/2015b; Interview 12/11/2015b

¹⁶² It must be noted that manufacturing does need to happen in-country for designs to have a 'local flavour', i.e. Ethiopian jewellers could design and outsource manufacturing to cheaper hubs, like India, then re-import it. But this is a serious investment, and requires capital and confidence in the market.

There are two main issues at play here: a lack of domestic skills in relation to jewellery manufacturing, and a lack of domestic knowledge regarding natural gemstones (those found both within Ethiopia and without) amongst both consumers and retailers. Three of the lapidaries/exporters with whom researchers spoke said that they have taken steps to develop local demand for jewellery set with Ethiopian gemstones, and were going about it in one of three ways:¹⁶³

1. By making cheaper jewellery with 'high volume, low value' gemstones to appeal to the average employed Ethiopian (such as obsidian, agate, chrysoprase), using local jewellers (see Figure 6 for an example of 'high volume, low value' gemstones seen in Addis Ababa);
2. By making higher end pieces to appeal to the minority of Ethiopians who have significant discretionary income, and expats and tourists, using local jewellers;
3. By doing both of the above to appeal to a broad consumer base.

These efforts were coupled with a desire to advertise Ethiopia's gemstones to the



Figure 6 Assortment of polished and rough low value, high volume Ethiopian gemstones

local market, in turn educating consumers about their existence and encouraging more jewellers to incorporate them into gold and silver pieces. However, the lapidaries/exporters admitted that they could not afford to pay for this advertising on their own, and were instead relying on word-of-mouth to promote the jewellery.¹⁶⁴

The obvious commercial necessity to advertise gemstones to Ethiopians, and expats and tourists residing in the country, is something that highlights the need for a functional, well-funded gemstone industry association that can represent and promote the interests of the industry as a whole; a latent individual is unlikely to see any incentive in assuming the financial burden of

¹⁶³ Interview 12/11/2015b; Interview 10/11/2015b; 13/11/2015a

¹⁶⁴ Interview 10/11/2015b; Interview 12/11/2015b

advertising for the entire industry, i.e. providing the collective good, particularly if he/she is a small-scale operator.¹⁶⁵ The government should also be encouraged to contribute financially to advertising efforts. This issue will be explored further in the case study of the Australian opal industry in Chapter 5, and in the recommendations at the end of this chapter.¹⁶⁶

4.2.2. Key challenges

The fact that the lapidaries/exporters foraying into jewellery making were using local jewellers also highlights several other challenges confronting Ethiopia's gemstones value chain. Firstly, making the local jewellery industry more open to using natural coloured gemstones can arguably only occur to any meaningful degree if better jewellery-making skills are developed in the country. Two of the lapidaries/exporters interviewed for the study argued that local jewellers do not want to make jewellery using gemstones (Ethiopian or otherwise) as that comes with a degree of risk that they are not willing to carry; if the stone cracks, chips or shatters while they are setting it into a piece of jewellery, the jeweller will incur a loss.¹⁶⁷ Breakage of this nature can occur with some regularity with gemstones, particularly when those that rank lower on the Mohs' hardness scale of 1-10 (with 1 being talc and 10 being diamond), such as emerald (7.5-8), tourmaline (7-7.5) and tanzanite (6.5-7), are not skilfully handled.¹⁶⁸ Opal has a hardness scale of 5.5-6.5, which means that it can be scratched with a knife, and is relatively challenging to set into jewellery.¹⁶⁹ Given that a minority of Ethiopian opal is hydrophane also means that it can expand when retaining (additional) moisture, which makes setting such stones more challenging. Therefore, until local jewellers gain the required skills—and thus confidence—to work with natural gemstones they will likely continue to largely eschew them.¹⁷⁰

¹⁶⁵ The example of De Beers assuming the costs of advertising generic (unbranded) diamonds on behalf of the entire diamond industry from the 1930s-early 2000s was only logical for the company on account of its governance of a cartel that controlled up 85% of the world's diamonds throughout the majority of its existence. Control of this magnitude does not reside with any one company in Ethiopia's gemstones sector. It is telling that once De Beers lost this degree of market control it moved away from this model of generic industry advertising. See: Bergenstock, D. J. 2004. *An Analysis of the International Diamond Market*. New York, The Edwin Mellen Press; Olson, M. 1971. *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge, Harvard University Press.

¹⁶⁶ Photo credit, Yolande Kyngdon-McKay, 2015, Addis Ababa.

¹⁶⁷ Interview 10/11/2015b; Interview 12/11/2015b

¹⁶⁸ Schumann, W. 2013.,pp.20-2.

¹⁶⁹ Ibid.

¹⁷⁰ Photo credit: Yolande Kyngdon-McKay, Addis Ababa, 2015.

Another issue at play here is the fact that jewellery set with small gemstones is likely



Figure 7 Loose Ethiopian fire opals beneath a selection of gemstone jewellery made in Addis Ababa

to sell better in Ethiopia as it is typically cheaper than jewellery that is set with larger gemstones. However, jewellery made with small gemstones is often set with multiple stones, and setting smaller gems requires more intricately detailed work—attributes that increase the labour costs of making such jewellery. In contrast, setting large stones is comparatively easy and a single large stone is often all that is needed in a piece of jewellery—both features that reduce labour costs.¹⁷¹

This reality therefore places Ethiopia in

somewhat of a Catch-22 situation: its local market can seldom afford jewellery set with large gemstones, but the dearth of necessary jewellery-making skills makes working with 'affordable' small stones more challenging and expensive (ironically). Therefore, for people wanting to make jewellery to sell locally it is currently more cost-effective to export small gems to India to be set in jewellery, and then import that jewellery back into Ethiopia (as is also the case in Australia, as explored in Chapter 5). Combined with the abovementioned preference for jewellery that has been mass-produced in Asia, this means that Ethiopia is currently effectively exporting the vast majority of jobs associated with jewellery manufacturing. This loss of productivity is compounded by the loss in foreign currency that results when jewellery is imported from overseas.¹⁷² These issues will be further explored in the recommendations below.

One individual who is trying to buck this trend is Manale Dagnev, an Ethiopian clothes and jewellery designer. In 2013, Dagnev established the jewellery company MANALE, with the goal to sell around the world jewellery made with Ethiopian coloured gemstones, by Ethiopian artisans. As her business plan details, the business' social and economic development goals include:¹⁷³

- Bringing skilled design production jobs to Ethiopia' s lapidary and jewellery-making artisans;

¹⁷¹ Interview 13/11/2015a

¹⁷² Interview 10/11/2015b

¹⁷³ MANALE. N.d Business Plan. (Not publically available)

- Adding economic value to Ethiopian raw and finished materials;
- Bringing the world's attention to the amazing potential of the Ethiopian gemstone jewellery industry; and
- Reinvesting a percentage of profits back into the growing Ethiopian lapidary and jewellery industry.

Dagnev is therefore aspiring to achieve with this business the kind of domestic beneficiation that the 40:60 rule was intended to enable; indeed she advised the government on the rule's introduction.



Figure 8 MANALE jewellery sample

Dagnev is not just focussed on the downstream of Ethiopia's gemstone supply chain, but is also committed to developing the capacity of women in ASM communities to cut and polish the country's diverse range of coloured gemstones. She is particularly interested in helping to push their skills beyond making standard oval-shaped cabachon stones, which, as argued above, is the

kind of skills expansion that is required for diversifying the country's product offerings in this sector.

Figure 9 illustrates the variety of shapes that Dagnev has overseen women in ASM communities in Ethiopia learn how to cut and polish, primarily with low-value, high-volume gemstones like agate, jasper, etc.¹⁷⁴

Dagnev has also established and tested a five-tier supply chain for her jewellery business, which produces uniquely Ethiopian pieces at a price point of between USD100 to USD1,000. She has tested the market demand for this jewellery at trunk shows around the world, where it has sold very well.¹⁷⁵

¹⁷⁴ Photo credit: Yolande Kyngdon-McKay, Addis Ababa, Ethiopia 2015.

¹⁷⁵ Dagnev has agreed to discuss her business with The World Bank to assist in the development of Ethiopia's coloured gemstones sector.

Figure 8 above shows a sample of the MANALE jewellery, which was unique to any of the other jewellery seen in Addis Ababa during the research trip.¹⁷⁶

The appeal of this jewellery, despite it being made with low value, high volume gemstones, shows two things:

1. Jewellery designers in Ethiopia have a creative talent that is arguably one of the industry's best assets; and
2. Opal should not be considered the 'hero' of the Ethiopian gemstone and jewellery industries—other stones are also beautiful and marketable.

Dagnew's jewellery business model is a strong example of how the downstream can work to help develop the capacity of ASM communities. It also shows the potential diversity of jewellery made with Ethiopian gemstones, and how it can be manufactured domestically in unique Ethiopian designs. These points will be further explored in the recommendations below.

4.3. Recommendations

The following explores key recommendations that have arisen from this study's findings on Ethiopia's coloured gemstones supply chain, and the challenges associated with value-

addition therein. Each set of recommendations has been grouped according to its key theme.

These recommendations are designed to be a starting point for further discussion on the issues illuminated above.

Opal marketing

Interviews with international gem traders showed how well Ethiopian opal is received on the international market, on account of its high quality but lower price point (compared to Australian opal). Further to the previous recommendation regarding



Figure 9 Stones cut and polished by women in ASM communities

¹⁷⁶ Photo credit: Yolande Kyngdon-McKay, Addis Ababa, Ethiopia 2015.

countering misinformation on gemstone treatments, the Ethiopian government is encouraged to be more proactive in marketing Ethiopian opal (and its other coloured gemstones, including those that are low value) internationally to improve global sales and ensure that residual concerns about its stability are addressed once and for all. Its failure to concertedly counteract misinformation on the market about its opal has no doubt helped give legitimacy to baseless arguments that Shewa and Wello opal are essentially the same. The government's planned market centres, as will be explored in the next chapter, could play a role in this marketing.

Export pricing guidelines

As previously stated, it is again advised that the MoMPNG review its opal export pricing guidelines, as they appear to be significantly out of step with market prices. This is likely to incentivise smuggling. It is also advised that the export process be simplified to reduce uncertainty (risk) for exporters and international gem traders. Export and financing procedures need to be as simple as possible to encourage maximum compliance—the current requirements are too onerous. The government should seek input during this review process from key supply chain actors to enable a stronger degree of industry buy-in (thus arguably reducing the incentive to smuggle) and to ensure that the revised export process is practical for the industry to implement.

Supporting the jewellery industry

Ethiopia's jewellery making industry is fledgling, but shows potential. It is recommended that further research be conducted into this specific stage of the gemstone supply chain to illuminate the challenges that are preventing its steady growth, and whether locally produced gold could be used in designs for further value-addition. A good place to start with this research would be the lapidaries who are attempting to build domestic demand for jewellery set with Ethiopian gemstones, and Manale Dagnev (and others like her), who is trying to put unique Ethiopian jewellery designs onto the world stage.

At the same time it would be interesting to research domestic consumer attitudes (locals, tourists, expats) towards jewellery set with gemstones to identify why this style of jewellery is currently so rare in the domestic market, and if (and how) that could be changed moving forward. This research could also try to pinpoint the unique narrative surrounding Ethiopian gemstones, which could be used to help market them internationally. Researching this 'story' would require meaningful engagement (in-field research) with all key supply chain actors in the industry, from miners to exporters, and involve a multimedia collation and articulation thereof.

5. Country Case Studies of Gemstone Sector Development

Understanding the approaches of different gem-producing states in promoting the development of their coloured gemstone sectors, and the reasons behind their successes and/or failures in doing so, sheds some light on what Ethiopia could do to maximize its likelihood of supporting and governing a resilient coloured gemstone sector.

The country case studies include i) examinations of the gemstone sectors in Afghanistan, Australia, Brazil, Madagascar, Nigeria, Sri Lanka and Tanzania, ii) what governments therein have done to promote domestic beneficiation via gemstone manufacturing and other added-value activities, iii) whether these efforts and succeeded and why/why not, and iv) what key lessons each state can provide to the Ethiopian context. The Australian case study will focus specifically on whether the state's globally dominant opal industry has been supported by the government, the domestic lapidary sector, and the marketing efforts that have underpinned the industry's international success.

5.1. Afghanistan

Overview

Afghanistan has seen quite some donor support to building its gemstone and jewellery sector over the last few years. There have been several donor-funded projects that supported both the industry and the government in moving towards higher value addition in country. However, the sector is still in its infancy and the domestic gemstone processing and jewellery making activities are not yet able to fully compete on an international level.

Laws, policies, visions

The government of Afghanistan has recognised that the gem and jewellery sector has strategic potential for several reasons:¹⁷⁷

- Domestic entrepreneurs and companies have already entered the space spontaneously themselves, and both raw material supplies and markets exist already within Afghanistan;
- Many of the skills needed already exist;
- Technology needs are moderate and can be filled cost-effectively;
- The sector is labour intensive, its financial barriers to entry are low, and it has a

¹⁷⁷ GIRoA 2014

strong rural presence.

In 2014, the Afghan Government developed a 3-year sectorial policy for the development of the Afghan gems and jewellery industry, in alignment with the goals of its small and medium-scale enterprise (SME) policy. The sectorial policy aims to 'reform and establish the infrastructure to formalize support and positively influence the gemstone sector value-chain from mines to markets'. Amongst the goals of the plan are increased value addition within Afghanistan, increased gemstone processing, cutting and polishing, as well as increased production and sale of jewellery.¹⁷⁸

The plan recognises that one of the biggest impediments for the gems and jewellery sector currently is uncompetitive royalty rates, taxes, fees and export duties, which push most activities in the sector into informality, resulting in a loss of government revenue and foreign exchange.¹⁷⁹ Other identified challenges include the lack of skilled trainers and experts in cutting, polishing, designing, manufacturing; the lack of adequate equipment; the high cost of doing business in Afghanistan generally; and inadequate support with regards to training on business management, marketing, and sales, as well as limited access to finance.¹⁸⁰

Based on this assessment, the plan includes the following priorities for the development of the sector:¹⁸¹

- Training and technical assistance in gem cutting, polishing and jewellery production;
- Access to finance to allow for more working capital and investments in facilities and improved equipment;
- Business development services;
- International promotion and marketing, including through exhibitions;
- Partnerships with international companies and organisations, B-2-B assistance;
- Competitive royalties, taxes and fees; simplified export procedures, temporary duty-free exports;
- Establishment of a National Gemstones and Jewellery Association.

In order to implement this Action Plan, a Gemstones and Jewellery Sector Working Group was created, comprising of the relevant government agencies, the private sector and NGOs.¹⁸²

¹⁷⁸ GIRoA 2014

¹⁷⁹ GIRoA 2014

¹⁸⁰ GIRoA 2014

¹⁸¹ GIRoA 2014

Institutions and Projects

There have been several donor-funded initiatives and programmes working with the government and the private sector to support the development of a gemstone cutting and jewellery sector in Afghanistan.

1. Turquoise Mountain Institute

The Turquoise Mountain Institute was established in 2006 through the Turquoise Mountain NGO, which has been funded by various donor agencies including the Prince's Charities, the British Council, United States Agency for International Development (USAID), Canadian International Development Agency (CIDA), and others. The Institute is a vocational training centre, training Afghan artisans in traditional crafts such as woodwork, calligraphy, ceramics, miniature painting and jewellery.¹⁸³ 15 students are trained in each of these crafts every year. Each training course lasts for three years and is accredited by the internationally recognised City and Guilds Institute.¹⁸⁴

In the first two years, students work with traditional designs and techniques, whereas in the third year they are encouraged to create their own designs. From the beginning of the course, students are involved in exhibitions in Kabul and internationally, in order to raise their skills to international levels.¹⁸⁵ The Institute not only teaches craftsmanship, but also trains the students in business skills, including computer literacy, business management, and graphic design.¹⁸⁶ Students are provided with specialist equipment and workspace, and are connected with international markets and retailers, which helps them establish partnerships with internationally renowned jewellers such as Pippa Small.¹⁸⁷

Many of the Institute's former students have become teachers at the Institute themselves, and have established their own businesses and workshops, where they also provide work opportunities for new graduates.¹⁸⁸

2. Future Brilliance Afghanistan Organisation (FBAO)

Future Brilliance Afghanistan Organisation FBAO is an NGO established in 2012 by its founder and CEO Sophia Swire. The organisation's goal is to develop

¹⁸² GIRoA 2014

¹⁸³ Turquoise Mountain, n.d.a.

¹⁸⁴ Turquoise Mountain, n.d.b.

¹⁸⁵ Turquoise Mountain, n.d.b.

¹⁸⁶ Turquoise Mountain, n.d.c.

¹⁸⁷ Turquoise Mountain, n.d.d.

¹⁸⁸ Turquoise Mountain, n.d.d.

Afghanistan's jewellery industry by building jewellers' technical and business skills and supporting the creation of employment and market opportunities.¹⁸⁹ Through an apprenticeship and training programme in Kabul and Jaipur, the organisation has trained 37 semi-skilled lapidaries, 11 of whom are female, and 10 of whom are former graduates of Turquoise Mountain Institute.¹⁹⁰

The six-month training included lapidary, jewellery design and jewellery making business in Jaipur, India, at the Indian Institute of Gems & Jewellery.¹⁹¹ The training in Jaipur was aimed at exposing the students to international standards, elevating their skills to export quality level, and allowing them to build relationships with their Indian counterparts.¹⁹² In Jaipur, the students also worked with internationally renowned US and UK jewellers to create jewellery collections that would appeal to a diversity of customer segments. These collections are now sold under the Aayenda jewellery brand, which had been specifically created as a sales and marketing platform to bring Afghan jewellery to international markets.¹⁹³ In addition to craftsmanship, the training also included classes on branding, sales and marketing, digital literacy, and English language skills, as well as financial and business management skills.¹⁹⁴

Five months after the training, 80% of the students worked in their own workshops and businesses, employing others, or were employed themselves as gem cutters and jewellery designers. The former students also reported higher incomes, and some of them now not only produce jewellery but also create designs for the Aayenda brand.¹⁹⁵ Some of the Turquoise Mountain graduates are now also producing jewellery for the Aayenda brand, and according to the brand website, international orders have so far provided work for 1,200 artisans in Afghanistan, including 300 war widows who hand carve lapis lazuli and turquoise beads.¹⁹⁶

3. Gemstone cutting and polishing centres in the Northern Provinces

With funds from several donors, including the Rupani Foundation, GIZ's Sustainable Economic Development in Northern Afghanistan (NaWi) project, and the Agha Khan Foundation, 8 gemstone cutting and polishing centres were established between

¹⁸⁹ Amber, M. 2014

¹⁹⁰ Amber, M. 2014

¹⁹¹ Amber, M. 2014

¹⁹² Future Brilliance, n.d.a

¹⁹³ Amber, M. 2014

¹⁹⁴ Amber, M. 2014

¹⁹⁵ Amber, M. 2014

¹⁹⁶ Aayenda Jewelry, n.d.a

2011 and 2014 across the northern provinces of the country, where gemstone processing and jewellery making had been a traditional activity for many years.¹⁹⁷ These centres were equipped with the necessary tools and equipment to serve as service centres for the local SMEs and households involved in jewellery making. Through the fees paid by the jewellers for these services, the centres were able to become financially independent over time. In addition, the centres were used to provide training on gemstone cutting, polishing and jewellery manufacturing, and gemmology training, as well as technical training in repair and maintenance of tools and equipment. Other capacity building activities also included business plan writing, association management and marketing and communication. The project also helped set up savings groups, through which the members could pool money and purchase materials or tools. By the end of the project, the management of the centres and their equipment were handed over to the local Gemstone and Jewellery Associations.¹⁹⁸

One year after the end of the project, 6 centres were still operational and used by jewellers on a regular basis (2 centres were not operational anymore, due to a deteriorating security context and issues around the governance of cooperatives). Most recently, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), commissioned and funded by the World Bank for another project, has funded additional training activities in some of the centres, focussing mainly on female trainees.

4. Small and Medium Enterprise Development Project (USAID-ASMED)

The Small and Medium Enterprise Development Project was funded by USAID between 2006 and 2012, and included a focus on businesses in the gemstone and jewellery sector (amongst others). The programme provided support for investment, technology and business development services, and facilitated grants, public-private partnerships, the establishment of business associations, as well as technical and business trainings (including business development and management skills) in partnership with local universities.¹⁹⁹ In the gemstone and jewellery sector this included for example a two-month gemstone cutting and polishing course, a business skills training course for the students of Turquoise Mountain Institute, a training on gemmology, and the provision of gemstone cutting and polishing

¹⁹⁷ GIRoA 2014

¹⁹⁸ GIZ/GFA 2014

¹⁹⁹ DAI, n.d.a; USAID 2009

equipment, as well as the organisation of 'sector meetings' to coordinate the work of government and donors.²⁰⁰

5. Adam Smith International (ASI) with DFID/World Bank funding

ASI implemented several short-term consultancy projects in 2009-2011 aimed at improving the legal framework for artisanal miners and downstream buyers (gem-cutters) of the rocks, including considerations of export issues. Part of their output was a coordination group of donor projects which met several times to bring in the relevant aspects. Recommendations made to the Ministry of Mines were considered, and partly implemented when changes to the mining laws came in; however, many issues remained as the self-interests of decision-makers still held sway.

There was a good degree of donor coordination and cooperation between GIZ/GFA Consulting Group (GFA)-Rupani-Aga Khan Development Network (AKDN)-USAID in 2009-2011, and GIZ-USAID-Future Brilliance in 2011-2014. This resulted, for example, in the inclusion of candidates from all projects and programmes to the FBAO training courses that were implemented in Jaipur. Despite these initiatives, the large majority of gemstone cutting and polishing within Afghanistan is only done with semi-precious stones and gemstones of lower value, as the capacities to provide high-quality cutting and polishing are still lacking. Therefore, many of Afghanistan's high-value gemstones are still exported (or smuggled) rough to other countries.²⁰¹

Lessons learnt / recommendations

- It could be a good strategy to build a domestic cutting and polishing sector by first focussing on lower value gemstones, where skill levels don't need to be as high and the barriers of entry are lower. A differentiated strategy may be necessary for export quality, internationally oriented jewellery production, and the gemstone processing and jewellery production destined for local and regional markets.
- It could be a good strategy to focus efforts and support where domestic processing, cutting, polishing or jewellery making (even if at a very low level) is already happening, and where skills can be 'upgraded' instead of being built from scratch.
- Lapidary / gemstone cutting and polishing training needs to be integrated with small business development initiatives and training (e.g. business management, financial and accounting skills, etc), as well as with support in

²⁰⁰ USAID 2009

²⁰¹ GIRoA 2014

creating international market access, market linkages, developing marketing and sales skills, and international branding.

- Strategies and activities that rely solely on donor funding might only have short-term effect. Any such activities need to be embedded in a larger economic or sectorial strategy by the government, and receive committed and long-term support and guidance by the government.

5.2. Australia

Overview

Opal has been mined in Australia for over 100 years, exclusively by small-scale miners—there are no large-scale companies operating in the upstream sector.



Figure 10 Known major opal deposits in Australia

Australian opal is primarily sedimentary, and falls into three dominant categories: black opal, which is mined in Lightning Ridge in New South Wales (NSW); white opal, mined in South Australia (SA); and boulder opal, which is mined in Queensland (Qld)²⁰²(see Figure 10).²⁰³

Lightning Ridge and Coober Pedy also produce lesser-known crystal opal, which has limited-

to-no play-of-colour. Black opal is the most highly prized variety, due to its strong play-of-colour (in high quality stones)²⁰⁴ (see Figure 11).²⁰⁵

²⁰² Pecover, S.R. 2007. Australian Opal Resources: Outback Spectral Fire, Rocks & Minerals. Vol. 82, No. 2, pp.102-115

²⁰³ Map sourced from Masterpiece Jewellery. N.d. What is Opal? Retrieved 09/12/15 from

<http://www.masterpiecejewellery.com.au/what-is-opal.html>

²⁰⁴ Smallwood, A. 2014. The Unique Attributes of Australian Precious Opal. The Australian Gemmologist. Vol. 25, No.6-7.

²⁰⁵ Photo credit Opals-On-Black.com, 2009. Lightning Ridge Black Opal Bead.



Figure 11 Black opal from Lightning Ridge, Australia

Opal is culturally important to Australia; it was declared the country's national gemstone in 1994. Black opal is also the state emblem of NSW, with white opal holding the same position for the state of SA. Although Australia is home to several notable gemstones, including extremely rare pink and red diamonds,²⁰⁶ and blue sapphires, opals remain synonymous with the country, particularly for tourists (primarily those from China

and Japan).²⁰⁷

Australia has always dominated the global opal market, for the following reasons:²⁰⁸

- It produces some of the highest quality opal in the world; and
- It came into being when there were no competitors, either in terms of quality or output.

In 2012 and 2011, Australia produced an estimated USD41 million and USD40 million of opal respectively, making it the world's largest producer (by known value).²⁰⁹ The majority of Australian opal is sold overseas, at major gem trade shows, with a lot of trading taking place between exhibitors. Local trade shows in Lightning Ridge and Coober Pedy also attract international dealers, but on a smaller scale, and international dealers are known to come to the main production centres throughout the year to buy directly from the miners. A small number of locals also buy and cut opal for re-sale in Australia.²¹⁰ The key international markets for Australian opal are China, Europe, the US and Japan.²¹¹

Despite the beauty and dominance of Australian opals in the global market, and the fact that the comparatively low Australian dollar has seen demand increase in the

²⁰⁶ Australia also originated 'cognac' and 'champagne' diamonds—coloured diamonds from the Argyle mine that were cleverly branded and marketed internationally by Rio Tinto from the early 1990s.

²⁰⁷ Based on the author's own experience in the downstream sector of the Australian jewellery industry.

²⁰⁸ Smallwood, A. 2014.

²⁰⁹ Tse, P-K. 2014.

²¹⁰ Interview 4/11/15a

²¹¹ Interview 3/11/15. The importance of China to the Australian market, and its interest in Australian opals, was demonstrated by the selection of Australian opal as the feature gemstone at the first major gem show ever held in China, the China Mineral and Gem Show, which took place in 2013.

past 18 months,²¹² the industry at home is not flourishing, whether in mining, cutting and polishing, or retail. The following contains an analysis of semi-structured interviews held with five Australian opal industry experts in November 2015. It explores some of the reasons why the industry is struggling, and what lessons Ethiopia can learn from the Australian experience.

Laws, policies, visions

The experts interviewed for this study were asked to explain some of the challenges that they believe are facing the opal industry in Australia. The identified main impediment to growth varied between interviewees, but some common themes emerged. Four argued that more exploration is required to identify new deposits, to ensure that global markets have a steady supply and more miners are attracted to the industry. This would also ensure that much needed marketing efforts could be backed up by a reliable supply. However, the scientific and technological developments and investments needed for this to take place are beyond the abilities of the small-scale miners, and the government has no interest in supporting the industry in this manner.²¹³

The stated reasons why government (state or federal) does not wish to support the opal mining industry in Australia included the following:

1. The large-scale tax evasion amongst small-scale miners, which compels the government to ask: "If you're not going to help us, why should we help you?"²¹⁴ (Although the scale of this practice was disputed by one interviewee²¹⁵);
2. The atomistic and isolated nature of opal mining, which is not conducive to collective action;²¹⁶
3. The inability of disparate industry associations to reach agreement on how the industry should be supported, which prevents the industry from lobbying the government collectively;

²¹² Tasker, S.J. 2015, March 28. Economic Stars Align to Revive Opal Rush. The Australian. Retrieved 09/12/2015 from <http://www.theaustralian.com.au/business/mining-energy/economic-stars-align-to-revive-opal-rush/news-story/d6ae025b2db26435ca83cc49b57b85c2>

²¹³ Interview 4/11/15b; For further information on potential opal exploration techniques, see Committee Secretary. 2001 Submission to the Inquiry into Resources Exploration Impediments. Standing Committee on Industry and Resources. Retrieved 20/11/2015 from http://www.aphref.aph.gov.au_house_committee_isr_resexp_subs_sub32.pdf

²¹⁴ Interview 5/11/15b

²¹⁵ Interview 5/11/15a

²¹⁶ Interview 3/11/15; Interview 5/11/15b;

4. The lack of data on the number of opal miners in Australia and their annual production levels, meaning that quantifying the industry’s economic contributions is impossible and promoting its development to the government is undermined (one study in the late 1990s pegged the export figures at half a billion Australian dollars,²¹⁷ but no comparable study has been carried out since);²¹⁸
5. It is “not an industry that is going to change the course of Australia’s history” ²¹⁹, unlike large-scale industries like coal, nickel, gold;²²⁰
6. Production is quite distant from centres of power, and is thus invisible to government;²²¹
7. Governments do not receive royalties from opal mining, unlike other commodities like coal, iron ore and gold;²²² and
8. A general lack of interest in the industry from the government,²²³ which fails to see its economic and cultural importance. This simply results in it being ignored— “it’s just a bit of a nuisance.” ²²⁴

Three of the interviewees also argued that government regulations are a key problem stifling mining: “It is a constant battle with government” ²²⁵; “No government in Australia has ever been behind any gemstone resource in Australia from that point of view (in relation to favourable regulation)” ²²⁶; “We can’t compete against countries whose governments support their local coloured gemstones industries.” ²²⁷

The key complaint from interviewees was the fact that opal-mining laws are not differentiated from those governing large-scale mining activities, which dominate Australia’s extractives industry.²²⁸ In 2011, the NSW state government was advised to remove opal mining from the 1992 Mining Act and the Environmental Planning and Assessment Act 1979, and create a separate piece of legislation for the industry. However, this was rejected by the government in favour of developing “longer term

²¹⁷ Interview 5/11/15b

²¹⁸ Interview 4/11/15a

²¹⁹ Interview 4/11/15b

²²⁰ Interview 3/11/15; Interview 4/11/15a

²²¹ Interview 4/11/15a

²²² Interview 4/11/15a

²²³ Interview 3/11/15

²²⁴ Interview 4/11/15a

²²⁵ Interview 3/11/15

²²⁶ Interview 4/11/15b

²²⁷ Interview 5/11/15b

²²⁸ Interview 3/11/15

proposals for the regulation of opal mining in Lightning Ridge” .²²⁹ Nonetheless, small-scale miners simply cannot afford to implement all of the OH&S and environmental protection requirements that large-scale companies like BHP Billiton and Rio Tinto can.²³⁰ Opal miners also have little incentive to do so, as they cannot pass those costs onto the market because of international competition from other opal sources (namely Ethiopia), and instead must absorb them.²³¹

Opal cutting and polishing

In relation to the cutting and polishing of Australian opal, it is common for only the high-grade rough to be cut in the country, while the rest is bought by international buyers to manufacture overseas (mainly China).²³² This is because it is more expensive to cut and polish stones in Australia: “When you can get a stone cut for 10 or 20 cents in China, but it would cost AUD5 to do it in Australia, and it’ s a stone you want to sell for AUD10, that’ s when overseas options are more appealing.” ²³³ This is particularly the case for doublets and triplets—low quality goods that are much cheaper to manufacture overseas. It was estimated by one interviewee that only 5-6% of Australian opal is of a good enough quality to be cut at home, while the rest is cut overseas. However, this is also positive for the industry as it means that the lower-quality goods can be shifted onto the international market.²³⁴

Despite the industry’ s reliance on local cutters for high-value goods, it was argued by two interviewees that cutters do not make a good living in Australia²³⁵—they struggle to get people to pay for their expertise, as it is not valued, even though it should be: “A good cutter can be the difference between a stone selling for AUD2,000 or AUD10,000.” ²³⁶ This suggests that highly trained cutters can have a significant impact on the returns earned by lapidaries (which is also supported by the experiences of some lapidary/exporters in Ethiopia, as examined in Chapter 2.)

Institutions and initiatives

²²⁹ Trade and Investment. 2013. Final NSW Government Response to the Wilcox Report into Lightning Ridge Opal Mining. NSW Government. Retrieved 27/11/2015 from http://www.resourcesandenergy.nsw.gov.au/_data/assets/pdf_file/0007/473029/Wilcox-Report-Final-Government-Response.pdf

²³⁰ Interview 3/11/15

²³¹ Interview 3/11/15; Interview 4/11/15a

²³² Interview 3/11/15; Interview 5/11/15a; Interview 4/11/15b

²³³ Interview 4/11/15a

²³⁴ Interview 5/11/15a

²³⁵ Interview 5/11/15a

²³⁶ Interview 4/11/15b

Formal cutting and polishing (and other lapidary) training opportunities do not currently exist in Australia. Courses used to be run by Technical and Further Education (TAFE) colleges around mining towns in Australia (Coober Pedy), but they were not economically viable and were shut down.²³⁷ One interviewee who taught opal cutting and polishing at a TAFE for 20 years argued that the government gave the courses no support whatsoever: “The support from government has been appalling.”²³⁸ He also argued that the TAFE was very top-heavy in management, and when cost cutting had to be made, the first people to go were the teachers.²³⁹ Nowadays, people learn cutting and polishing informally, typically from friends or family.²⁴⁰

Sometimes two or three day cutting and polishing courses are offered, which are very popular, but this time is insufficient to become an expert.²⁴¹ At the abovementioned TAFE courses, each student would study for about 6 months, learning for a few hours each day; in that time they could learn to cut and polish proficiently.²⁴² Two interviewees argued that the key elements of becoming a skilled opal cutter are having a large volume of stones to practice on, and practicing for a sufficient number of hours.²⁴³ To ensure students could access sufficient rough to practice on at the TAFE course in Coober Pedy, local miners were asked to donate very low-grade opal rough to the organisation. This meant that the TAFE never paid for any stones—it was argued that if it was required to buy its own stones the course would not have survived, due to severe budgetary limitations.²⁴⁴

It was argued by the interviewee who had taught opal cutting and polishing for 20 years that opals are very easy stones to work with. Once students are taught to properly clean a stone and then ‘read’ it to identify where the strongest play-of-colour lies, it then becomes a matter of practicing on the cutting and polishing wheels with as many stones as possible—the more you practice, the more efficient you get. (This point ties into the aforementioned challenge in Ethiopia of accessing sufficient rough with which to train staff). Because opals are so soft compared to other stones, it was additionally argued that they are also very easy to cut and

²³⁷ Interview 4/11/15a; Interview 5/11/15a; Interview 4/11/15b

²³⁸ Interview 5/11/15a

²³⁹ Interview 5/11/15a

²⁴⁰ Interview 4/11/15a; Interview 5/11/15a; Interview 4/11/15b

²⁴¹ Interview 4/11/15a

²⁴² Interview 5/11/15a

²⁴³ Interview 4/11/15a; Interview 5/11/15a

²⁴⁴ Interview 5/11/15a

polish.²⁴⁵ This opinion conflicts with that of Ethiopian lapidaries and exporters, who argued that opal is extremely difficult to work with, and sufficient skills can take up to ten years to acquire. This difference of opinion is perhaps attributable to the relative infancy of Ethiopia's opal industry.

The Australian Opal Centre in Lightning Ridge is trying to address the current gap in formal opal cutting and polishing training opportunities in the country but is struggling to find sufficient funding for doing so.²⁴⁶ The logical outcome of this situation is that the number of formally trained cutters and polishers in Australia will fall over time, reducing the value-addition that can take place in the country and further normalising the export of rough to international markets for processing.

The Marketing of Australian Opal

The marketing of Australian opal internationally has been carried out by well-financed people in the industry; they have promoted the stone at some of the world's biggest trade shows, showcasing it to gem dealers and designer jewellers to sell the product. The actions of these few have been successful in increasing demand for Australian opal on the aggregate.²⁴⁷

The Australian opal industry relies almost entirely on international buyers for its market (tourists, and the international market)—the domestic market for opal is extremely small and has been virtually ignored in terms of advertising.²⁴⁸ Indeed, the international marketing of opal has been so effective that Australian women would likely identify opal as 'the kind of thing that tourists buy', not what they themselves would covet in a piece of jewellery. This is in part because of the mass-produced, tacky way that Australian opal is often showcased to tourists, which is often typified by doublets or triplets being set in silver and gold plated Australian animal pendants.²⁴⁹

The failure to advertise opal to Australian consumers is in part due to the industry's atomistic nature—it is dominated by small businesses. Efforts to do so have never gained any traction, as the individuals driving these 'collaborative marketing' initiatives ultimately realise that they do not have the time, or the money, to market on behalf of the entire industry. They also struggle to agree on a strategy, and do not

²⁴⁵ Interview 5/11/15a

²⁴⁶ Interview 4/11/15a

²⁴⁷ Interview 3/11/15; Interview 4/11/15a

²⁴⁸ Levin, N. 2011, March 01. Opal: Australia's Troubled Gemstone. Jeweller Magazine. Retrieved 3rd of November 2015 from <http://www.jewellermagazine.com/Article.aspx?id=1434>.

²⁴⁹ Ibid.

have the necessary marketing expertise: "Opal miners are not necessarily good opal marketers" .²⁵⁰ There is also a lack of demand for opals within the Australian jewellery industry, which predominately sells diamond jewellery (in the high-end categories): "There' s a few blue stones and green stones and red stones, but Australians don' t understand what a coloured gemstone is. We need to get a few [high] profile people wearing good opal to highlight it." ²⁵¹

However, the lack of exploration taking place, and the exodus of young people out of the industry, means that such marketing campaigns could ultimately backfire, as the industry may be unable to meet subsequent demand.²⁵² It was argued that Australian opal prices are declining because of the decreased supply: "That' s what' s so unique about opal—when supply goes down the price does not go up because of rarity, it actually goes down as the market moves away from using it, and buyers stop coming to Australia." ²⁵³ It is possible that opal is a stone that can drop off the radar of some international buyers and consumers with relative ease, perhaps because it is not as well known or celebrated as the 'occasion' stones, such as diamonds, emeralds, rubies or sapphires. This again speaks to the importance of strong international and domestic marketing campaigns, a point that also applies to the Ethiopian context. It also suggests that buyers want reliability in gemstone supplies, and an inability to access sufficient goods will reduce the appeal of buying from the Australian market.

The discovery of Ethiopian opal in the mid-1990s was argued by all interviewees to have had only a short-term impact on the Australian opal industry: "The novelty of low prices and bright colours has worn off." ²⁵⁴ Ethiopian opal was not perceived by interviewees to pose a threat to Australian opal, as the consensus was that it is of a poorer quality (unstable) and not as beautiful.²⁵⁵ However, the popularity of Wello opal on the international market has caused some members of the Australian opal industry to take proactive steps to attempt to convince consumers and key stakeholders in the global jewellery industry that Australian opal is superior to Ethiopian opal. Some of these efforts have included the following:

- Presenting to the Gemmological Industrial Laboratories conference in 2014 about the differences between Australian opal and other sources from around

²⁵⁰ Interview 4/11/15a

²⁵¹ Interview 4/11/15b

²⁵² Interview 4/11/15b

²⁵³ Interview 5/11/15a

²⁵⁴ Interview 5/11/15a

²⁵⁵ Interview 5/11/15a; Interview 4/11/15b;

the world, to educate international gem labs and convince them to put a country of origin on their certificates;

- Lobbying the World Jewellery Confederation (CIBJO) to change the opal nomenclature to include reference to hydrophane opal as a separate classification, which is a characteristic that afflicts Ethiopian opal more so than Australian. (It is interesting to note that interviewees suggested that hydrophaneity in Ethiopian opal was the norm, which conflicts with the available literature on this issue²⁵⁶);
- Writing articles for various industry magazines about the differences between Ethiopian and Australian opal;
- Running Australian opal field tours for international gemmologists and gem labs (GIA) to educate them about the differences between the two varieties (among other things);²⁵⁷
- Running opal courses (at the Gemmological Association of Australia) that specifically teach students about the "questionable stability of the Ethiopian Opal..." ;²⁵⁸ and
- Encouraging the GIA to teach students about hydrophane opal, which it had not done previously.²⁵⁹

The proliferation of undisclosed treated Ethiopian opal, particularly that which had been dyed to resemble Lightning Ridge black opal, was also a key criticism of interviewees.²⁶⁰ Akin to the aforementioned complaints made by exporters in Ethiopia and traders in Asia, one interviewee argued that the dominance of large-scale Indian-owned companies in Ethiopia's opal industry was ruining the industry in the country, because of their alleged wide-scale use of undisclosed opal treatments. He argued that there must be greater efforts made to ensure treatments are disclosed, which will ultimately help Ethiopia regain control over their industry: "That's the only way we can bring the Indians into line. That's the only way the Ethiopians can get better value from their product...Ethiopia could avoid the Indian

²⁵⁶ Rondeau, B. et al. 2010..

²⁵⁷ See: Hsu, T. et al. 2015, September 30. Chasing the Rainbow: Australia Opal Fields Expedition. Gemological Institute of America. Retrieved 09/12/2015 from <http://www.gia.edu/gia-news-research/australia-opal-fields-expedition>

²⁵⁸ Gemmological Association of Australia. N.d. Advanced opal course with Anthony Smallwood. Retrieved 9/12/2015 from http://www.gem.org.au/advanced_opal_course_with_anthony_smallwood/

²⁵⁹ Interview 5/11/15b

²⁶⁰ Interview 3/11/15; Interview 4/11/15a

selling methods of just cutting the price and flooding the market, which has pushed the price down and caused a massive over-supply.”²⁶¹

Lessons learned / Recommendations for Ethiopia

Overall, the Australian opal industry appears to be working quite hard to ensure that Ethiopian opal is widely considered to be different, or if viewed cynically, inferior to Australian opal. Nonetheless, these efforts also show how Ethiopian opal could be better marketed internationally; similar efforts could be made by stakeholders in the Ethiopian opal industry to ensure that the international market is made more aware of the fact that the majority of Wello opal is not hydrophane, and that it is among the most robust opal in the world. The fact that Ethiopian Wello opal typically commands cheaper prices than Australian opal is also an important selling point to emphasise.²⁶²

Furthermore:

- An industry that is organised, harmonious and speaks with one voice is better able to influence government and communicate its development needs;
- Marketing internationally is extremely important to establishing strong demand;
- Marketing to tourists not only creates a domestic market for goods, but also arguably seeds international markets when those tourists return home;
- Training programmes need to be supported by government if they are not self-funding—providing people with skills should be the goal of these programmes, not making profits;
- Training programmes need to be able to access sufficient quantities of rough to enable students to develop required skill levels, and strong relationships with miners is a good way of achieving this;
- The government must view the industry as a serious contributor to GDP and support its development accordingly;
- Tax evasion should be condemned by all industry stakeholders, including miners, lapidaries and exporters, as it is ultimately detrimental to the success of the industry on the whole and the government's willingness to support its development;
- Investments should be made in opal exploration to prevent future supply shortages, and opal dropping off the radar of international consumers; and

²⁶¹ Interview 5/11/15b

²⁶² One interviewee mentioned an advertisement he had once seen in an industry magazine that promoted Ethiopian opal as being ‘just as beautiful as Australian opal, but only 30% of the price’ .

- An opal industry can be viable even if only a small percentage of production is cut and polished domestically.

5.3. Brazil

Overview

In recent years, Brazilian jewellery manufacturing and design has grown to a vibrant and internationally acclaimed industry,²⁶³ which was partly helped by domestic demand from a growing Brazilian middle class.²⁶⁴ The companies in the gemstone sector are mostly small and medium-sized companies²⁶⁵ and have gradually climbed up the value chain from gem cutting into finished jewellery, with the help of government policies and programmes.²⁶⁶ The success and value addition through this industry segment has in turn made domestic gemstone mining and cutting more profitable again, which had previously become expensive and internationally uncompetitive.²⁶⁷ Now, Brazil's exports of cut and polished gemstones amount to more than double the value of rough gemstone exports. In 2014, rough exports amounted to 57 million USD, whereas cut and polished exports hit 131 million USD.²⁶⁸

Laws, policies, visions

In 2005, the Ministry of Mining and Energy (MME) developed a 20-year plan for the gemstone sector²⁶⁹ as part of the National Mining Plan 2030 (Plano Nacional de Mineração 2030, PNM 2030)²⁷⁰. The PNM sets out action points towards the strategic aim of sustainable mineral production, which also includes value-addition to gemstones and the contribution of mining to local development.²⁷¹

The 20-year plan for the gems and jewellery sector is based on a thorough assessment of the gemstone and jewellery supply chain within Brazil, which includes information on production, employment and tax revenue statistics, and value and types of exports and domestic consumption, as well as a qualitative and quantitative study of the industry, including location and numbers of operators at each step in

²⁶³ Doulton, M. 2014; Lucas, A. 2013

²⁶⁴ Lucas, A. 2013

²⁶⁵ ICA 2011

²⁶⁶ Doulton, M. 2014; Lucas, A. 2013

²⁶⁷ Lucas, A. 2013

²⁶⁸ Taylor, R. 2015

²⁶⁹ ICA 2011

²⁷⁰ SGM 2011

²⁷¹ SGM 2011

the value chain and each of their challenges and difficulties. It is also based on an assessment of international markets and competitors, concluding that if Brazil wants to compete with countries like Thailand, India and China, it will need to distinguish its jewellery in the design segment of the industry, in order to create a unique image of the sector internationally.²⁷²

The 20-year plan goes on to formulate clear macro-level goals and indicators, as well as the following strategic activities to reach those:²⁷³

- Training, management and technological development (including capacity building for SMEs, technical consultancy and improvement of quality and productivity at each tier of the chain);
- Internal trade promotion, including trade shows and displays, as well as integration with the tourism industry;
- External trade promotion, including support to Brazilian jewellery producers to participate in international fairs, dissemination of information on markets, promotion of high value added exports (including through a Centralised Export Desk that supports exporters), and diversifying export markets to target both traditional and emerging markets;
- Access to credit, including making the sector a priority for government funded programmes, and supporting the establishment of credit lines to companies in the sector;
- Reduction of domestic tax burden, including a reduction to zero tax on imports of rough precious stones to ensure competitiveness of exporters of cut stones and to reduce smuggling. This fosters the possibility of a gem trading and lapidary sector that is not reliant upon domestic production and that can access the volumes of stones necessary to develop specialisations for the international market, provide opportunities for training (lots of cheap material needed), and achieve economies of scale. In the Ethiopian context, it may even allow some Ethiopian opal to be reimported for value addition (for example, jewellery making), if changes in the Indian lapidary sector would make that attractive;
- Strengthening of Local Productive Clusters (further discussed below), including as a priority supporting the various training programmes that industry actors at various supply chain tiers already implement, and fostering internal knowledge exchange.

²⁷² IBGM 2005

²⁷³ IBGM 2005

Institutions and initiatives

One of the most important institutions with regards to the promotion of the Brazilian gems and jewellery sector is the Brazilian Gems & Jewellery Trade Association (the Instituto Brasileiro de gemas e metais preciosos, IBGM), a non-profit organisation established in 1977 that acts as a confederation, representing the whole gemstone value chain from mining, to jewellery design, manufacturing and retail in Brazil, and bringing together national and state-level associations, unions, institutes and companies involved in the precious stone and metals industry and trade.²⁷⁴ The IBGM's goals are to represent the interests and needs of the industries before the government, to provide information and training, and to promote the sector locally and internationally.²⁷⁵ The IBGM is also Brazil's representative in international gems and jewellery associations, such as the International Confederation of Jewelry (CIBJO) and the International Colored Gemstone Association (ICA).

The IBGM conducts the following services²⁷⁶:

- Promotional services: Export and trade promotion to increase exports of higher value product and expand exports of selected market segments including faceted gems, jewellery & costume jewellery. This includes direct support to exporters with a focus on priority markets, as well as industry fairs;
- Technical services: Training, consulting and skills improvement in gemmology, developing technical materials, disseminating technical and market information and analysis;
- Capacity building services: Capacity building and training courses, workshops, lectures and consulting in the field of gemmology, design, management, technology and marketing.

The IBGM and its activities are supported by the government, namely through the Brazilian Service of Support for Micro and Small Enterprises (SEBRAE), and the Brazilian Trade and Investment Promotion Agency (APEX-Brasil).²⁷⁷

APEX-Brazil promotes the image of Brazilian services and products internationally, and coordinates activities related to foreign direct investment (FDI), aiming to allocate investment to economic sectors of key importance with the goal of enhancing the international competitiveness of Brazilian companies.¹

SEBRAE is a non-profit organisation aiming to promote the competitiveness of Brazilian SMEs through training programs, business consultancy and services in partnership with the private and public sector, as well as through advocacy for a better business environment and the facilitation of access to markets, credit, technology and innovation.¹ SEBRAE has offices in all states and around 800 small business development centres across the country, serviced by more than five thousand small business experts.¹

²⁷⁴ IBGM, n.d.a

²⁷⁵ IBGM, n.d.a

²⁷⁶ IBGM, n.d.b

²⁷⁷ IBGM, n.d.a

The IBGM's long-term Sectorial Project for Support to Gems, Jewellery and Costume Jewellery Exports in partnership with APEX-Brazil was one of the first government programmes in the sector. It runs since 1998 in various phases and includes activities such as awareness raising, training (including on technology), product suitability, surveys and market research, promotional material, promotional events in Brazil and abroad, and direct promotion of products through fairs and exhibitions.²⁷⁸

IBGM's activities, particularly the Sectorial Project, seem to be successful. In 2002, 144 exporting companies were participating in the project, whereas in 1995 it was only 35; and the export volume, as well as the destination market diversification, has increased (with Brazilian jewellery being exported to 43 countries by 2004).²⁷⁹

Industry associations and unions play a very important role in the Brazilian gemstone sector. They exist for almost every supply chain tier (from mine to retail, including gemmology, lapidary, jewellery manufacturing, gem and jewellery exporters), and at all three levels of political organisation (municipality, state, national level). These associations provide a broad range of services to their members, which can include commercial advice, technical assistance and education, as well as training on gemstone cutting.²⁸⁰

Additionally, universities and technical schools offer practical courses in the gemstones and jewellery sector, including on design, lapidary and entrepreneurship. The Senac Vocational College in Rio de Janeiro is one such example,²⁸¹ or the School of Mines at the University of Ouro Preto, Minas Gerais, which for example has also taught staff of the Mozambican Gemmology and Cutting Center.²⁸² In addition, some of the larger gemstone mining companies, such as the Belmont emerald mine, have started cutting a part of their production on their own within Brazil (Belmont cuts

²⁷⁸ IBGM 2010

²⁷⁹ IBGM 2005; see also Santos, A. 2010

²⁸⁰ Examples include the Brazilian Gemmological and Mineralogical Association (Associação Brasileira de Gemologia e Mineralogia AGBM), Sindicato das Indústrias de Joalheria, Mineração, Lapidação, Beneficiamento e Transformação de Pedras Preciosas (SINDIPEDRAS – Union of the jewellery, lapidary, and precious stones processing industry), the Associação dos Comerciantes e Exportadores de Jóias e Gemas do Brasil (GEA - Association of gem and jewellery exporters); and the Sindicato das Indústrias de Joalheria, Ourivesaria, Lapidação de Pedras Preciosas e Relojoaria de Minas Gerais (SINDIJOIAS – Union of the jewellery industry, goldsmiths, precious stones lapidaries and watchmakers of Minas Gerais).

²⁸¹ ICA 2011

²⁸² MacaHub 2011

25% of its production by value - 10% by volume - on their own²⁸³), which mirrors a recent trend in which Brazilian cutters have found a niche in fine-quality emeralds.²⁸⁴

Local Productive Clusters

Based on the 20-year plan of the sector, the Brazilian government specifically supports localised value addition in the gemstone sector. One of its main initiatives is the 'local productive clusters' in gemstone producing areas of the country. This initiative involves the collaboration of the MME, the Centre of Mineral Technology (CETEM), which is part of the Ministry of Science, Technology and Innovation, as well as SEBRAE.²⁸⁵ The 'local productive cluster' initiative focuses on both gemstone mining, and gemstone processing and cutting. On the one hand, it aims at legalizing informal artisanal mining, supporting ASM in acquiring mining permits and organizing themselves into cooperatives, as well as improving labour through safer mining techniques and equipment. On the other hand, the initiative also targets the local gemstone processing and cutting sector by supporting training on cutting and design techniques, and supporting the development of cutting machines, in order to increase and improve production.²⁸⁶

The 'local productive cluster' initiative was first tested in two pilot projects in two different states (one of which was in an opal producing area in Piauí state, see below). After the pilot projects, nine such 'local productive clusters' were established in additional states and can now be found all over Brazil, each adapting its activities and priorities to the local context of the industry.²⁸⁷

²⁸³ Lucas, A. 2012

²⁸⁴ Lucas, A. 2012

²⁸⁵ ICA 2011

²⁸⁶ Interview with Brazilian gemstone sector expert, 06.25.2013

²⁸⁷ IBGM 2010

The Local Productive Cluster in the opal producing area of Pedro II, Piauí state

In the 1980s, with some government support, the private sector decided to train locals in jewellery making in order to add value to the opals mined in the area. The Piauí State Development Agency started offering a course for opal cutters, and as a result, the first mineral handicraft school was opened in Pedro II. Consequently, gemstone processing workshops and jewellery shops were opened in the city, and private actors organised in order to hire jewellers from other states to work and teach in Pedro II. The market for cut stones and jewels increased locally.²⁸⁸

However, these activities were later discontinued, and an assessment done in 2005 still found very low technological and economic efficiency in the sector. The Local Productive Cluster later established in Pedro II largely focussed on formalising artisanal opal mining and improving conditions for artisanal miners, but also had a component working on value addition. The main activity included the creation of the Pedro II Jewellers and Stone Cutters Association in 2004, with the objective of supporting jewellery production and trade. The members of the association received training on new production techniques (sometimes through the engagement of international jewellery makers as teachers), as well as financing to attend jewellery fairs, with the aim of facilitating access to international markets. In addition, the association succeeded in encouraging its members to formalise their businesses. This in turn helped increase the tax revenues for the state, provided a better oversight of the sector by the state, and gave the businesses access to services and opportunities.²⁸⁹

The association also succeeded in introducing and disseminating new opal jewellery production techniques using small opal fragments. This boosted the demand for small opal fragments, which was important for the local mining industry, as large opals had become increasingly hard to find in the area. Additionally, it allowed the economic use of stones previously considered as waste and tailings.²⁹⁰

Lessons learnt / Recommendations for Ethiopia

- There is a long-term strategy over 20 years, building on activities and achievements already implemented even before that period. A long-term view and strategy for the sector is needed to guide all subsequent activities.
- The government largely remains in the role of the facilitator, implementing a framework of policies and incentives, and providing targeted support. Within that framework, activities for the promotion of the sector are largely industry-led, with the support of government agencies. Industry and government are

²⁸⁸ Milanez, B. and Puppim de Oliveira, J.A. 2013

²⁸⁹ Milanez, B. and Puppim de Oliveira, J.A. 2013

²⁹⁰ Milanez, B. and Puppim de Oliveira, J.A. 2013

working in close collaboration through mutual support and information sharing.

- There is no ban on the export of rough stones. The government fosters the sector not only through restrictions and legislation, but also active and targeted support to key industry actors.
- There is a large role for industry associations, and their activities are self-organised and self-financed, but with incentives and support from governments. Training in gemstone cutting, lapidary or jewellery making are not done by the government – the government only supports training that is done by industry actors or educational institutions.
- The activities and support to the gemstone and jewellery sector is integrated into the country's larger economic strategies and activities, also involving government departments responsible for Trade, Investment, Support to SMEs, etc.
- Training for lapidary and cutting is only a small piece in the overall strategy. Activities to support the sector are embedded in a bigger macro-economic strategy that also includes export promotion, private sector development / development of SMEs (through training in management for example) etc.

5.4. Madagascar²⁹¹

Overview

Madagascar has had a long history as a gem producer from its colonial times (1896 – 1960) up until the present day.²⁹² During the 1920s – 1950s Madagascar was well known as a major producer of gem beryl, aquamarine and morganite (pink beryl). During the colonial period the French, in particular LaCroix (Geologie de Madagascar 1923) and Besaire (Geologue, Services des Mines 1934- 1964), explored and mapped many of Madagascar's geological features, and especially its pegmatites. Post-independence, explorations for minerals were greatly reduced,²⁹³ and following the exodus of the French colonists and immigrants in the early 1970s, the island became increasingly isolated and unattractive to direct foreign investment.

²⁹¹ The majority of this case study is based on the personal experiences and observations of its author, Tom Cushman, who played a key role in the lapidary and gem institute project in Madagascar.

²⁹² L' Industrie miniere a Madagascar pendant l' annee 1904, *Bulletin Economique 1905*, Tananarive, Imprimerie officielle.

²⁹³ Coutelle, B., (1968) *Madagascar a l' Echelle d' un Continent*, Loire, Societe Nouvelle des Imprimeries de la Loire Republicaine.

From 1988 onwards, foreign gem hunters began to return to Madagascar. They were few, and what they found was an industry almost entirely artisanal and basic. The gems produced in the 1980s and early-mid 1990s were generally of pegmatitic origin and featured tourmalines, aquamarines, moonstones, and rose quartz. Other gemstones found during this period were amethyst, rock crystal, iolite, and garnet.

In 1994, sapphires were discovered in Andranondambo, a primary, hard rock deposit in the deep south of Madagascar.²⁹⁴ A minor rush ensued. The problem with this deposit was its primary nature in a crystalline calcite host rock, which therefore required moving a large quantity of very hard rock to release the blue sapphires. Furthermore, there was no infrastructure near the mine, roads were bad to impassable in the rainy season, and there were no towns within a six hour drive. The southern Andranondambo sapphires was of high quality and price, but were very difficult to mine in an extremely unpleasant environment. A few international gem companies investigated this resource, but abandoned it after a couple years. Artisanal miners continue to work the site to this day. An Australian company with experience in the sapphire mining business in Australia (Siam Sarl) did acquire several of the claims of this sapphire area and built a mine and washing plant.

In 1996 another sapphire discovery was made in Northern Madagascar near the town of Diego Suarez. These sapphires were found in an alluvial setting and were much easier to mine. A significant rush, with up to 20,000 miners, descended on the Ambondromifehy to seek their fortune in sapphire mining. The Ambondromifehy sapphires were of a basaltic nature and not as pleasing a blue colour, or of equal transparency, as the southern sapphires; but they were plentiful and easy to mine with rudimentary hand tools. An unfortunate problem with the Diego sapphires was that they were found around and in the Ankerana National Park and protected area. The government of Madagascar attempted to close the area to sapphire mining, but lacked the resources (and local will) to enforce a closure.²⁹⁵

In late 1998 sapphires were discovered in Southern Madagascar, near the village of Ilakaka. The initial sapphire diggings were within 200 meters of the main national North South highway and 20 km south of a medium sized town. The blue and pink sapphires of Ilakaka soon became the talk of the world gemstone industry, and at its heyday the Ilakaka-Sakaraha region was producing up to 40% of the world's gem sapphires. The town of Ilakaka had a population of, at most, 40 prior to the sapphire

²⁹⁴ Schwarz D., 1996, Sapphires from the Andranodambo region, Madagascar, *Gems and Gemology*, vol 32, No 2, pp 80-99

²⁹⁵ Cushman, T. A. (1999): *The short life and death of a Sapphire Boomtown*. *Gems & Gemology* 35, 142.

discovery. By late 1999 the region held over 100,000 miners, dealers, and others. The Ilakaka sapphires were alluvial and found in several layers of gravel at 1, 5, 15, and 25 meters depth. The Ilakaka sapphires were of extremely good colour quality and responded well to heat treatment. Dealers came from all over the world (especially Thailand, Sri Lanka and West Africa) to buy these sapphires.

The government of Madagascar dealt with this rush by withholding all new sapphire and ruby mining permits in the unrealised hope that without a formal mining license the artisanal miners would simply go back home. The authorities were overwhelmed by the rush, and the lack of a formal structure to manage and tax the resource meant widespread corruption and informal mechanisms to manage trade ensued. In 1999 and 2000, the local gendarmes were implicated in several murders and thefts of sapphires, and eventually national police authorities were rotated through in the hopes that they would be able to enforce the law without being corrupted. The Ilakaka fields stretched over 60 km in length down the RN2 (national highway) and up to 50 km in width. Over the course of the next 15 years, multiple other hotspots were found in the Ilakaka area. Several attempts to mine sapphires industrially were begun but no company ever made a long term go of it. Today there are still several tens of thousands of sapphire miners in the region, but production is far from the 1999-2005 peaks (personal observation of the author).

Ilakaka village and the first sapphire discovery were directly across the road from the Isalo National Park. Lessons learned by environmentalists, especially the World Wildlife Fund (WWF), led to an enlargement of the park borders and strenuous patrolling by park rangers to keep miners out of the national park. Isalo is Madagascar's most visited park and the local community has had income from the park for many years. Unlike the Ankerana Park near Diego where the local community did not benefit much from tourism, in Ilakaka the local communities worked in partnership with park management and the environmental community to preserve the park and keep mining out. Another point of differentiation from Ankerana was the fact that, in the Ilakaka, sapphires were found easily, far from the park boundaries.²⁹⁶

In 2000 and 2001, new ruby finds were made in Vatomandry and Andilamena. The Andilamena strike was enormous and led to tons of corundum (the sapphire and ruby mineral) being exported to Asia, particularly Thailand. The Andilamena material was mostly of low to very low quality, but there was a lot of it. A process to clean,

²⁹⁶ For further information, see: Cook, R. and T. Healy. 2012.

and then fill, this corundum with a glass substance led to a new product of "glass filled ruby" coming on the market. Where polished natural gem ruby of one carat sizes may have cost \$1000-\$2000, the lead glass ruby could be had for a low as \$5.00/ carat. The material had significant durability issues, but was pretty and, best of all, cheap.

In 2002, a disputed presidential election led to a 7-month crisis that had a serious impact on gem trading in Madagascar.

With no buyers able to come to the mines, the sapphire business plummeted. The Andilamena mine was on an old smugglers' overland route from the coast, and material was still able to be purchased and exported from the main port, which was under control of the defeated candidate of the presidential election.

Laws, policies, visions

When order was restored in late 2002, and with the ex-president in exile in Paris, the new President Ravalomanana decided to bring some direction to the ASM and mining sector. Working with the World Bank, President Ravalomanana established the PGRM (projet de gouvernance des ressources minerales). The PGRM's main mission was to produce a revised geological map of Madagascar. Additionally, the PGRM decided to establish an Institute de Gemmologie de Madagascar (IGM), whose objectives were to provide technical assistance for the establishment and direction of the IGM, in order to develop a national expertise in gemstones and gem polishing and thus improve the added value of Madagascar's mineral production.

Institutions and initiatives

Upon the advice of the GIA, Tom Cushman was selected as an international consultant to plan and develop the IGM. The IGM was planned by Projekt Consult as a three-part establishment; a gemmology school, a gemstone cutting school and a gemstone laboratory. Each of the three parts had a separate schedule, and engaged separate expert consultants.

The gemmology school required a selection of potential teachers who needed to be sent for instruction in gemmology (at the start of the project there was only one Malagasy gemmologist and she was selected as project coordinator). A curriculum needed to be selected, and texts translated into French from English. The gemmology school took one and one half years to build; from the approval of the work plan, to the opening day of the first gemmology courses taught by Malagasy instructors in October 2004. The gemmology school teaches the Gemmological Association of Great Britain course and awards the Fellow of the Gemmological Association (FGA) diploma. Working with Gem-A, the IGM instructors co-authored a

Practical Gemmology text that required only a two-week, rather than eight month, course. Practical Gemmology is not only a much lighter course, but also much more affordable in both cost and time, than the FGA course.

The lapidary school opened in December 2004 after the gemmology school was established. An international, prize-winning faceter was engaged to write the curricula, and teach the first several courses. IGM was fortunate to be able to engage a local cutter to work with the international expert, and was able to rent an existing factory that had gone bankrupt to use as its first teaching facility. The IGM faceting course had three one-month-long modules teaching beginning faceting, advanced faceting and faceting instructor.

The laboratory opened in 2006. The IGM needed to have trained Malagasy gemmologists to work in the laboratory, and to develop their expertise in gemmology to a high standard. An internationally recognised laboratory gemmologist was recruited to be the consultant for the development of the laboratory.

A gemmological education project like this had never been done before, and there were some who thought the plan too ambitious. The national coordinator of the PGRM, Ms Nadine Ranorosa, believed in the project and the consultant. She gave the necessary managerial support to allow the project to develop organically, and build from a foundation to a success over the requisite time needed.

According to the IGM, from 2004 to 2014, 923 people received some gemmological instruction. The large majority received training in Practical Gemmology. The FGA gemmology classes had from 3 to 14 students in each year's class. (Breakout numbers are not forthcoming from IGM). 68 people (generally school children) took the 'Initiation to Gemmology' class.²⁹⁷

830 students received lapidary instruction, but some of them may have been counted twice in the case where a novice lapidary took the advanced class.²⁹⁸

A course in Fashion Jewellery Design and Creation was added in 2007, and 303 students have taken this course. The laboratory got off to a slow start, but it is now issuing over 300 reports per year.²⁹⁹

²⁹⁷ Personal communications.

²⁹⁸ Personal communications.

²⁹⁹ Personal communications.

The proprietor of the lapidary factory that was the site of the initial IGM lapidary course developed a cutting machine manufacturing business, and was the supplier of many of the machines used by IGM.

The quality of gem cutting blossomed with the first graduating class of IGM. The IGM students were taught to cut for beauty instead of weight, as had been the traditional criteria. When IGM graduates began to sell their wares in the market next to older lapidaries, the quality differences were immediately apparent, and after a year there were no poorly cut gems available in the Madagascar market. Early graduates of IGM lapidary were engaged by foreign investors to work in, and develop, ateliers to cut stones in Madagascar. Unfortunately, following the collapse of the gem industry in 2007- due to the ban on rough exports- all of these workshops closed. There are today only a few small shops employing two to four cutters in house for jewellers and gem dealers.

The PGRM had some problems, and to date (2015) the geological map is not available. Other parts of the project never quite materialised, or found themselves side-lined by subsequent events (small scale grants and gold panning formalization). The IGM, however, is still in business, and continues to teach gemmologists and lapidaries and issue gemstone certificates. This is especially noteworthy as the World Bank funding on which the entire PGRM depended was cut off in early 2009, after a coup d' etat.

In 2007, when Mr. Cushman's contract with the PGRM came to an end, he became the Country director of the Institute for Sustainable Mining (aka Artminers) and was able to apply for and receive a grant from the Tiffany & Co. Foundation. The grant was to furnish scholarships to the IGM for students that might otherwise not have been able to attend. A particular focus of the scholarships was enlisting students from towns and villages away from the capital, and furnishing them with tuition and the means of sustenance while attending the IGM. The goal was to develop capacity in rural areas where stones are found, with the aim of increasing revenues locally. The side effect of the grant program was that IGM had a steady income stream during the early years of the coup crisis. Artminers received an additional grant from the World Bank in 2011.

Also in 2007, in a council of ministers meeting, the President of Madagascar declared that henceforth all unprocessed mineral exports would be prohibited. The export ban was shortly later clarified to specify only unprocessed gemstones. Ex post facto, several rationalisations for the rough gemstone export prohibition were advanced; among them, the need for gemstone cutting factories to be established in Madagascar to provide employment and added value to exports. In fact, the export

ban was as a result of the president losing a court case on the island of Reunion, in which a legally exported mineral sample had been demanded to be returned to Madagascar. The court in Reunion determined that the specimen (a 500kg emerald crystal encrusted rock)³⁰⁰ had been legally described and exported with royalties paid, and should not be seized and returned to the government of Madagascar.

Outcomes

The rough export ban had catastrophic consequences for the gemstone industry in Madagascar. Initially international buyers believed the ban would be for a short while, and the government would adjust the ruling to allow business to continue. That did not turn out to be the case. By 2008, the gemstone industry was in complete collapse. As the ban on exports held, the dealers from Asia and elsewhere went away. With fewer buyers, and the additional risks to capitalisation, the miners began to leave the diggings. This led to a gradual but inexorable decrease in the number of miners, middlemen and product and service providers in Ilakaka and other gem producing areas. A viscous spiral of no buyers-low prices-no miners-no products no buyers ensued. Those few buyers and exporters who did stay in Madagascar found alternative shipping arrangements that did not involve paying royalties or formal declarations, and tax revenues fell off sharply. 2007 gem exports through the Ministry of Mines were \$30,000,000. 2008 exports through the ministry were \$300,000. To add insult to injury, the world economic crisis hit at the end of 2008/early 2009, and the entire gemstone industry suffered enormously. The rough export ban was lifted in 2010, but Madagascar has never recovered.

In 2014, after the return of an elected government, the IGM began to receive a small share of the mining royalties that had been written into the mining code but never been distributed. The IGM is now attached to the Ministry under the Presidency in Charge of Mines and Petrol and is managed by civil servants.

On a recent visit there were three FGA students, six lapidary students and eight Practical Gemmology students. The laboratory had done three reports that week.

Lessons learnt / Recommendations for Ethiopia

- Establishing a gemmological institute centralises advanced expertise on gemstones, and cutting and polishing training, thus providing the industry with a focal point for necessary skills development;
- Teaching lapidary students to cut for beauty instead of weight will force them to concentrate on technique and improve the quality of their cutting and

³⁰⁰ See: <http://www.mindat.org/article.php/357/The+world's+largest+Emerald+on+Matrix+specimen>

polishing. These stones will thus be more appealing to buyers than larger but poorly cut stones; and

- Banning rough exports may cripple a domestic coloured gemstones industry, and undermine previous efforts to build capacity in the lapidary sector.

5.5. Nigeria

Overview

Gemstone mining has long been a part of Nigeria's history, and is performed mainly by artisanal and small-scale miners, the majority of whom operate informally or illegally.³⁰¹ Despite various attempted interventions by the government and the World Bank, the lapidary sector in Nigeria remained virtually non-existent, until recently in 2009 when an international standard Lapidary was established at the Nigeria Institute of Mining and Geoscience (NIMG), Jos for the training of over 500 cutters within 5 years. Almost no jewellery making takes place in the country.³⁰² High levels of rough stone smuggling continue to undermine potential value-addition within Nigeria, whilst the unregulated nature of gemstone mining impedes the success of programmes designed to engage with the gemstone sector and adding value.³⁰³

Laws, policies, visions

According to a World Bank report, the government of Nigeria has identified the creation of a domestic gemstone (and dimension stone) cutting industry as a high priority, due to their potential revenue generation and employment creation.³⁰⁴ However, there seems to be no formalised policy or guidelines for the gemstone processing and jewellery-making sector.

Institutions and initiatives

Attempts have been made to develop Nigeria's gemstone and lapidary sector. In 2004, the World Bank introduced the Sustainable Management of Mineral Resources Program (SMMRP), which, amongst other goals, aimed at adding value to raw gems and creating jobs. It injected a \$120 million loan into Nigeria's solid mining sector and was scheduled to last until 2010, but an additional two years were approved based and no additional financing.³⁰⁵

³⁰¹ Mallo, Stephen J. 2012

³⁰² Adebayo, A. 2015a

³⁰³ Mallo, Stephen J. 2012

³⁰⁴ World Bank 2012

³⁰⁵ World Bank 2012

Even though value addition in the gemstone sector was not one of the main focuses of the SMMRP, the programme included training for gem processing and the creation of a gemmological laboratory.³⁰⁶ Through the project, the School of Mines in Jos was rehabilitated and expanded, and became the Nigerian Institute of Mining and Geosciences in 2005. A lapidary centre, the first of its kind, was established as part of this expansion, with up-to-date technology and equipment for the cutting and polishing of stones. At this lapidary centre, nine master trainers and 15 commercial gemstone cutters were trained with the support of the SMMRP.³⁰⁷ This was facilitated by the use of foreign trainers, such as the Canada-based gemstone cutter and trainer Soosai Prosper.³⁰⁸ The trainees were expected to train a further 500 gemstone cutters in the 5 years following 2012, but it remains unclear whether this has happened.

The SMMRP also supported the creation of the Gemstone Entrepreneurial Association in order to improve organisation and encourage business.³⁰⁹

In addition, the Nigerian Ministry of Mines and Steel Development (MMSD) started working with Nigerian-born jewellery designer Chris Aire in 2010, in order to promote Nigerian gemstones and gold. Aire created a jewellery collection that was then launched at a celebrity-filled event in Hollywood, with the goal of bringing Nigerian jewellery to the world stage and with the hope of stimulating investment in the sector.³¹⁰ The collaboration between the MMSD and the jewellery designer was seen as successful, and a representative of the MMSD Department of ASM in Nigeria stated that 'he' s [Chris Aire] brought a high level of focus on the quality of Nigerian' s gemstones.'³¹¹

Outcomes

Overall, Nigeria has experienced very limited success as a result of these initiatives. The sector has hardly been developed.³¹² One of the main challenges that prevent the growth of the domestic lapidary and jewellery sector is the continued smuggling of gemstones out of the country,³¹³ with an estimated 80% of domestic gemstone

³⁰⁶ Michelou J.C. 2011; World Bank 2012

³⁰⁷ World Bank 2012

³⁰⁸ Prosperdesignonline.com, n.d.a

³⁰⁹ Interview with P. Ojeka, 8-09-15

³¹⁰ Naija, B. 2010

³¹¹ Interview with P. Ojeka, 8-09-15

³¹² Ademola, A. 2015b

³¹³ Interview with P. Ojeka, 8-09-15

production leaving the country rough and illegally.³¹⁴ The government has tried to counter this trend by establishing gemstone buying centres, but these have not been successful for a range of reasons. For example, buyers have little trust in the government (many of them operate informally and buy stones from informal or illegal mines, and are therefore avoiding any contact with, or any initiatives by, the authorities, for fear of being punished or arrested), and had no commercial incentive to sell and buy stones through a government-run programme.³¹⁵ Thus without any regulatory requirements (e.g. a restriction on the export of rough stones, or the enforcement of legal trading practices) or commercial incentives (e.g. domestic purchasing power and competitive and skilled domestic cutting), gemstones are not retained in country, and the lapidary centre at the Jos Mining School remains unused.³¹⁶

A further challenge is that although lapidary training was provided, it was futile without serious investment. The trained cutters had difficulties getting their own machinery and shops, which requires a large amount of up-front finance. There needed to be investment from the businesses themselves, or financing from another source, in order for the training to make a sustainable, long term impact. Furthermore, due to the above-mentioned issues, there was no supply of gemstones for the cutters to put their training into practice.³¹⁷ Many of the trained cutters have since left, as there was no business to be found in Nigeria.³¹⁸

This highlights a larger issue: the training activities and initiatives in value addition were implemented through a government-led top-down approach, without the participation of the gemstone industry and traders. The widespread informality and illegality of the gemstone mining and trading sector exacerbated this, as a collaboration and engagement between the government and an essentially informal industry was difficult due to legal issues and a lack of trust between the actors.³¹⁹ A crucial factor for the success of such programmes is thus a collaborative approach and partnership involving both government and industry in order to foster trust and ownership. A bottom-up approach is necessary with the government providing support and facilitation, but not management.³²⁰

³¹⁴ Esiedesa, O. 2014

³¹⁵ Interview with P. Ojeka, 8-09-15

³¹⁶ Interview with P. Ojeka, 8-09-15

³¹⁷ Interview with P. Ojeka, 8-09-15

³¹⁸ Interview with P. Ojeka, 8-09-15

³¹⁹ Interview with P. Ojeka, 8-09-15

³²⁰ Interview with P. Ojeka, 8-09-15

Lessons learnt / recommendations

- A thorough understanding of the gemstone sector, especially the commercial incentives in trading and supply chains is necessary before any activities in value-addition can be implemented.
- Any activity needs to be embedded in a larger strategy or policy to foster the gemstone cutting and jewellery industry, and a conducive environment needs to be created for lapidary training and any other value-adding activities to be successful. This includes regulatory, policy and commercial measures to encourage the formalisation of the gemstone trade and export through the adaption of procedures, requirements and tax regimes.
- Providing gem cutting and lapidary training is not enough, there needs to be substantial investment (or facilitation of investment) in tools, machinery and technology, as well as a coherent macro-economic policy to fostering cutting and lapidary activities in the long term
- Top-down, government-led approaches and initiatives are unlikely to be successful. Government needs to take a facilitating rather than a steering role, and work in close collaboration with representatives of the private sector. All parties concerned need to be consulted, and the gemstone and jewellery industry should have a significant role in shaping any policy or activity.
- Measures should be taken to promote the gemstone and jewellery sector internationally, to ensure there is a demand and interest, which could encourage investment.

5.6. Sri Lanka

Overview

The gemstone and jewellery sector in Sri Lanka has a long history and is of vital importance to the country's economy, as it provides a large source of employment and foreign exchange earnings. While Sri Lanka is a world leader in the production of gemstones, its jewellery sector and its potential for value addition in country remains underdeveloped to a certain degree.³²¹ The gem and jewellery sector provides employment to around 300,000 people in total (this is perhaps a conservative estimate—other sources state up to 650,000 people³²²), of which an estimated 105,000 are in mining, 100,000 in manufacturing (gem processing and jewellery

³²¹ Chandrasiri, S.. 2013

³²² Export Development Board 2013

making, which includes cutters, polishers, jewellery designers, manufacturers and craftsmen), and 85,000 in trading (marketing, sales, retail).³²³

Sri Lanka's gem and jewellery market comprises of three segments: the domestic (31%), tourist (5%), and export markets (64%). The exports mainly comprise of 4 categories, 'gouda' (unprocessed corundum), polished diamonds, cut and polished gemstones, and jewellery, with 'cut and polished gemstones' being responsible for most value addition.³²⁴ In 2013, gem exports comprised 89% of the total export earnings in the gems and jewellery sector.³²⁵

Sri Lanka's gem processing and jewellery industry has benefitted from a long history in gem cutting technology, as well as from a well-educated and skilled workforce.³²⁶ Cutting and polishing is done both in small, traditional, artisanal production units and in modern mass production facilities, which are equipped with modern technology.³²⁷ Traditional cutters use rather traditional methods and tools, but are highly skilled and experienced, and many high-end sapphires are cut by these traditional cutters.³²⁸ There is also a growing precision-cutting, as well as re-cutting, industry.³²⁹

Laws, policies, visions

Sri Lanka has long banned the export of rough gemstones, and all stones must be cut and polished domestically before export.

In 2003, the Government of Sri Lanka launched its economic vision and strategy called 'Regaining Sri Lanka'. One of the main goals of this strategy was employment creation and value addition to the country's export products. In line with these goals, the gemstone and jewellery sector was given high priority for development.³³⁰ Under this strategy, the Sri Lanka Export Development Board (EDB) undertook several initiatives and programmes, one of which was the international branding of the 'Ceylon Sapphire' (described in detail below).³³¹

³²³ Chandrasiri, S.. 2013

³²⁴ Chandrasiri, S.. 2013

³²⁵ Chandrasiri, S.. 2013

³²⁶ Chandrasiri, S.. 2013

³²⁷ Chandrasiri, S.. 2013

³²⁸ Lucas, A. et al 2014a

³²⁹ Lucas, A. et al 2014a

³³⁰ ITC Executive Forum 2003

³³¹ ITC Executive Forum 2003

Since 2009, the jewellery sector has grown, largely due to the economic policies implemented by the government. The government has smoothed out customs procedures for the export of gems, liberalised import policies on rough gemstones and reduced import duties, taxes and fees on gems as well as machinery and technology.³³² Allowing the industry to import rough gemstones from anywhere in the world was a crucial factor in helping the Sri Lankan cutting industry to become competitive, as the cutters and jewellers were able to get materials at affordable prices.³³³

To ease the export procedures, Sri Lanka has created a 'one stop shop' in Colombo, where all facilities and services necessary for gem and jewellery exports are housed under one roof, including: the Customs Department, the National Gem and Jewellery Association's (NGJA) Valuation Division, insurance companies, international and local freight forwarders, as well as the Postal Department.³³⁴ In addition, the growing tourism industry has also led to growth in the jewellery sector.³³⁵

The cutting industry has improved over the years, and the industry is now in need of an international standard gem-testing laboratory in order to avoid lengthy shipping and increased expenses for sending gems to laboratories in Hong Kong.³³⁶ Industry experts see the need to build a reputation for the use of genuine stones as one of the most important factors in the country's future strategy, which will require the certification of genuine market actors and products, and the strict enforcement of rules and regulations.³³⁷ Other significant gaps, in terms of adding further value in the sector, are said to be the lack of locally inspired and created designs (rather than copies), as well as a lack of skills in displaying, marketing and packaging.³³⁸

Despite the industry's growth and success in the past few years, the value of gemstone and jewellery exports has decreased again since 2012. The industry and government had set an export target of 1 billion USD by 2015, but the export value of diamonds, gemstones and jewellery actually fell from 558.90 million USD in 2012 to 381 million USD in 2014.³³⁹ Industry experts state that the reasons for this is that

³³² Sequeira, Y. 2015; Export Development Board 2013

³³³ Lucas, A. et al 2014a

³³⁴ Larif, S. 2012

³³⁵ Sequeira, Y. 2015

³³⁶ Sequeira, Y. 2015

³³⁷ Sequeira, Y. 2015

³³⁸ Sequeira, Y. 2015

³³⁹ Wettasinghe, C. 2015

there is still not enough domestic value addition, and that Sri Lankan lapidaries and gem cutting businesses are still underperforming compared to international competitors.³⁴⁰

The 'Ceylon Sapphire' Brand Strategy

The Ceylon Sapphire Brand strategy, formulated in 2003, was based on a public-private partnership between the NGJA, the EDB, and the industry. The two main goals of the strategy were to develop Colombo into an international hub for sapphire trading and services, and to establish the Ceylon Sapphire brand in international markets.³⁴¹ The focus on sapphire was chosen in order to widen the market-focus of the gemstone and jewellery exports and to distinguish Sri Lanka from low-value mass-producing countries, by developing an up-market and branded product. It was intended that the strategy would be a tool to move production in the whole gems and jewellery sector towards higher-end sales and corresponding higher value addition.³⁴²

The creation of a hub in Colombo was to include investment in an industry centre that would provide services such as gem testing and certification, specialised banking services, internal freight forwarding services, technology upgrading and human resources development. In addition, the strategy also included an investment package for medium scale export companies to help them upgrade their workshops with modern production methods, as well as technical assistance in marketing and sales.³⁴³

To implement the strategy, leading jewellery export centres in Colombo were brought together to form a marketing and promotion consortium called 'the Ceylon Sapphire Council Ltd', which entered into partnerships with an international jewellery designer to design a 'Ceylon Sapphire' jewellery collection destined for international markets. The collection was then to be promoted and marketed at international fairs and shows.³⁴⁴

Institutions

The main institution in governing Sri Lanka's gemstone and jewellery sector is the NGJA, established in 1993. It is a government-run institution for the purpose of the "development, regulation and promotion of the gem industry and the jewellery industry".³⁴⁵ The NGJA is the central authority with several regional offices that issues licenses to all actors along the gemstone supply chain, including gem mining

³⁴⁰ Wettasinghe, C. 2015

³⁴¹ ITC Executive Forum 2003

³⁴² ITC Executive Forum 2003

³⁴³ ITC Executive Forum 2003

³⁴⁴ ITC Executive Forum 2003

³⁴⁵ National Gem and Jewellery Authority Act 1993

operations, gemstone traders, and lapidaries, as well as gem and jewellery exporters.

³⁴⁶

Amongst several other functions, the NGJA is responsible for promoting and sponsoring technical training in the gemstone and jewellery industry, with a particular focus on heat treatment and gemstone cutting, with the goal to develop these sub-sectors.³⁴⁷ This includes the facilitation of training in technical skills, marketing, social responsibility and business administration for all actors along the gemstone and jewellery value chain.³⁴⁸ In addition, the NGJA is responsible for pursuing marketing opportunities and B2B marketing platforms and the development of industry norms in line with international benchmarks.³⁴⁹

The NGJA is following a three-pronged strategy to support the gems and jewellery sector:³⁵⁰

- Supply development: This includes supporting and fostering domestic gemstone mining activities in order to build a high quality and high-volume domestic supply. It also includes liberalising input and import policies in order to allow gem material from other countries to be cut and polished within Sri Lanka (thus adding value to raw materials from elsewhere).
- Demand development: The NGJA participates in some of the key international trade fairs and shows, and organises Sri Lanka pavilions at each of them to showcase Sri Lankan products. The events are targeted based on a market assessment and include India and China (due to their geographical proximity and their status as emerging economies), as well as Turkey and Russia.
- Support to technical capacity building and training (as described above).

In 2014, the NGJA announced that it would introduce a new national policy for the gem and jewellery industry in 2014, which would aim at providing training for industry players and introduce eco-friendly techniques in mining, cutting and polishing.³⁵¹ However, this policy has not yet been elaborated and the government recently asked industry to come up with a policy paper first.³⁵²

³⁴⁶ National Gem and Jewellery Authority Act 1993

³⁴⁷ National Gem and Jewellery Authority Act 1993

³⁴⁸ National Gem and Jewellery Authority, n.d.a

³⁴⁹ National Gem and Jewellery Authority, n.d.a

³⁵⁰ Larif, S. 2012

³⁵¹ Daily News 2014

³⁵² Wettasinghe, C. 2015

Industry associations play an important role in promoting the gems and jewellery sector in Sri Lanka. The most important industry body is the Sri Lanka Gem & Jewellery Association (GJA), which represents the interests of stakeholders along the gems and jewellery supply chain, including mining, manufacturing, wholesale and retail. The government has mandated GJA with the responsibility of formulating industry-level policies to improve productivity and competitiveness of the sector, working closely with the NGJA and the EDB. One of GJA's main goals is to increase the sales of gemstone and jewellery products to international markets.³⁵³

The GJA has also worked on human resource development through an associate organisation, the Gem and Jewellery Research and Training Institute (GJRTI). The GJRTI provides formal vocational training and technical capacity building for the sector, including several programmes in: jewellery design, gem cutting and polishing; heat treating; gemmology and colour grading; jewellery manufacturing; stone setting; and marketing.³⁵⁴ The courses are taught by Sri Lankan and international teachers, and the Institute has been supported by donors such as USAID and the EU, which has enabled knowledge transfers and skills from the US and EU.³⁵⁵ The industry is actively engaged in the activities of the Institute, as it is governed by representatives from the industry, which is considered one of the Institute's biggest strengths.³⁵⁶

Lessons learnt / Recommendations for Ethiopia

- International branding of one high-end iconic stone (e.g. opal in Ethiopia) could enhance the image of the whole gems and jewellery sector and move all domestic lapidary, cutting, polishing and jewellery manufacturing activities towards higher value addition;
- A national authority responsible for the regulation, supervision and promotion of the whole gemstone and jewellery sector (from mine to market) allows for a streamlined and targeted approach to fostering the sector as a whole;
- Industry collaboration, participation and influence in policy making and skills development is paramount; and
- Technical capacity building and skills training needs to be accompanied by larger economic strategies, such as the simplification of export procedures, the liberalisation of import regulations, and the reduction of the tax burden at

³⁵³ Sri Lanka Gem and Jewellery Association, n.d.a

³⁵⁴ Sri Lanka Gem and Jewellery Association, n.d.a

³⁵⁵ Larif, S. 2009

³⁵⁶ Larif, S. 2009

strategic points.

5.7. Tanzania

Overview

Since the Tanzanian government restricted the export of rough tanzanite, its most valuable and iconic gemstone, there have been several initiatives and activities attempting to develop a domestic gemstone lapidary sector. However, the sudden regulation also led to challenges and was not entirely effective in bringing about the desired value addition in country.

Laws, policies, visions

In its Mineral Sector Policy Statement of 2009, the Government of Tanzania included the aim of 'promoting and facilitating value addition activities within the country to increase income and employment opportunities.'³⁵⁷

Subsequently, the Tanzanian government banned the export of rough Tanzanite above 1 gram as part of the Mining Act of 2010, in a move to encourage value-adding activities in the gemstone sector, and in order to increase government revenues and employment creation, requiring the gems to be processed and cut within Tanzania.³⁵⁸ The export of other rough gemstones however is still allowed, but the government imposes a higher tax on exports of rough stones (5% for rough stones exports, 1% for cut stone exports) in order to encourage domestic cutting.³⁵⁹

Four years after the ban was installed, in 2014, the Government's policy seemed largely ineffective in achieving its goal of retaining value. A large chunk of tanzanite was still exported rough to Asia, and Tanzania did not earn sufficient revenue from tanzanite. According to newspaper reports, even though the country is the only source of this gemstone, it earns only 4.15 % (20.75 million USD export value) of the value of the global tanzanite trade (500 million USD per year). In 2012, Jaipur still earned 82 million USD from exports of cut and polished tanzanite exports, equivalent to what Tanzania earned in four years.³⁶⁰ In 2014, almost 99.5% of (officially) exported tanzanite from Tanzania fell below the threshold of 1 gram and could thus be exported rough, which means that less than 1% of tanzanite was cut within the country and exported in cut form.³⁶¹ According to a calculation by a Tanzanian

³⁵⁷ World Bank 2015

³⁵⁸ The Citizen 2013

³⁵⁹ The Citizen 2013

³⁶⁰ Arusha Times 2014

³⁶¹ Arusha Times 2014

newspaper, the 0.5% of tanzanite processed locally thus only created 119 jobs within Tanzania, while around 250,000 people still worked in tanzanite cutting in Jaipur, India.³⁶²

The main reason for this policy failure was that at the time of the ban, the domestic cutting and polishing industry was in its infancy; few cutting facilities existed within the country, and the skills to cut a high-value gemstone like tanzanite did not exist in Tanzania. Many traders and exporters criticised the regulation, claiming that there were little skills and technical equipment to process and cut the stones domestically.³⁶³ This led to an incentive for illicit trade, and an increasing amount of rough tanzanite was smuggled out of the country.³⁶⁴

Institutions

The partial ban of rough tanzanite exports at least encouraged the creation of a domestic cutting and polishing industry. The largest tanzanite mining company, TanzaniteOne, asked the government for an exemption period to the ban, and a staggered approach to allow the company time to establish in-house lapidary and cutting operations, and to establish relationships with existing domestic lapidaries.³⁶⁵ In 2011, TanzaniteOne created a modern lapidary with high-end technology suitable to the needs of the company's clients, and brought in Indians to cut the stones within Tanzania.³⁶⁶ By 2012, the company had hired and trained 18 local lapidaries to cut stones, and 60-70% of its production was cut on site.³⁶⁷

These TanzaniteOne-led activities however seem short-lived, as Richland Resources, who held 50% of the shares in Tanzanite One (the other 50% are owned by the Tanzanian government), sold its shares in the company in 2014, stating that due to regulatory uncertainty and other reasons, it was not possible to operate profitably anymore. The shares were sold to a British Virgin Island based company called Sky Associates Group Ltd;³⁶⁸ and it is unclear whether this company has continued support for building the domestic cutting and polishing industry.

There were also government and development agency led initiatives to develop the polishing and cutting industry in Tanzania. Since 2012, the Tanzanian government, in

³⁶² Arusha Times 2014

³⁶³ The Citizen 2013

³⁶⁴ Arusha Times 2014

³⁶⁵ Reuters 2010

³⁶⁶ Rapaport Magazine 2012

³⁶⁷ Rapaport Magazine 2012

³⁶⁸ East African Business Week 2014

collaboration with the Tanzania Mineral Dealers Association (TAMIDA), has developed lapidary training for local women in Arusha.³⁶⁹ The training was financed by TAMIDA, which also contributed to the financing of the Tanzania Gemmological Centre (below).³⁷⁰

Since 2011, the World Bank's Sustainable Management of Mineral Resources Programme (SMMRP) has supported the Tanzanian Government to set up a training centre for gemstone cutting and polishing (the Tanzania Gemmological Centre in Arusha), which aims at building domestic capacity to cut tanzanite and other gemstones.³⁷¹ One of the goals of the centre is to build the technical skills and provide the facilities necessary for successful domestic value addition,³⁷² including through the following activities:³⁷³

- Training and support in value addition and investment in the gemstone sector;
- Support for the Tanzania International Gem Show;
- Support to the Centre in building strategic relationships for capacity building and marketing with international training and marketing centres.

It is only since 2014, 4 years after the ban was enacted, that the Centre has been running courses in lapidary, jewellery manufacturing and design taught by experts from Sri Lanka.³⁷⁴ The SMMRP aims to have enabled at least 200 people to graduate from the Centre's training courses by 2018.³⁷⁵ In addition, from 2015 onwards, the SMMRP also provides technical assistance to the government with regards to the development and implementation of a regulatory framework for value addition.³⁷⁶

In 2013, the Arusha Technical College also introduced a course on lapidary and jewellery technology to mitigate the impacts of the export restrictions on rough gemstones and increase the number of Tanzanian cutting, polishing and design experts. A challenge for the College was the limited number of teachers in this area,³⁷⁷ as Tanzania still experienced a shortage in experts in gemstone cutting and jewellery making.³⁷⁸ The Technical College was finally able to find an expert that had

³⁶⁹ Rapaport Magazine 2012

³⁷⁰ Business Times 2015

³⁷¹ World Bank n.d.a

³⁷² The New Jeweller 2015

³⁷³ World Bank 2015

³⁷⁴ The New Jeweller 2015

³⁷⁵ World Bank n.d.a

³⁷⁶ World Bank 2015

³⁷⁷ Pesa Times 2013

³⁷⁸ Arusha Times 2014b

previously been trained at the Southern and Eastern African Mineral Centre (SEAMIC), a regional centre based in Dar es Salaam that was established in 1977.³⁷⁹ According to media reports, the course was well received with the gemstone industry and several graduates managed to find jobs in domestic lapidaries.³⁸⁰ Other Tanzanian graduates of SEMAIC have also established their own lapidary training courses, for example the Lapidary Training Centre Ltd in Dar Es Salaam.³⁸¹

Gemstone trading companies have also started to invest in building the domestic cutting and polishing skills themselves. Sometimes with funds from the government, they established lapidaries in Dar Es Salaam and Arusha, and often brought skilled cutters from abroad (Sri Lanka, Thailand and Kenya) to teach their workers how to cut and polish gemstones.³⁸²

Lessons learnt / Recommendations for Ethiopia

- A sudden ban on the export of rough gemstones, without an existing domestic cutting and polishing industry, is counterproductive;
- A ban on the export of rough gemstones is only helpful if implemented gradually and partially (based on existing skill levels and market needs) and if the government at the same time nurtures a domestic cutting and polishing industry. A differentiated approach in line with gemstone types, values and market needs might be necessary;
- 'Softer' policies, other than a ban, might be more effective in fostering a domestic cutting and polishing industry, e.g. tax reduction for the export of cut gemstones;
- A domestic cutting and polishing industry cannot be built through a sole focus on lapidary training activities; there is a need for wider macro-economic strategy and activities. Support to lapidary training activities needs to be accompanied by wider sectorial 'carrot and stick policies', such as an adaption of the taxation regime and the establishment of other incentives to support companies establishing lapidaries, as well as thorough enforcement of any export policy in order to curb smuggling or corruption; and
- Training in cutting and polishing is only one of the activities that needs to be supported: other activities include support and training for SMEs (management, etc), export promotion, marketing, etc.

³⁷⁹ Arusha Times 2014b

³⁸⁰ Arusha Times 2014b

³⁸¹ See <http://www.noreen.ch/> (23.10.2015)

³⁸² Mwaswenya, A. 2015

6. Summary of Recommendations

This scoping study of Ethiopia's coloured gemstones industry was commissioned by The World Bank to shed light on the following:

- The present state of the industry, primarily in economic and development terms;
- Which features of the industry and its governance are either improving or limiting its commercial development, and why; and
- The key 'lessons learned' from what other gemstone producing countries around the world have done to commercialise this industry, and how they could be constructively applied to the Ethiopian context.

For ease of reference, the following is a summary of the key recommendations that have been made throughout this report, grouped under relevant themes. They are for the Ministry of Mines, Petroleum and Natural Gas's consideration. The recommendations have been labelled in terms of short-to-medium or long-term strategy; those falling under the former category are appropriate for an immediate action plan, while those under the latter are suited to a more extended time horizon.

While this study focussed primarily on the opal industry, given its dominance in Ethiopia's coloured gemstone sector, these recommendations are largely relevant to all of the 40-plus gemstone varieties mined in the country.

Support for miners

- Short-to-medium term:
 - Train the miners to use commercially sensitive mining techniques;
 - Offer Operational Health and Safety (OH&S) and safe mining practices training to the miners; and
 - Educate gemstone miners about the value and characteristics of opal (and other gemstones)
- Long-term:
 - Provide adequate business training for any future mining cooperatives to educate the miners about how to build resilience into their activities, and help them mine and commercialise more productively.

Support for exporters and lapidaries

- Short-to-medium term:
 - Research how best to improve access to financing for smaller lapidaries and exporters to increase their viability and competitiveness; and
 - Develop a strong marketing plan that communicates the attributes of

natural Ethiopian opal, with the goal to educate domestic and international consumers

- Long-term:
 - Promote and assist exporters in selling cut and polished stones directly to global markets like the US and Europe, once lapidary skills reach an internationally competitive standard;
 - Possibly also oversee the development of certain specialisms that give the sector a cutting edge over established 'do-it-all' competitors;
 - Provide more support in creating international market access, market linkages, and developing marketing and sales skills within the lapidary and export sectors; and
 - Integrate lapidary/gemstone cutting and polishing training with small business development initiatives and training (e.g. business management, financial and accounting skills, etc.).

Cutting and polishing training

- Short-to-medium term
 - Encourage close collaboration between existing lapidary training centres and the gemstone industry, particularly the downstream;
 - Work with lapidaries and exporters to create and improve domestic cutting and polishing skills (perhaps by subsidising in-house training programmes);
 - Allow gemstone brokers to trade in cut and polished stones, thus improving access to the market for trained lapidaries and reducing the appeal of the black market for such stones; and
 - Increase funding to lapidary training institutes, in order to supply sufficient quantities of rough for the students to practice on, thus increasing the currently minimal numbers of highly trained cutters and polishers entering the market
- Long-term:
 - Introduce a 'train the trainer' model, which has proven to be a valuable long-term strategy in other countries;
 - Encourage training schools to teach students to cut for beauty instead of weight, thus shifting focus to technique, in turn improving the quality of their cutting and polishing; and
 - Support training centres that they cannot self-fund, concentrating on the skills development goal of the programme, not the profits.

Supporting the jewellery industry

- Short-to-medium term:
 - Conduct further research into the jewellery making stage of the gemstone supply chain in Ethiopia, to illuminate its potential and the challenges that are preventing its steady growth;
 - Engage with lapidaries attempting to build domestic demand for jewellery set with Ethiopian gemstones;
 - Analyse domestic consumer attitudes (locals, tourists, expats) towards jewellery set with gemstones, to identify why this style of jewellery is currently so rare in the domestic market and how that could be changed moving forward;
 - Pinpoint the unique 'story' that Ethiopian jewellery has, which could be used to help market it internationally; and
 - Engage meaningfully with all key supply chain actors in the industry, from miners to jewellers, to establish this provenance
- Long-term:
 - Research whether locally produced gold could be used in designs for further value adding.

Gemstone marketing

- Short-to-medium term:
 - Market Ethiopian opal internationally, to foster demand, improve global sales and permanently address/disprove residual concerns about its stability, quality and value; and
 - Allocate a sufficient budget, or consider other sources of funding, in order to realise the proposed gemstone marketing centre detailed in the Ministry's five-year plan.
- Long-term:
 - Consider international branding of one high-end iconic stone, such as opal, and thus enhance the overall image of the gems and jewellery sector.

Illegal activities

- Short-to-medium term:
 - Research illegal gemstone supply chains in Ethiopia, to ascertain the typical structure and common actors, their geographical profile, the loopholes (and vulnerable actors [miners, underpaid officials, etc.]) they exploit, and what motivates people to engage in this illegal trade; and
 - Tackle illegal lapidary businesses, which are limiting economic growth and undermining legitimate operators, potentially forcing them out of

business

- Long-term:
 - Develop an appropriate framework for systematically addressing illegal gemstone supply chains in Ethiopia, based on the abovementioned research;
 - Seek to use diplomatic channels to require improved customs control at the point of import in India;
 - Encourage its neighbours, particularly Kenya and Djibouti, to exercise vigilance with regards to the export of opal, which neither of these two countries mine domestically; and
 - Explore the utility of a implementing a nation-wide supply chain quality assurance mechanism, like MineralCare³⁸³.

Taxes and export prices

- Short-to-medium term:
 - Introduce market-based incentives in order to reduce the size of Ethiopia's gemstone black market;
 - Reconsider its policy of minimum export prices for rough opal, in order to disincentivise engagement in the black market for lower quality gemstones;
 - Seek input from key supply chain actors to enable a stronger degree of industry buy-in for such changes; and
 - Review the 40:60 rule, in cooperation with stakeholders, to ascertain whether, and to what extent, it is incentivising smuggling.
- Long-term:
 - Explore options for removing import taxes on rough stones, in order to provide additional material for the infant domestic cutting and polishing sector, and reduce its reliance on domestically produced stones.

Infrastructure

- Short-to-medium term:
 - Consult with all major industry stakeholders to determine the key desired features and functions of the Ministry's Mineral Market and Value Chain Development Directorate's proposed gemmological institute; and
 - Encourage partnerships with the private sector to help link trained

³⁸³ For more information, see: <https://idcare.eu>

lapidaries in this region to buyers, and improve the calibre of training on offer (by identifying key areas of weakness from a private sector perspective)

- Long-term:
 - Ensure that the MMVCDD try to utilise the existing cutting and polishing, bead drilling and faceting machinery in lapidary training institutes in the Amhara region (and beyond), the vast majority of which is currently lying idle; and
 - Improve major arterial roads in Ethiopia, to increase the efficiency of transportation between mines and major trading hubs.

Governance

- Short-to-medium term:
 - Study the challenges associated with staff retention in the Ministry, and explore how they could be addressed
- Long-term:
 - Address the dearth of knowledge of the coloured gemstones industry within the Ministry;
 - Undertake a facilitating rather than a steering role in the industry, working in close collaboration with all relevant representatives of the private sector; and
 - Establish a national authority responsible for the regulation, supervision and promotion of the whole gemstone and jewellery sector.

Policy

- Short-to-medium term:
 - Build a domestic cutting and polishing sector by first focussing on lower value gemstones, where skill levels do not need to be as high and the barriers of entry are low; and
 - Focus efforts and support where domestic processing, cutting, polishing or jewellery making is already happening (including in the private sector), and where skills can be 'upgraded' instead of being built from scratch.
- Long-term:
 - Embed any activities designed to develop cutting and polishing training into a larger strategy or policy;
 - Consider 'softer' policies differentiated by gemstone types, values and markets (i.e. tax reduction on export of cut gemstones) as alternatives to a ban on the export of rough gemstones, until/unless it

- can be implemented gradually and partially (based on existing skill levels and market needs), simultaneous with the development of a domestic cutting and polishing industry;
- Initiate a wider macro-economic strategy and activities, since a domestic cutting and polishing industry cannot be built through a sole focus on lapidary training activities; and
- Embed donor funded activities in a larger economic or sectorial strategy by the government, and receive committed and long-term support and guidance by the government.

The World Bank and the Ministry of Mines, Petroleum and Natural Gas may use the recommendations and lessons learned outlined in this report to help inform the growth of Ethiopia's coloured gemstone sector. The recommendations could also inform other research (including that which has been suggested in this report) into options for developing Ethiopia's gemstone sector to ensure it has a resilient future. This information could form the basis of a new strategic plan for the realisation of this goal, which should be drafted in consultation with all relevant industry stakeholders. It is also recommended that the MoMPNG's five-year plan for the mining industry be revised accordingly.

BIBLIOGRAPHY

- Adebayo, A. 2015: FG ignores Nigeria' s multibillion naira gemstone deposits. 21 October 2015. Retrieved 26 October 2015 from <http://www.dailytrust.com.ng/news/business/fg-ignores-nigeria-s-multibillion-naira-gemstone-deposits/115987.html>
- Ademola, A. 2015b: Solid Minerals: Nigeria' s neglected cash cow. 23 September 2015. Retrieved 27 October 2015 from <http://www.dailytrust.com.ng/news/business/solid-minerals-nigeria-s-neglected-cash-cow/112167.html>
- Admed, H. 2013, August 21. Indian Gemstone-Crafting Industry to Invest in Ethiopia. Business Standard News. Retrieved 7 September 2015 from http://www.business-standard.com/article/news-ians/indian-gemstone-crafting-industry-to-invest-in-ethiopia-113082100351_1.html
- Akerloff, G.A. 1970. The Market for "Lemons" : Quality Uncertainty and the Market Mechanism. The Quarterly Journal of Economics. Vol. 84, No. 3, pp. 488-500.
- Amber, M. 2014: Gems of Hope. Rapaport Magazine, Vol. 37 No. 8 August 2014. Retrieved 26 October 2015 from <http://www.slideshare.net/Sophiaswire1/rapaport-magazine-august-2014-aayenda-jewelry>
- Araya, E. 2013, August 4. Rough Cut Ban U-Turn in Bid to Boost Mining Revenue. Addis Fortune. Retrieved 13 September 2015 from <http://addisfortune.net/articles/rough-cut-ban-u-turn-in-bid-to-boost-mining-revenue/>
- Arusha Times 2014: Tanzania: Tanzanite Mainly Benefits India Despite Ban on Raw Exports. Retrieved 22 October 2015 from <http://allafrica.com/stories/201405120444.html>
- Arusha Times 2014b: Tanzania: Profile: How Discovery Channel Shaped Azim Premji's Career. Retrieved 23 October 2015 from <http://allafrica.com/stories/201411240233.html>
- Atlaw, D., D. Teklemariam, H. Dong-Geun. 2014. Determinants of Foreign Direct Investment: Reflections from Ethiopia. Social and Basic Sciences Research Review. Vol. 2, No. 2, pp.85-95.

- Aayenda Jewelry, n.d.a: Aayenda Jewelry. Retrieved 26 October from <http://aayendajewelry.com/>
- Bergenstock, D. J. 2004. An Analysis of the International Diamond Market. New York, The Edwin Mellen Press
- Beyene, T.M. 2014. ASM Sector and Sustainable Development in Ethiopia. Powerpoint presentation given at Ethiopia Extractives Industry Forum, Addis Ababa, Ethiopia, October 7th 2014. Retrieved 13 September 2015 from http://www.worldbank.org/content/dam/Worldbank/Event/Africa/Ethiopia%20Extractive%20Industries%20Forum%202014/4a_MOMPNG.pdf
- Business Times 2015: Sri Lankans Train Tanzanians in Lapidary Activities. Retrieved 23 October 2015 from http://businesstimes.co.tz/index.php?option=com_content&view=article&id=4895:sri-lankans-train-tanzanians-in-lapidary-activities&catid=1:latest-news&Itemid=57
- Chandrasiri, S. 2013: Promoting employment intensive growth in Sri Lanka: An assessment of key sectors. ILO Employment Sector Employment Working Paper No. 139. Retrieved 22 November 2015 from http://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_212722.pdf
- Committee Secretary. 2001 Submission to the Inquiry into Resources Exploration Impediments. Standing Committee on Industry and Resources. Retrieved 20 November 2015 from http://www.aphref.aph.gov.au_house_committee_isr_resexp_subs_sub32.pdf
- Cook, R., T. Healy. 2012. Madagascar Case Study: Artisanal Mining Rushes in Protected Areas and a Response Toolkit. Cambridge, Estelle Levin Ltd. and WWF at www.asm-pace.org
- Coutelle, B., (1968) Madagascar a l' Echelle d' un Continent, Loire, Societe Nouvelle des Imprimeries de la Loire Republicaine.
- Cross, J. S. van der Wal, E. de Han. 2010. Rough Cut: Sustainability Issues in the Coloured Gemstones Industry. Retrieved 20 November 2015 from http://www.somo.nl/publications-en/Publication_3418
- Cushman, T. A. (1999): The short life and death of a Sapphire Boomtown. *Gems & Gemology* 35, 142.
- DAI, n.d.a: Small and Medium Enterprise Development (ASMED). Retrieved 26 October 2015 from <http://dai.com/our->

work/projects/afghanistan%E2%80%94small-and-medium-enterprise-development-asmad

Daily News 2014: National Policy for Gem and Jewellery Industry. January 2014. Retrieved 27 October 2015 from At: <http://www.highbeam.com/doc/1P3-3171349301.html>

Doulton, M. 2014: The Brazilian Jewellers making waves. The Telegraph, 03.01.2014. Retrieved 21 October 2015 from <http://www.telegraph.co.uk/luxury/jewellery/20181/the-brazilian-jewellers-making-waves.html>

East African Business Week 2014: Richland exits Tanzanite. Retrieved 23 October 2015 from <http://www.busiweek.com/index1.php?Ctp=2&pI=2366&pLv=3&srI=54&spI=100&cI=11>

Esiedesa, O. 2014: 80% of Nigeria's gemstones smuggled out – Minister (22 September 2014). Retrieved 26 October 2015 from <http://thebusinessdispatch.com/80-of-nigerias-gemstones-smuggled-out-minister/>

Export Development Board 2013: Sri Lankan diamonds, gems and jewellery sector. Retrieved 27 October from <http://www.srilankabusiness.com/pdf/incapreportgemsjewel.pdf>

Foreign Affairs, Trade and Development Canada. 2014. Ethiopian Gemstones: Maximising Potential. Summary Report.

Foreign Affairs, Trade and Development Canada. 2014. Scoping Study of the Mining Supply Chain in Ethiopia. Summary Report.

Friedman, J. W. 1983. Oligopoly Theory. Cambridge, Cambridge University Press,

Future Brilliance, n.d.a: Jewellery training in Jaipur. Retrieved 26 October 2015 from <http://www.futurebrilliance.net/our-work/jewellery-training-in-jaipur/>

Gabriel, O. 2015: Neglect of solid minerals: Why Nigeria remains poor (19 June 2015). Retrieved 26 October 2015 from <http://sweetcrudereports.com/2015/06/29/neglect-of-solid-minerals-why-nigeria-remains-poor/>

Gemmological Association of Australia. N.d. Advanced opal course with Anthony Smallwood. Retrieved 9 December 2015 from http://www.gem.org.au/advanced_opal_course_with_anthony_smallwood/

- Geological Survey of Ethiopia, Ministry of Mines and Energy. 2009. Opportunities for Gem Resource Development in Ethiopia. Retrieved 13 September 2015 from <http://www.gse.gov.et/phocadownload/PromotionDocs/Gemstone%20Potential%20Of%20Ethiopia.pdf>
- Geological Survey of Ethiopia. N.d. Gemstone [sic] in Ethiopia. Retrieved 1 September 2015 from <http://www.gse.gov.et/index.php/coal2>
- Geological Survey of Ethiopia, Ministry of Mines and Energy. 2009. Opportunities for Gem resource development in Ethiopia. Retrieved 1 September 2015 from <http://www.gse.gov.et/phocadownload/PromotionDocs/Gemstone%20Potential%20Of%20Ethiopia.pdf>
- GIRoA 2014: Implementing the SME Strategy: An Updated Action Plan for Developing Afghanistan's Gemstone and Jewelry Industry. December 2014-November 2017. Retrieved 23 October 2015 from <http://afghanenterprise.com/wp-content/uploads/2015/02/Gemstones-Jewelry-Action-Plan.pdf>
- GIZ/GFA 2014: Fact Sheets Training Centers. Not available online.
- Hindeya, T.W. 2012. An Overview of the Legal Regime Governing Minerals in Ethiopia. Bahir Dar University Journal of Law. Vol. 3, No. 1, pp.24-66.
- Hsu, T. et al. 2015, September 30. Chasing the Rainbow: Australia Opal Fields Expedition. Gemological Institute of America. Retrieved 9 December 2015 from <http://www.gia.edu/gia-news-research/australia-opal-fields-expedition>
- IBGM 2005: Políticas e Ações para a Cadeia Produtiva de Gemas e Jóias / Instituto Brasileiro de Gemas e Metais Precioso. Retrieved 21 October 2015 from http://www.desenvolvimento.gov.br/arquivos/dwnl_1196865342.pdf
- IBGM n.d.a: About. Retrieved 20 October 2015 from <http://international.ibgm.com.br/about/>
- IBGM n.d.b: Ações. Retrieved 21 October 2015 from <http://www.ibgm.com.br/acoes/>
- ICA 2011: Opportunities abound in Brazilian Gem & Jewellery Industry. Retrieved 21 October 2015 from http://www.gemstone.org/index.php?option=com_content&view=article&id=263:opportunities-abound-in-brazilian-gem-a-jewelry-industry&catid=43:industry&Itemid=43 (21.10.2015)
- Investment Office ANRS. 2008. Project Profile on the Establishment of Gemstone Production Plant. Retrieved 13 September 2015 from <http://www.ethiopianembassy.org/AboutEthiopia/InvestmentProjectProfiles/Manufacturing/Non-metallic%20Products/Gemstone.pdf>

- ITC Executive Forum 2003: BUSINESS FOR DEVELOPMENT: IMPLICATIONS FOR EXPORT STRATEGY-MAKERS - SRI LANKA: THE SAPPHIRE BRANDING STRATEGY OF THE GEM AND JEWELLERY SECTOR IN SRI LANKA. Retrieved 26 October 2015 from www.intracen.org/WorkArea/DownloadAsset.aspx?id=52045
- Johnson, M., R.C. Kammerling, D. G. DeGhionno, and J. I. Koivula. 1996. Opal from Shewa Province, Ethiopia. *Gems and Gemology*, Vol. 32, No.2.
- Keifert, L., P. Hardy, T. Sinteyehu, B. Abate, and G. Woldetinsae. 2014. New Deposit of Black Opal from Ethiopia. *Gems & Gemology*. Vol. 50. No. 4.
- Kyngdon, Y. 2014. From Ultimate Rent Seeker to Positive-Sum Stakeholder? An Ethical Analysis of the Modern Diamond Industry. Unpublished doctoral thesis. Sydney, University of New South Wales, Australia.
- Larif, S. 2012: INTERVIEW GIVEN BY CHAIRMAN NATIONAL GEM AND JEWELRY AUTHORITY, SRI LANKA TO THE UNIVERSAL NEWS IN SEPTEMBER, 2011. Retrieved 27 October 2015 from <https://jewelry-blog.internetstones.com/gemstone-and-jewellery-industry-news/interview-given-by-chairman-national-gem-and-jewelry-authoritysri-lanka-to-the-universal-news-in-september-2011> (27.10.2015)
- Larif, S. 2009: Gem and Jewellery Institute (GJI) -Training Facility. Retrieved 27 October 2015 from <https://jewelry-blog.internetstones.com/gemstone-and-jewellery-industry-news/gem-and-jewellery-institute-gji-training-facility> (27.10.2015)
- Lee, D., V. S. Anthony and A. Skuse. 1968. *Monopoly*. London, Heinemann Educational Books Ltd.
- Levin, N. 2011, March 01. Opal: Australia's Troubled Gemstone. *Jeweller Magazine*. Retrieved 3 November 2015 from <http://www.jewellermagazine.com/Article.aspx?id=1434>.
- L' Industrie miniere a Madagascar pendant l' annee 1904, *Bulletin Economique* 1905, Tananarive, Imprimerie officielle.
- Lucas, A. 2013: The rise of the Brazilian jewellery industry. Retrieved 21 October 2015 from <http://www.gia.edu/gia-news-research-Rise-of-the-Brazilian-Jewelry-Industry>
- Lucas, A et al 2014a: Sri Lanka: From Mine to Market, Part 1. *GIA*. Retrieved 26 October 2015 from <http://www.gia.edu/gia-news-research-sri-lanka-mining-part1>

- Macauhub 2011: Mozambican staff receive training in Ouro Preto, Brazil. Retrieved 22 October 2015 from <http://www.macauhub.com.mo/en/2011/09/12/mozambican-staff-receive-training-in-ouro-preto-brazil/>
- Mallo, Stephen J. 2012: Mitigating the Activities of Artisanal and Small-Scale Miners in Africa: Challenges for Engineering and Technological Institutions, *International Journal of Modern Engineering Research (IJMER)* (Vol.2, Issue.6, Nov-Dec. 2012) Pg. 4714-4725. Retrieved 27 October 2015 from http://www.ijmer.com/papers/Vol2_Issue6/FC2647144725.pdf
- Mesfin, M. 2013, January 13. Rough Gem Exports to be Banned. *Addis Fortune*. Retrieved 13 September 2015 from <http://addisfortune.net/articles/rough-gem-exports-to-be-banned/>
- Michelou J.C. 2011: Adding value to Nigerian gemstones. *InColor Winter 2011*.
- Milanez, B. and Puppim de Oliveira, J.A. 2013: Innovation for sustainable development in artisanal mining: Advances in a cluster of opal mining in Brazil. *Resources Policy* 38 (2013), p. 427–434.
- Mining in Malawi. 2014, April 23. Malawian Bank Partners with Government to Support Artisanal and Small Scale Miners. Retrieved 11 July 2014 from <http://mininginmalawi.com/2014/04/23/malawian-bank-partners-with-government-to-support-artisanal-and-small-scale-miners/>.
- Ministry of Mines, Petroleum and Natural Gas. N.d. MMVCDD Profile. Retrieved 2 November 2015 from www.mom.gov.et/upload/MMVCDD.pdf
- Ministry of Mines. 2012. Artisanal Mining Activities in Ethiopia: Challenges and Opportunities. Powerpoint presentation. Retrieved 29 November 2015 from [http://www.globaldialogue.info/Artisanal%20Mining%20Activities%20in%20Ethiopia%20-%20Challenges%20and%20Opportunities%20\(Oct%202012\)%20-%20Abayneh%20Tilahun.pdf](http://www.globaldialogue.info/Artisanal%20Mining%20Activities%20in%20Ethiopia%20-%20Challenges%20and%20Opportunities%20(Oct%202012)%20-%20Abayneh%20Tilahun.pdf)
- Ministry of Mines, Petroleum and Natural Gas. 2015. Mining Sector Second Five Year Growth and Transformation Plan (2015/16-2019-20)
- Mwaswenya, A. 2015: HOW CAN GOVERNMENT ASSIST WITH ESTABLISHING VALUE ADDING IN ASM SECTOR. Retrieved 23 October 2015 from abandonedminesafrica.org/downloads/publications/category/5-arusha-workshop-held-on.html?download=39:day2_how-can-government-assist-with-establishing-value-adding-in-asm-sector_alfred-mwaswenya

- Naija, B. 2010: Nigerian Jewels Bling in Hollywood as Chris Aire launches the "Hollywood Glamour Collection" (9 April 2010) Retrieved 26 October 2015 from <http://www.bellanaija.com/2010/04/09/nigerian-jewels-bling-in-hollywood-as-chris-aire-launches-the-hollywood-glamour-collection/>
- National Gem and Jewellery Authority Act 1993: National Gem And Jewellery Authority. Retrieved 27 October 2015 from https://www.imolin.org/doc/amlid/Sri_Lanka_National%20Gem%20And%20Jewellery%20Authority%20Act%20No%2050%20of%201993.pdf
- National Gem and Jewellery Authority, n.d.a: NGJA Corporate Profile. Retrieved 27 October 2015 from <http://www.ngja.gov.lk/si/ngja-corporate-profile>
- Natsa, R. T. 2015: Solid Mineral Development Fund: A White Elephant Project? (June 25 2015) Retrieved 26 October 2015 from <http://leadership.ng/business/442868/solid-mineral-development-fund-a-white-elephant-project>
- NEITI 2011: Report on the Physical and Process Flows in Nigeria Solid Minerals Industry 2011. Retrieved 29 October 2015 from <https://eiti.org/files/SMA%202011%20EITI%20++%20FINAL%20REPORT.pdf>
- Nwadike, G. U. 2015: Nigeria Gemstone Supplies: A Brief Overview (14 October 2015) Retrieved 27 October 2015 from http://gemstone.org/index.php?option=com_content&view=category&layout=blog&id=43&Itemid=43
- Ojeka, Patrick, representative of the Department Of ASM, Nigeria Ministry Of Mines and Steel Development. Interviewed by: Smith, A., Regarding The Development Of Nigeria' s Gemstone Sector. (Arusha, 8 September 2015, In Person.)
- Olson, M. 1971. The Logic of Collective Action: Public Goods and the Theory of Groups. Cambridge, Harvard University Press
- Onwuenyi, O. 2013: World Bank appraises Nigeria' s application of \$120m mining credit, (16 April 2013) Retrieved 26 October 2015 from <http://sweetcrudereports.com/2013/04/16/world-bank-appraises-nigerias-application-of-120m-mining-credit/>
- Paternoster, R. and S. Simpson. 1996. 'Sanction threats and appeals to morality: Testing a rational choice model of corporate crime.' Law & Society Review. Vol. 30, No. 3: 549–583

- Pesa Ties 2013: College introduces course on lapidary. Retrieved 23 October 2015 from <http://pesatimes.co.tz/news/education/college-introduces-course-on-lapidary>
- Prosperdesignonline.com, n.d.a: 'About Soosai Prosper' , 17 February 2015. Retrieved 26 October 2015 from <http://www.prosperdesignonline.com/about.html>
- Rapaport Magazine 2012: Onsite in Tanzania. June 2012. Retrieved 23 October 2015 from <http://www.diamonds.net/Magazine/Article.aspx?ArticleID=40288&RDRIssueID=91>
- Renfro, N., and S. F. McClure. 2011. Dyed Purple Hydrophane Opal. *Gems & Gemology*. Vol. 47, No. 4, pp. 260-70.
- Reuters 2010: Press Release Tanzanite One Ltd - Export Ban Update. Retrieved 23 October 2015 from <http://www.reuters.com/article/2010/08/31/idUS48926+31-Aug-2010+RNS20100831>
- Rondeau, B. E. Fritsch, F. Mazzero, J.P. Gauthier, B. Cenki-Tok, E. Bekele, and E. Gaillou. 2010. Play-of-Color Opal from Wegel Tena, Wollo Province, Ethiopia. *Gems & Gemology*. Vol. 46, No. 2, pp.90-105.
- Santos, A. 2010: The treasures of small companies. Retrieved 21 October 2015 from <http://www2.anba.com.br/noticia/10403441/small-exporters/the-treasures-of-small-companies/?indice=10>
- Schumann, W. 2013. *Gemstones of the World*. Fifth Edition. Sterling Publishing, Toronto.
- Schwarz D., 1996, Sapphires from the Andranodambo region, Madagascar, *Gems and Gemology*, vol 32, No 2, pp 80-99
- Sequeira, Y. 2015: A legacy like no other. Retrieved 26 October 2015 from <http://lmd.lk/the-sparkle-of-jewellery/>
- SGM 2011: Plano Nacional de Mineracao 2030, Geologia, Mineração e Transformação Mineral. Retrieved 21 October 2015 from http://www.mme.gov.br/documents/1138775/1732821/Book_PNM_2030_2.pdf/f7cc76c1-2d3b-4490-9d45-d725801c3522
- Sintayehu, T. N.d. Value Addition on Gemstones and its Impact on Ethiopian Economy. Orbit Ethiopia Plc. Presentation at Ethiopia Extractives Industry Forum, Addis Ababa, Ethiopia, October 7th 2014. Retrieved 13 September 2015

- from
http://www.worldbank.org/content/dam/Worldbank/Event/Africa/Ethiopia%20Extractive%20Industries%20Forum%202014/4c_ORBIT.pdf.
- Sri Lanka Gem and Jewellery Association, n.d.a: Profile. Retrieved 27 October 2015 from <http://www.slgja.org/profile.php>
- Taylor, R. 2015: Brazil Is Taking Its Place on the Global Jewellery Scene. Retrieved 21 October 2015 from <http://www.jewellerynetasia.com/en-us/editorial/Trends/555/6244/brazil-is-taking-its-place-on-the-global-jewellery-scene>
- Tasker, S.J. 2015, March 28. Economic Stars Align to Revive Opal Rush. The Australian. Retrieved 9 December 2015 from <http://www.theaustralian.com.au/business/mining-energy/economic-stars-align-to-revive-opal-rush/news-story/d6ae025b2db26435ca83cc49b57b85c2>
- The African Development Bank Group. N.d. Ethiopia Economic Outlook. Retrieved 16 January 2016 from <http://www.afdb.org/en/countries/east-africa/ethiopia/ethiopia-economic-outlook/>
- The Central Intelligence Agency. 2015, November 4. Africa: Ethiopia. The World Factbook. Retrieved 20 November 2015 from <https://www.cia.gov/library/publications/the-world-factbook/geos/et.html>
- The Citizen 2013: India tanzanite sector in crisis. Retrieved 22 October 2015 from <http://www.thecitizen.co.tz/News/India-tanzanite-sector-in-crisis/-/1840392/2018338/-/gdn9we/-/index.html>
- The New Jeweller 2015: Tanzania Gemological Centre inaugurated in Arusha. Retrieved 23 October 2015 from http://thenewjewelleruae.me/Top_Stories/TGC.html
- The World Bank. 2012. Diagnosing Corruption in Ethiopia: Perceptions, Realities and the Way Forward for Key Sectors. Ed. J. Plummer. Retrieved 1 September 2015 from <http://elibrary.worldbank.org/doi/abs/10.1596/978-0-8213-9531-8>
- The World Bank 2012: Implementation Completion And Results Report (IDA -40120) On A Credit In The Amount Of SDR 80.1 MILLION (US\$120 Million Equivalent) To The Federal Republic Of Nigeria For A Sustainable Management Of Mineral Resources Project (Report No: ICR2258) (November 28, 2012, Sustainable Energy, Oil, Gas, and Mining Unit) Retrieved 27 October 2015 from <http://www->

wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2012/12/11/000386194_20121211005549/Rendered/PDF/NonAsciiFileName0.pdf

The World Bank 2015: ADDITIONAL FINANCING FOR THE SUSTAINABLE MANAGEMENT OF MINERAL RESOURCES PROJECT. Retrieved 23 October 2015 from http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2015/05/08/090224b082df951d/1_0/Rendered/PDF/Tanzania000The0additional0financing.pdf

The World Bank n.d.a: Tanzania - Sustainable Management of Mineral Resources; Results. Retrieved 23 October 2015 from <http://www.worldbank.org/projects/P096302/sustainable-management-mineral-resources?lang=en>

The World Bank Group. 2015. Ethiopia Poverty Assessment 2014. Retrieved 10/02/2016 from <https://openknowledge.worldbank.org/handle/10986/21323>

Trade and Investment. 2013. Final NSW Government Response to the Wilcox Report into Lightning Ridge Opal Mining. NSW Government. Retrieved 27 November 2015 from http://www.resourcesandenergy.nsw.gov.au/_data/assets/pdf_file/0007/473029/Wilcox-Report-Final-Government-Response.pdf

Treasurion. 2012, September 2. Welo Opal—deposits, extraction methods and material characteristics. Retrieved 7 September 2015 from <http://treasurion.com/blog/welo-opal-depositsextraction-methods-and-material-characteristics/>.

Tse, P-K. 2014. The Mineral Industry of Australia. United States Geological Survey. Retrieved 13 September 2015 from <http://minerals.usgs.gov/minerals/pubs/country/2012/myb3-2012-as.pdf>

Turquoise Mountain, n.d.a: Turquoise Mountain. Retrieved 26 October 2015 from <http://turquoisemountain.org/>

Turquoise Mountain, n.d.b: Training craftsmen. Retrieved 26 October 2015 from <http://turquoisemountain.org/index.php?p=institute-entries/training-craftsmen>

Turquoise Mountain, n.d.c: Creating entrepreneurs. Retrieved 26 October 2015 from <http://turquoisemountain.org/index.php?p=institute-entries/creating-entrepreneurs>

- Turquoise Mountain, n.d.d: Artisans. Retrieved 26 October 2015 from <http://turquoisemountain.org/index.php?p=artisans>.
- USAID 2009: Afghanistan Small and Medium Enterprises Development Programme, Annual Report 2009. Retrieved 26 October 2015 from http://pdf.usaid.gov/pdf_docs/Pdacs203.pdf
- Wettasinghe, C. 2015: Sri Lanka's gem industry potential largely untapped. Retrieved 27 October 2015 from <http://www.dailymirror.lk/85971/www.americanexpress.lk/personal/cards/offers/default.htm>
- Winter, H. 2008. The Economics of Crime: An Introduction to Rational Crime Analysis. Oxon, Routledge
- Yager, T. 2014. The Mineral Industry of Ethiopia. United States Geological Survey. Retrieved 13 September 2015 from <http://minerals.usgs.gov/minerals/pubs/country/2012/myb3-2012-et.pdf>