

January 27, 2012

172 West 79th Street
New York, NY 10024

The Honorable Mary L. Schapiro
Chairman
US Securities and Exchange Commission
100 F Street, NE
Washington, DC 20549

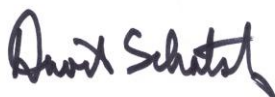
Dear Chairman Schapiro:

Attached please find a new study that looks at the costs and benefits of Dodd-Frank Section 1502 from the perspective of individual businesses. The study was sponsored by Global Witness and conducted independently by Green Research. Green Research alone is responsible for its findings.

The study is based in interviews with over 20 companies that are affected by this legislation. It provides an additional perspective on the costs of compliance. And it also presents a unique point of view on the business benefits that company may reap in the course of complying with the new rules.

I hope you find that the study makes a useful contribution to the discussion about the effect of this legislation and the shape of the final rules.

Sincerely,



David Schatsky
Principal Analyst / Founder
Green Research

The Costs and Benefits of Dodd-Frank Section 1502

A Company-Level Perspective

January 2012

This Green Research report is based on independent research and presents analysis reflecting the judgment of Green Research analysts.

It was sponsored by Global Witness.



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Executive Summary

Dodd-Frank Conflict Minerals Provisions

Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act is an effort to help cut off financing to armed groups and members of the Congolese national army that are making millions of dollars through illegal control of mines and mineral trading routes in eastern DRC while inflicting appalling suffering on the local population. The law aims to achieve this by requiring companies to undertake supply chain due diligence on any minerals sourced from the Democratic Republic of Congo (DRC) or adjoining countries and to publically report on measures undertaken to the Securities and Exchange Commission (SEC).¹

Since the bill was signed into a law, much debate has ensued about costs and benefits of the law and what the specific rules should be that will govern its application. The SEC is tasked with writing those rules and is expected to issue them in the first half of 2012. It is worth noting that the rules were originally due for publication in April 2011 and at the time of publication of this report, the SEC rules have been delayed by ten months.

Purpose of this Study

The purpose of the study is to gather and share information that may be useful to the SEC's rulemaking process and to industry. It aims to paint a picture of the costs and benefits of compliance with Dodd-Frank Section 1502 at the level of individual firms. This information is designed to provide some insight that will help companies follow best practices, minimize the costs of compliance, and take advantage of the business benefits that the process of compliance may present. The questions the research sought to answer include:

- What changes in company systems and processes will be required to comply with Section 1502?
- What are the costs, if any, of making the necessary changes, in terms of staff time, professional services fees, systems and technology?
- What are the benefits of compliance with Section 1502?
- How do conflict minerals fit into companies' overall responsible supply chain strategy? How are the requirements set out by 1502 similar to and different from other responsible supply chain processes implemented?
- What are the perceived advantages and disadvantages of continuing to source minerals of Congolese origin?

Study Methodology

This report benefited from interviews with executives at more than 20 global companies affected by Dodd-Frank Section 1502. The companies interviewed ranged in size from about a half billion dollars to

¹ A detailed discussion of the specifics of the law is beyond the scope of this report. Readers are referred to the text of the law on the SEC website, and other online sources that interpret it for various business audiences.

over \$120 billion in annual revenues and represent a variety of industries including electronic components, computers, consumer health care, automotive and retail. We also spoke with several industry associations, consulting firms and software providers. Despite multiple attempts, we were not able to secure interviews with representatives of the jewelry industry. A full statement of the methodology of this study can be found at the end of the report. The research was independently conducted by Green Research. The findings are our own.

This study was sponsored by Global Witness, an international NGO established in 1993 that works to break the links between natural resource exploitation, conflict, poverty, corruption and human rights abuses worldwide.

Definitions

This study attempts to avoid jargon and confusing terminology. The meaning of the terms "conflict mineral" and "DRC conflict free" are, however, specific in this context;

Conflict mineral. Defined as in the U.S. Dodd-Frank law to mean either "(A) columbite-tantalite (coltan), cassiterite, gold, wolframite, or their derivatives; or (B) any other mineral or its derivatives determined by the Secretary of State to be financing conflict in the Democratic Republic of the Congo or an adjoining country." The label "conflict mineral" is applied as a blanket term to all minerals named within the law, regardless of their origin or whether trade in any specific unit of them has financed conflict. For instance, anything containing tin is considered to contain a conflict mineral, regardless of where or how the tin was obtained.

DRC conflict free. Defined in the U.S. Dodd-Frank law to mean free of "minerals that directly or indirectly finance or benefit armed groups in the Democratic Republic of the Congo or an adjoining country."

Key Findings

A common theme across our interviews was uncertainty. Participants had many questions. What would the final rules from the SEC be? What will this really cost us? Will the law produce the desired outcome in the DRC? On this last point we heard various blends of hope and skepticism. A number of participants voiced concern about facing new regulations. Some had the perception that the approach followed by Section 1502 was not devised in cooperation with industry. Beside all this, though, we found that the better informed the executive, the more likely he or she was to feel that the costs of compliance would be manageable. And many, but not all, executives could envision some business benefits arising from the compliance process. Some of the questions raised by the executives we interviewed will be swiftly answered after the SEC issues its final rules. Others will unfold as compliance measures are implemented and capacity building on the ground in the DRC and along companies' supply chains continues.

The following are the key findings of the study:

1. As companies become familiar with the legislation and its impacts on them, the perceived costs of compliance tend to decline. Across industry there are differing levels understanding of the

requirements and implications of Section 1502. Our interviews revealed that the more companies know about these costs and implications, the more manageable they believe the compliance process and associated costs will be.

2. Section 1502 compliance costs will vary widely with the size and complexity of companies' supply chains but seem to be manageable for all company sizes. The largest companies (with annual revenues over \$50 billion) are facing one-time costs ranging from \$500,000 to \$2 million; companies with well developed responsible sourcing systems may need to spend only half as much. Many smaller companies should be able to meet their obligations for less than the cost of a full-time employee in the first year, with costs declining over time.

3. Companies have an opportunity to reap a wide range of business benefits associated with Section 1502 compliance. Executives interviewed cited better risk management, improved supply chain performance, new innovation opportunities and the ability to prepare to meet a new generation of expectations for greater supply chain transparency and accountability as potential benefits of the new compliance regime. Companies should look for opportunities to seize these benefits as they review and update their supply chain processes and practices.

4. The impacts of the regulations on competition are likely to be benign. Many companies interviewed believe there will be a negligible to positive impact on competition, as the regulations will tend to "level the playing field." With incremental costs modest compared to the overall costs of being a publicly traded company, the competitive position of public companies versus their counterparts should not significantly change. Indeed, Green Research believes that offering conflict-free products will become a competitive advantage.

5. Firms should exploit opportunities to collaborate with industry and cross-industry groups to set standards and share costs as they define and implement their responses. Where possible, companies and industry organizations should build on the work of groups like EICC and GeSI and others and centralize the design of industry-wide processes with industry groups. One company expects to save 80 percent on consulting fees by working through an industry organization rather than going it alone.

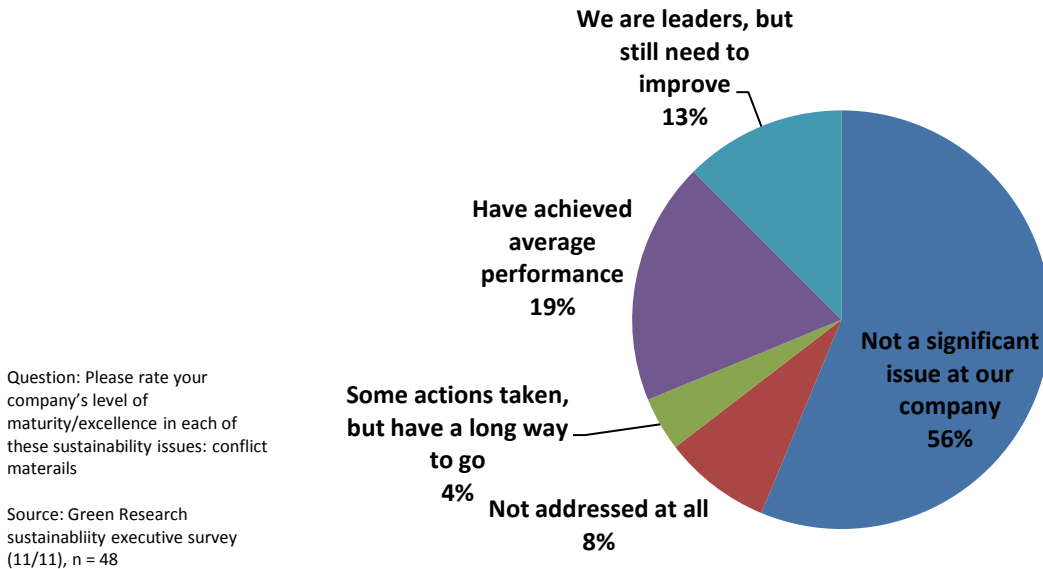
6. The days of selling products containing substances of indeterminate origin produced under unknown conditions are coming to an end. The trend toward greater supply chain visibility and accountability, driven by rising expectations of responsible corporate behavior on the part of customers, investors, employees, NGOs and regulators, is set. Section 1502 presents an opportunity for companies to move towards greater supply chain transparency and accountability in their businesses, and design their processes and systems for the long term.

7. Executives' attitudes about the pros and cons of sourcing minerals of Congolese origin range widely from indifference, to acknowledgement of the difficulties of developing conflict-free Congolese sources, to an appreciation of benefits, ranging from supporting the legitimate Congo minerals sector and the workers who depend on it to expanding the global supply of these minerals.

The Study

Company Engagement and Knowledge Ranges Widely

Figure 1 Sustainability Executives' Assessment of Company's Maturity on Conflict Materials



With industry awaiting the final rules governing Section 1502, company attitudes about the legislation vary from resigned to inspired. Some of the companies we spoke with view the regulations as costly and of dubious value while others, even within the same industry, believe the costs will be manageable and the regulations will be worthwhile. Some companies have been heavily involved with this issue for several years. Others are just looking at it now. Some feel that they have a good idea of what they will need to do to comply with whatever rules the SEC ultimately sets, while others seem almost paralyzed waiting for a final ruling on how demanding audits must be or what the rules on phase-in periods or recycled materials will be. In a Green Research survey² of senior sustainability executives at major US and European companies conducted in November 2011, before we undertook the present study, over half said they felt that “conflict materials” (that is how the question was worded) were not a significant issue at their companies. Thirteen percent of respondents felt their companies were leaders in dealing with this issue, about the same number felt they still had much work to do on it.

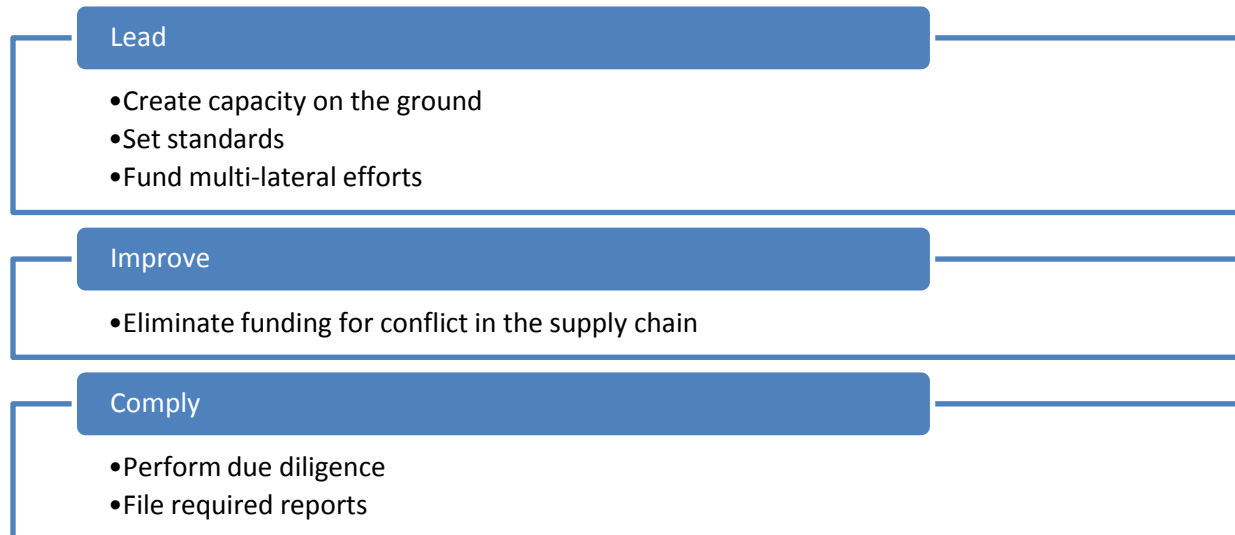
Given the wide range of knowledge and attitudes companies possess on this issue, it is necessary to view companies’ own assessments of the impacts of this legislation with some skepticism. In general, new regulatory regimes always cause concern and confusion and are met with resistance. Eventually, if the regulations are well designed, questions are resolved, best practices are established and complying with the regulations becomes part of standard business practice without much ado. Examples range from the Federal Corporate Average Fuel Economy standards, which generally met with initial

² Schatsky, David. *Annual Sustainability Executive Survey, 2012*. Rep. Green Research, Dec. 2011. Web. 19 Jan. 2012.

opposition from the auto industry, to the Securities Act of 1933, which laid the foundation of disclosure upon which current business practices are based.³

Goals Range from Compliance to Leadership

Figure 2 Company Goals for their Section 1502 Programs



Companies' goals and commitments to addressing the humanitarian issues linked with conflict minerals vary widely. Every company will make a commitment to comply with the new regulations, but some companies take a broader view.

TriQuint Semiconductor corporate product compliance manager John Sharp says his company's goal is to be DRC conflict free, since that is TriQuint's customers' goal. Alcatel-Lucent is driven by meeting customer requirements as well, which corporate social responsibility manager Pierre-Louis Frouein says are for DRC conflict-free products as soon as possible. He points out that this requirement is more demanding than that imposed by Dodd-Frank Section 1502: This year he may need to assure customers that Alcatel-Lucent's products are conflict free. Section 1502, on the other hand, imposes no requirement that products be conflict free, and, because of the delay in issuing the final rules, may not require any reporting until 2014.

Applied Materials is a maker of equipment, not end-user products or components of such products. As such, the company may get less pressure from customers to go DRC conflict free says Bruce Klafter, the company's managing director of corporate responsibility and sustainability. Though he hasn't fully analyzed the impact on Applied Materials, Klafter expects the costs of achieving a conflict-free supply chain will be high and, given the company's relatively low profile, he thinks the benefits of doing so may be modest. Because of this, he believes the company will use a cost-benefit analysis to determine whether to invest more than the minimum necessary to comply with the requirements of Section 1502.

³ Bumgardner, Larry. "A Brief History of the 1930s Securities Laws in the United States – And the Potential Lesson for Today." Graziadio School of Business, Pepperdine University. Web. 19 Jan. 2012.

Dell's goal is to ensure the company's purchases are not fueling conflict. Beyond that, the company is pushing for a multi-industry, common strategy where as many companies as possible use the same tools and same processes to comply with and advance the goals of the legislation. This is guided by a desire to minimize cost and enhance the effectiveness of the new rules. It is also intended to highlight that, despite the fact that the electronics industry has received a lot of attention for its role in this issue, many other industries are involved as well.

Finally, some companies with dominant roles in their markets have committed to taking leadership positions and have taken on the goal of building capacity for their entire industry ecosystem. Intel's director of global citizenship, Gary Niekerk, says that his company has completed on-site reviews of over 40 smelters in many countries representing all four conflict minerals. For instance, Intel has conducted an on-the-ground review of the extractives and minerals trade in the DRC and has provided support to the Public-Private Alliance for Responsible Minerals Trade, a new collaboration between governments, companies, and civil society to support supply chain solutions to conflict minerals challenges in the region. Intel, Hewlett-Packard, Motorola Solutions and AVX Corporation, a leading tantalum capacitor supplier, have worked with a defined set of key suppliers to create a closed-pipe supply line in the DRC, with all suppliers identified in advance, to demonstrate an ability to provide conflict-free tantalum from the region and possibly establishing AVX as the first provider of DRC conflict-free tantalum capacitors to the industry.

Operational Impacts

Table 1 Procedures and Processes that Companies May Change to Implement Compliance with Section 1502

- Supply chain management systems
 - Tracking supplier responses
 - Multi-level traceability
 - Location tracking
- Supply chain processes
 - Company risk assessment / remediation processes
 - Supplier contracts/requirements
 - Supplier training and capability building efforts
 - Supply chain audits
- Grievance channels for ethics or compliance violations
- Corporate responsibility reporting
- Policy statement
- Code of Conduct

The breadth of operational impacts that the new regulations will have varies with the size and complexity of individual companies' operations. In general, companies will need to implement or modify IT systems to track new information; they will need to create or enhance their processes for contracting with, communicating with, training and auditing their suppliers; they will need to revise their policy statements; and they'll need to revise their processes for creating SEC reports and communicating with customers. Some companies we interviewed, though, felt they could accomplish all of this with little effort via minor modifications to existing processes. Some felt they had largely already done what was

necessary to comply over the last two years—at negligible cost. Some large companies were preparing plans for achieving operational readiness over a period of six or more months, assuming the SEC’s rules are released early in 2012, while spending hundreds of thousands of dollars or more in consulting fees in order to meet this goal. Such companies have convened teams with representatives from a wide range of corporate departments including legal, public and government affairs, investor relations, marketing, environment health and safety, procurement and supply chain, product stewardship and others—an indication of the broad operational impact and the potential complexity of ensuring the rules are implemented properly at some large companies.

Competitive Effects

Green Research believes that the effects of these rules on competition are likely to be largely benign and in any case will be more nuanced than some observers believe. The SEC acknowledged⁴ that the proposed rules could have an impact on the competitiveness of certain companies: “In industries where not all or only a few companies are subject to the disclosure or reporting requirements, issuers that must provide disclosure or furnish Conflict Mineral Reports would incur competitive costs because of our disclosure and reporting requirements and clarifications.” But, it added, “the net effect on competition would depend on how these costs compare to the benefits that companies obtain by using conflict minerals from the DRC and adjoining countries, such as lower input costs.”

It’s worth noting that public companies are already bearing costs that private companies do not. One study⁵ put the costs of being publicly traded in the US at over \$2 million annually for companies with under \$1 billion in revenue and up to \$12 million for larger companies. The evidence developed in this study, which points to costs in the five figures for small companies and generally in the low six figures for many large companies, suggests that conflict minerals disclosure costs will not increase the cost of being publicly traded by a significant percentage. Thus, Section 1502 should not significantly affect the competitive position of public companies relative to private ones.

Green Research argues below that the potential benefits of the law go beyond the lower input costs cited by the SEC (which, in fact, may be illusory, at least in the short term). We also believe that being able to declare a company’s products DRC conflict free will itself become a competitive advantage in a marketplace that is becoming increasingly aware of the role of conflict minerals in the humanitarian situation in the DRC. A supplier’s ability and willingness to provide accurate and timely information is likely to emerge as a point of competitive differentiation: companies bound under Section 1502 will, all else being equal, give preference to such suppliers.

Among the companies that are directly affected by Section 1502, many companies talk about the competitive effects of the rules in terms of “leveling the playing field,” for better or worse. Here are the scenarios:

⁴ Securities and Exchange Commission 17 CFR Parts 229 and 249 [Release No. 34-63547; File No. S7-40-10]

⁵ Hartman, Thomas E. *The Cost of Being Public in the Era Of Sarbanes-Oxley*. Publication. Foley & Lardner LLP, 2 Aug. 2007. Web. 19 Jan. 2012.

Leveling the playing field—positive. Some firms have been committed to “responsible sourcing” for years. Of those, some have already dedicated resources to working with industry forums and international organizations to understand how to eliminate conflict minerals that are financing armed groups in the DRC or adjoining countries from their supply chains and to source only “clean” minerals from the region. These efforts, such companies say, are a cost they have been bearing that their competitors have not. Once all companies are required to follow the same rules, they will no longer be at a cost disadvantage. This is the point of view of Deborah Albers, principal social strategist at computer maker Dell.

Leveling the playing field—negative. Sourcing and supply chain management are potential sources of competitive advantage for companies. Companies can reap rewards from being more agile than their competitors; managing risk better; or securing lower-cost or higher-quality sources of supply. Some firms say that the regulations will lead to standardization of some supply chain practices within and across industries and increase transparency and information flow; this could potentially cost them some of the competitive advantage that they have retained to date through secrecy about the identity of suppliers and the costs of materials. An executive we spoke with, who requested anonymity, told us that his company has access to low-cost suppliers that his competitors may not be aware of. Cost is a key advantage in his market, where the value of the tin in his products accounts for 60 to 90 percent of their value. His company is concerned it may be required to reveal the identity of its low-cost sources of supply, undercutting a source of competitive advantage.

Leveling the playing field—neutral. From the point of view of a company that has not invested much in this issue to date, these rules may look just like more regulations to follow. The rules will apply to everyone, so there is no advantage, reputational or otherwise, in complying. This is the view of Applied Material’s Bruce Klafter.

Some who have followed the development of this issue see limits to how level the playing field will really become. Pierre-Louis Frouein of Alcatel-Lucent believes that customer requests will tend to be more demanding than what is required by the regulations. (Especially at large consumer brand companies where brand reputation is a valuable asset, company policy, and the requirements imposed on suppliers, often exceed regulatory requirements when it comes to health, safety and social responsibility.) So, argues Frouein, suppliers will continue to face different burdens as determined by customers. And he points out that regulations are unlikely to specify in much detail how due diligence is to be conducted, meaning it will be implemented diversely by many companies, placing a heavier burden on companies with complex supply chains than with small ones.

It is clear that companies with larger, more complex supply chains will face greater due diligence burdens than those with simpler supply chains. But overall, Green Research expects due diligence standards and customer requirements to converge over time. We have already seen that companies that have been following the conflict minerals issue for a year or more and that are well familiar with the legislation and with the actions of industry groups such as the EICC and GeSI tend to share assumptions, have a similar sense of what is required of them, and tend to expect the costs of

compliance to be manageable. We therefore expect industry to coalesce around some common approaches for conducting due diligence as well.

Costs of Compliance

Our research suggests that costs for individual companies will vary widely depending on the size and complexity of the company and its supply chain; and the sophistication of its existing supply chain processes and systems. Companies with state-of-the-art supplier management systems and practices and deep supplier relationships, may have a lower cost burden than companies with more rudimentary supply chain management practices. Costs for most companies seem likely to be a modest increment above what they already spend on supply chain management and reporting based on what we know today.

Costs Include both One-Time and Recurring Expenses

Table 2 Components of Cost

One-Time	Recurring
Consultants	Internal supplier management/compliance auditing
Internal teams	Third-party auditing fees
Systems enhancements	Increased raw materials costs
<ul style="list-style-type: none"> Enhance/modify ERP systems Other computer planning/tracking systems used in production planning & management 	Supplier training
Development of training materials	Staff training
Contract development and legal review	

Costs fall into two broad categories: one-time costs and recurring costs. One-time costs cover the analysis, planning, policy making, program management, systems enhancements, development of training materials for suppliers and staff and legal review. Some companies are engaging consultants for services ranging from strategy and operations design to systems integration. Recurring costs cover the ongoing operation of the compliance program, which includes periodic due diligence and annual reporting. These costs generally include internal supplier management/compliance auditing and third-party auditing fees. An open question at the time of this publication is what impact the new rules will have on raw materials costs. On the one hand, the DRC accounts for a relatively small share of the global supply of any of the regulated minerals. On the other hand, the effort necessary to earn the label “DRC conflict free” may justify price increases on the part of some suppliers.

Recent Cost Estimates Vary Widely

Table 3 National Association of Manufacturers Cost Estimate (per Company)

Item	Cost	Recurrence
Changes to corporate compliance policies and supply chain operating procedures (\$50 per hour; 2 hours per supplier; 2000 suppliers)	\$200,000	One time
Systems changes Depending on size & complexity	\$1 million to \$25 million	One time

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Audit of conflict minerals report (\$25K for small, non-listed companies)	\$25,000 to \$100,000	Annually
implement risk-based programs that use company control processes to verify that suppliers are providing credible information and pushing legal obligations upstream half hour per supplier; \$50 per hour; 2000 suppliers	\$50,000	Annually
Creation and filing of annual report	Not estimated	Annually
Increased cost of the minerals as demand for DRC conflict free grows, and the increased cost of parts and components from suppliers	Not estimated	Annually

The National Association of Manufacturers (NAM) issued an estimate⁶ of the costs of compliance that attracted a lot of attention because of the large numbers it proposed: \$8 billion to \$16 billion industry-wide. The NAM analysis estimated one-time compliance costs per company would range from \$1.2 million to over \$25 million, with the biggest costs related to updating IT systems. It estimated recurring costs at \$75,000 to \$150,000 per year, not including the costs of creating and filing annual conflict minerals reports and any possibly higher minerals costs.

Green Research believes the NAM estimate significantly overstates the costs most companies will incur, especially the costs of updating IT systems. We found in our interviews that once companies had reflected on exactly what was required of them, they considered the effort of updating their IT systems to be a relatively modest burden. J. Scot Sharland, the executive director of the Automotive Industry Action Group (AIAG), a body that works to drive costs out of the automotive supply chain by developing technical standards and harmonized business practices, agrees. Once companies decide how they want to support the new requirements, “this is just an incremental change,” he said. It’s impossible to put a precise price tag on the IT systems changes needed because most companies haven’t yet done the detailed analysis needed to specify the technical changes. However, at other companies we spoke with, and according to the other estimates presented below, systems-related costs are likely to be much more modest than the NAM estimates.

It’s worth noting too that many companies have discovered that only a fraction of their suppliers actually use tin, tungsten, tantalum, gold or their derivatives. Once they have identified the relevant subset of suppliers, they find their costs more modest than if their due diligence had to span their entire supply base.

Table 4 Tulane University Cost Estimate (per Company)

Item	Cost	Recurrence
Changes to corporate compliance policies and supply chain operating procedures (assumes mix of consulting an internal resources and 40 hours of effort for small companies; 100 hours for large companies)	\$3,500 to \$6,500	One time
Systems changes Depending on size & complexity, based on an IPC survey	\$205,000 to \$1 million	One time

⁶ National Association of Manufacturers [comment to the SEC](#), March 2, 2011.

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Audit of conflict minerals report (\$25K for small companies; only listed companies will require them)	\$25,000 to \$100,000	Annually
implement risk-based programs that use company control processes to verify that suppliers are providing credible information and pushing legal obligations upstream (included in first item)	N/A	
Creation and filing of annual report (included in first item)	N/A	

A study at Tulane University analyzed the NAM estimates and produced its own analysis and cost estimates⁷ that calculated one-time costs ranging from about \$208,500 to over \$1 million, with most of that attributed to cost of systems modifications. In this estimate, systems costs are an order of magnitude lower than in the NAM estimate presented above. The Tulane study also makes the point that only listed companies would be required to obtain audits; non-listed companies' costs will therefore be lower. It also suggested that the NAM estimate overstated the IT costs faced by a typical company because, according to the IPC study Tulane cites, "anticipated costs for information technology modifications ranged from 12,500 to 750,000 dollars." Based on our executive interviews, we would concur; it appears that typical IT costs will tend to be on the lower end of this range for most companies.

Table 5 Claigan Environmental Cost Estimate (per Company, \$1B Companies)

Item	Cost	Recurrence
Corporate compliance		
Legal/organization/conflict minerals report	\$60,000	Year 1
Program management (1/4 person for 1 year)	\$38,000	Year 1
3rd party audit	\$15,000	Year 1
Data Gathering in the supply chain		
2000 suppliers x \$40 per supplier	\$80,000	Year 1
Software		
IT systems \$40K	\$40,000	Year 1
IT Support (1/4 person for 4 months)	\$10,000	Year 1
Aggregate ongoing costs (year 2)	\$114,000	Year 2

Product compliance consultancy Claigan Environmental prepared its own cost estimates⁸, putting first-year costs at \$228,000 for companies with \$1 billion in revenue. It estimated costs for the largest companies (with \$10 billion or more in annual revenue) at \$813,000. Costs are estimated by Claigan to drop by half in each of the succeeding two or three years after the first full year of compliance, as growing experience reduces the effort required to obtain reliable information from the supply chain. The relative magnitude of the costs shown in the Claigan estimate are aligned with what we found in our interviews: that the effort to gather reliable data from supply chain partners is likely to be more costly

⁷ Bayer, Chris. *A Critical Analysis of the SEC and NAM Economic Impact Models and the Proposal of a 3rd Model*. Rep. Tulane University, 17 Oct. 2011. Web. 2 Jan. 2012.

⁸ Claigan Environmental [comment](#) to the SEC on Dec. 16, 2011

initially than any systems changes required. Most companies we spoke with agreed with the proposition that the cost of collecting information from suppliers would decline sharply over time as the format of customer requests became standardized and as suppliers gained experience responding to them.

In February 2011 the IPC, a trade group for the electronic interconnect industry, surveyed⁹ its members and found median internal staff due diligence effort estimates ranging from 80 to 2280 hours for the first year. At \$100 per hour that is the equivalent of \$8,000 to \$228,000 in due diligence costs in the first year. The IPC survey indicates that the electronics manufacturing services (EMS) companies account for the high end of the range. While we do not know which companies responded to the IPC survey, the EMS industry is dominated by very large companies such as Jabil (over \$16 billion in revenue), Flextronics (around \$30 billion) and Foxconn (\$150 billion), which probably accounts for the higher median cost estimates. Forty-three percent of the respondents to the IPC study were in other segments than EMS, and these segments reported median effort estimates of just 80 to 1,301 hours.

Besides cost concerns, some small companies are concerned that they will have limited ability to compel their suppliers to provide them with information they are required to collect to fulfill their due diligence obligations. Small buyers may indeed have limited leverage over their suppliers. However, once a supplier collects the information, the cost of sharing it with customers large or small is negligible. Small buyers may also benefit from the influence exerted over their suppliers by larger buyers who use the same supplier base and who will have more leverage to request the necessary information.

Bruce Calder, vice president of consulting services at Claigan gave us some specific examples of conflict minerals compliance projects the company has undertaken for clients. A \$30 million publicly traded electronics company hired Claigan to handle its conflict minerals compliance obligations at a cost of \$10,000 to \$15,000, including the production of a conflict minerals report. An independent, third-party audit of the simple report will cost a just a few thousand dollars more, estimates Calder. A \$2 billion maker of consumer products will incur fees between \$30,000 and \$50,000, including minor work to modify information systems. Calder notes that this company's products are relatively simple; a company of a similar size with more complex projects, such as an aerospace component maker, might see fees of up to \$100,000, he believes.

The SEC's own estimate¹⁰ of the annual cost burden works out to a cost for individual companies that ranges from about \$14,500 for those not required to file a conflict minerals report to about \$53,000 for those that are required to file one. These figures are based on an aggregate estimate of \$71,243,000 industry-wide in professional services fees and 153,864 hours of company personnel effort for "collecting the information, preparing and reviewing disclosure, filing documents, and retaining records." At \$100 per hour, internal labor costs would be \$15,386,400, bringing the total cost to \$86,629,400 spread over an estimated 5,994 companies, or about \$14,500 per company. In addition, the SEC cited third-party estimates that put the aggregate cost of due diligence at \$16.5 million, which

⁹ IPC. *Results of an IPC Survey on the Impact of U.S. Conflict Minerals Reporting Requirements*. Rep. IPC, Feb. 2011. Web. 2012.

¹⁰ 17 CFR Parts 229 and 249 [Release No. 34-63547; File No. S7-40-10] RIN 3235-AK84

would be shared by an estimated 1,199 issuers (or about \$14,000 each) and \$25,000 per company for the audit of a conflict minerals report. The SEC estimate doesn't account for inevitable one-time costs relating to analysis and systems and probably understates the costs most affected companies would bear, especially larger ones.

Below is a comparison of the estimates discussed above.

Table 6 Comparison of Various Per-Company Cost Estimates

Estimate	One-Time Cost	Ongoing Annual Cost
SEC, company average	N/A	\$14,500 to \$53,000
NAM, excluding creating and filing conflict minerals reports	\$1.2 million to \$25 million	\$75,000 to \$150,000
Tulane	\$210,000 to \$1 million	\$25,000 to \$100,000
Claigan, \$10 - \$100 million company, 1 st and 2 nd years	\$21,000	\$10,500
Claigan, a \$1B company, 1 st and 2 nd years	\$228,000	\$114,000
Claigan, \$10 billion company, 1 st and 2 nd years	\$813,000	\$406,000

Cost Information from Interviews

In our interviews we found a range of attitudes and awareness surrounding the cost of compliance with the Section 1502 rules. Among companies that have been engaged with this issue for a year or more, some feel confident in their estimates of the eventual cost of compliance, despite the fact that final SEC rules have yet to be issued; others are unable or unwilling to speculate for fear of surprises in the final SEC rules.

Our interviews, and comments from other sources such as consultant Claigan Environmental, reveal that, based on what companies expect the final SEC rules to say, compliance costs for small companies will be relatively modest due to the smaller scale and lower complexity of these businesses. Some small companies we have spoken with have been talking to suppliers for one to two years already. Through persistent engagement with their suppliers they have been working to increase their rate of response to questionnaires about mineral origins and to improve the quality of information their suppliers provide. They are making low-cost modifications to internal information systems. These companies characterize the cost as modest to negligible. After working on this issue for a couple of years now, John Sharp of TriQuint Semiconductor estimates he'll need to hire one person to track and manage supplier information related to conflict minerals, and will need some low-cost modifications to the system they use for compliance with the Restriction of Hazardous Substances (RoHS) European Union directive. He thinks that this, plus the cost of an audit, should enable the company to meet its obligations.

Another company, which did not want to be named in our study, told us that, based on their experience following this issue over the last couple of years, they believe their compliance costs will be limited to travel expenses and staff time associated with participating in a pilot study with the OECD and costs

incurred through billing some management time to this issue. They already have the supply chain software programs and due diligence procedures in place that will require only slight changes to meet their needs.

Other companies, especially large ones, are taking a more formal approach and some expect their costs to be much higher. They have assembled large, cross-functional teams of 7 to 10 people or more to work part time on the policy and operational implications of the regulations in addition to their usual day-to-day responsibilities. They've retained high-end management consultants for one-time projects to help design their compliance programs. And they rely on complex, enterprise-wide supply chain systems that may be costly to modify.

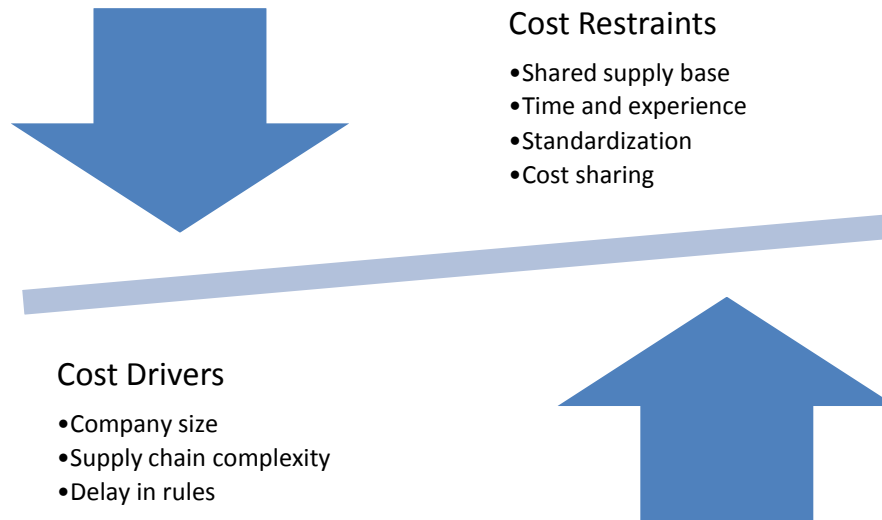
Johnson & Johnson, a \$60 billion maker of consumer health care and personal care products, is a case in point. The company expects to spend about \$1 million with a major consulting firm and has fielded an internal team consisting of a full-time program director and about a dozen others part time. The team will grow and shrink as needed; the supply chain staff is expected to be dedicated to this full time for a period. Their project plan calls for them to have built a sustainable compliance process for the estimated 250 affected suppliers within 6 months. "It's not going to be cheap," said Vic Chance of Johnson and Johnson, "but a lot of the costs will get buried in the normal cost of doing business." According to Xerox environmental health and safety manager Andy Cosgrove, that \$21 billion company has about 1,000 direct suppliers. Cosgrove says the company will hire an outside firm to collect and process the necessary information from their suppliers at a cost of about \$100,000, or \$100 per supplier.

Scott Lercel of Target Corporation, a retailer with \$67 billion in annual revenues, says the company had investigated bringing in a consultant to help define a compliance process, but as this is an industry wide initiative they opted to work closely with the Retail Industry Leaders Association (RILA), a retail trade group, which is coordinating an effort on behalf of multiple retailers. RILA will help define consistent practices for the retail industry. The consulting engagement will provide a detailed roadmap Target can use for planning further internal work, which includes defining the company's internal processes and modifying information systems. Lercel figures his ongoing conflict minerals compliance costs may be at least \$600,000 per year, including the addition of one or two members to his 50-person global social compliance team, auditing and training. But this is just an early estimate.

One factor that will influence a company's costs is the sophistication of its existing supply chain management systems and methods. Brian Martin, senior director of product environmental compliance at Seagate, an \$11 billion maker of electronic data storage devices, is undaunted by the cost of Section 1502 compliance. "If we had to spend a whole lot of money on this, it means we've not been managing our supply chain correctly anyway," he says. Ford Motor Company, whose 2010 revenues were about \$128 billion, has a similar perspective. The company has long maintained the capability to track ancillary information about the components in its vehicles such as toxins, emissions and hazardous materials. David Berdish, manager of sustainable business development at Ford says the company will rely on its existing staff to collect conflict minerals information, enhancing its procedures at no incremental cost. It estimates it will spend just \$100,000 to \$200,000 to modify its core database. Intel says it expects it to take one software developer working just three months to make the system changes it needs to comply.

Factors that Will Moderate Costs

Figure 3 Drivers of Compliance Cost



While compliance costs will vary widely by company type and size, there are several factors that can help to restrain costs. Companies and industry groups should take maximum advantage of these factors in order to reduce the costs of Section 1502 compliance.

Shared Supplier Base

With Section 1502 imposing a common set of requirements, suppliers are beginning to find that they are fielding similar if not identical information requests from multiple customers. Harmonized information requests will lower suppliers' costs to respond, and will reduce the effort their customers need to follow up and quality check supplier information.

Time and Experience

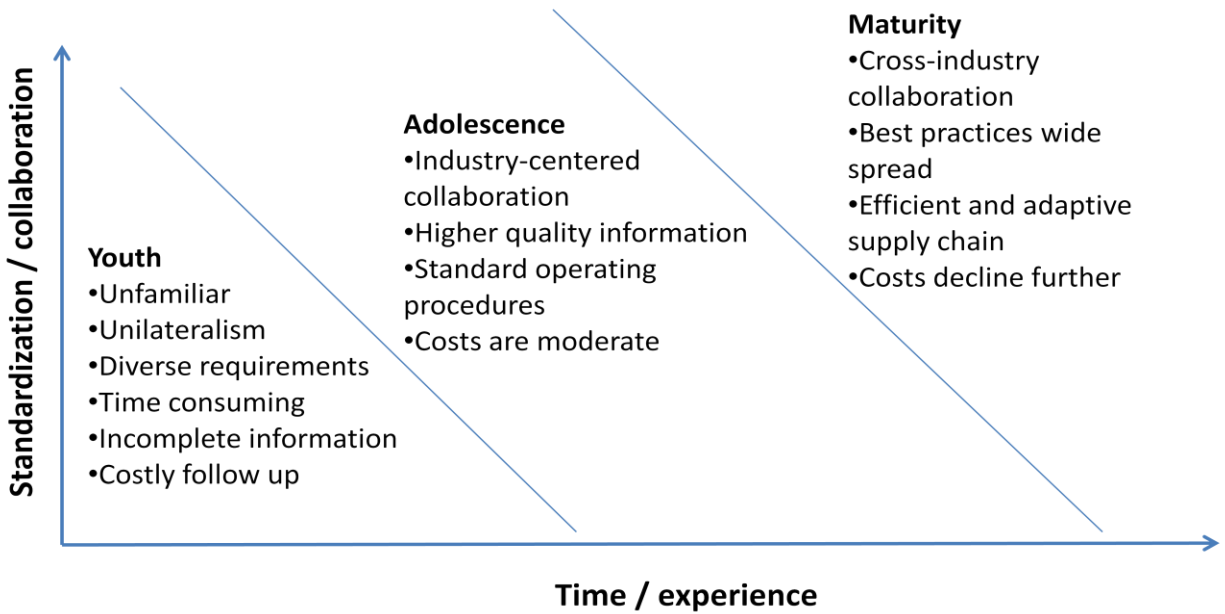
Several companies told us that suppliers sometimes found it challenging to respond to conflict minerals information requests initially, but their responses improved over time. This phenomenon will broaden as those same suppliers receive requests from multiple customers and will improve the response rates and response quality over time. TriQuint Semiconductor found this to be the case, and the Tulane study makes similar point.

Standardization of Requirements, Processes, Data Formats

Within companies and across industries, as processes and data formats become standardized, the effort necessary to collect, assure and report information will drop over time. After final rules are issued by the SEC, companies will be able to put in place stable supplier policies that will reduce suppliers' costs as well. Seagate says its suppliers enjoy the benefit of its own comparatively stable supplier policies. Brian Martin says suppliers tell Seagate: "You haven't changed your requirements in two years. Do you know how much money you saved us?"

Collaboration through Industry Groups

Figure 4 Impact of Collaboration and Experience on Costs



Industry groups have an important role to play in keeping costs low. At a tactical level, they can help companies share the costs of services such as consulting, as RILA is doing. At a more strategic level, they can standardize data formats and industry-wide practices and processes, which can dramatically reduce the cost and effort of compliance. The Electronics Industry Citizenship Coalition (EICC) and the Global e-Sustainability Initiative (GeSI) have provided significant leadership of this type. IPC, another electronics industry group, RILA, in the retail industry, the Automotive Industry Action Group (AIAG) and others have been stepping up their coordination with each other on behalf of their member companies.

Business Benefits of the Regulations

Government regulations are intended to provide benefits to society, usually at a cost to business. But regulations often deliver business benefits as well. A 2008 study¹¹ of the impact of the Restriction of Hazardous Substances (RoHS) European Union directive, for instance, found that 18 months after EU RoHS took effect about half of affected companies surveyed saw one or more businesses benefit from the compliance process. Similarly, about a third of the executives we interviewed cited a variety of business benefits they expected to reap from the Dodd-Frank conflict minerals regulations beyond whatever impact they may have on the humanitarian situation in the Democratic Republic of Congo.

Leveling the Playing Field

A number of companies had committed to working to ensure that their purchases do not fund conflict even before the Dodd-Frank legislation was signed into law. These companies voluntarily took on a burden that their competitors may not have faced were it not for the legislation. Deborah Albers of Dell

¹¹ Technology Forecasters Inc. *Economic Impact of the European Union RoHS Directive on the Electronics Industry*. Rep. Consumer Electronics Association, 21 Jan. 2008. Web. 19 Jan. 2012.

told us that the company's early engagement with this issue put them "on an island with five or six responsible companies who cared about these issues. With the legislation, suddenly everyone is involved and it's no longer a competitive disadvantage." Thus, from Dell's perspective, a benefit of the legislation is a leveling of the playing field.

Improved Risk Management

Effective supply chain risk management depends on obtaining and analyzing high-quality information about the supply chain. Since these regulations will require companies to obtain richer and deeper information about their supply chains than they had before, the potential to improve risk management is there, though not necessarily for every company.

"The more transparency that we have in our supply chain, the lower the risks for us," said Albers of Dell. Vic Chance, a senior vice president of supply chain at Johnson & Johnson concurred. "The more that you understand the full extent of your supply chain, that helps you to craft business continuity plans that are more robust....There's no argument about the reduction in risk" that compliance will lead to, said Chance. But, he added, "I don't know at the end of the day that this will give you a whole step function change in that visibility."

Bob Young, Vice President Purchasing Vehicle Parts and Materials at Toyota Motor Engineering & Manufacturing North America, also sees a potential risk management benefit—with reservations. "The risk management benefit depends on what the final regulations are and the tool they develop. If the tool is user friendly and allows visibility there would be a risk management benefit."

More information doesn't automatically equal lower risk, however. The risk management benefit is hypothetical unless companies use the additional information properly. Companies should design their conflict minerals compliance programs so that their systems are tracking and presenting information in ways that are useful for company risk managers.

Innovation

Students of innovation have long recognized a paradox: freedom can impair creativity, while constraints can unlock it and give rise to innovation.¹² Regulations are a form of constraints whose effects on innovation have been extensively studied. Some studies¹³ have concluded that properly designed regulations can indeed foster innovation. While a thorough analysis of the innovation-stimulating potential of Dodd-Frank Section 1502 is beyond the scope of the current study, it is worth noting that we can already see some innovation taking place in response. A case in point is the ["Solutions for Hope" Project](#). That project was jointly undertaken by Motorola Solutions, Inc. and AVX Corporation, to source conflict-free tantalum from the DRC and create conflict-free tantalum capacitors for the electronics industry. This pilot project not only provides a proof-of-concept of DRC-sourced conflict-free minerals

¹² Stokes, Patricia D. *Creativity from Constraints: The Psychology of Breakthrough*. New York: Springer Pub., 2006. Print. provides a good exploration of this idea, as does: Kaufman, Scott Barry. "How Constraints Force Us to Be More Creative." *Huffington Post*. 9 June 2011. Web. 19 Jan. 2012.

¹³ Hogan, Tim. *Regulation and Innovation: Evidence and Policy Implications*. UK: Department for Business Enterprise & Regulatory Reform, 2008. Print. BERR Economics Paper No. 4.

but positions AVX as a provider of a new product line of conflict-free components. Green Research believes that the regulations will create opportunities for other companies or industry groupings to innovate and create business value as well.

Improved Supply Chain Performance Management

Supply chains may be configured to optimize efficiency, responsiveness, or some combination of the two. No matter how the supply chain is configured, effective supply chain management is essential to delivering good business results, and information is essential to effective supply chain management. Seagate, an \$11 billion maker of electronic data storage devices, takes pride in its supply chain management prowess, and attributes that prowess partly to its information management. “We have the most comprehensive materials compliance database in the industry,” says Brian Martin of Seagate. Martin believes that by pushing companies to collect and track more information about their supply chains, the conflict minerals regulations present an opportunity for companies. “The more in depth understanding you have of your supply chain,” he says, “the more effectively you can manage the performance of your supply chain.” Of course collecting information and using it effectively are two different things. Companies will need to look for innovative ways of taking advantage of the new information they are gathering as part of their new compliance obligations.

Support for Meeting Customer Requirements

A number of companies we spoke with told us that they were working to ensure their products are DRC conflict free regardless of any regulatory requirements to do so because their customers were insisting on it. They faced challenges, however, in explaining their need for chain-of-custody information to some of their suppliers. And their suppliers were burdened by diverse and incompatible customer information requests. Dodd-Frank now promises to create some uniformity in what information is requested of suppliers, and it backs up these requests with a legal mandate to obtain the information. Pierre-Louis Frouein of Alcatel-Lucent believes that Dodd-Frank will fortify customers’ requirements with a legal mandate, making the whole industry and supply chain sensitive to them. If all customers make a request, it is more likely to be met than if only one customer is making it, he notes.

Supporting Future Requirements

The conflict minerals legislation was crafted in the context of a broad industry trend that is leading to ever greater calls for supply chain visibility, traceability and accountability. Just recently, for instance, a number of companies have been pressed to identify where their fuel suppliers obtain their petroleum and to avoid sourcing fuel that originates in Canadian tar sands.¹⁴ Many of the companies we spoke with foresee other requirements on the horizon, and consider their Dodd-Frank requirements work to be an opportunity to prepare. “Conflict minerals is just a start of something that I think is going to be the future of manufacturing, and that is supply chain transparency,” said one executive we spoke with, who did not want the comment attributed to him. “We’re hoping we can take this model and adapt it for other categories....It definitely will help create a platform that will support future demands for increased transparency and accountability.” Sandy Merber, Counsel, International Trade Regulation and Sourcing

¹⁴ Schatsky, David. "Knowing Your Supply Chain from a Hole in the Ground." Web log post. *Green Research Blog*. Green Research, 4 Jan. 2012. Web. 19 Jan. 2012.

at General Electric noted at a recent conference¹⁵ that “more and more companies are going to be called on to look deeper into their supply chains for this and other reasons.” He said that General Electric intends to design its compliance program to be flexible so it can accommodate new transparency requirements it expects will materialize in the future.

Intangible Benefits

Beyond the potential tangible benefits of compliance, a number of companies cite certain intangible benefits to compliance. John Sharp of TriQuint Semiconductor, a rapidly growing \$880 million maker of radio frequency solutions, has been working on this issue for over two years. Sharp believes the conflict minerals due diligence that will be required “increases your confidence in your company’s impact on people around the world. That’s an important benefit,” he says. Some company representatives feel that intangible benefits may generally not carry much weight in company decision making, however. Tim Mohin at \$6.5 billion chipmaker AMD acknowledges the general benefits of “building relationships, understanding the totality of the supply chain,” but avers that those benefits are “not that compelling in the face of the uncertainty, complexity and cost of preparing to comply with these new regulations.”

Sourcing Minerals of Congolese Origin

Executives’ attitudes about the pros and cons of sourcing minerals of Congolese origin range widely and tend to be expressed with some caution. Many makers of finished goods or high-value components are unaccustomed to considering the source of the raw materials used in their products. This is expressed in various ways. The source of the minerals is “immaterial,” says Bruce Klafter at Applied Materials.

Some expressed the view that developing a robust and reliable conflict-free supply of minerals from the DRC would be difficult. Bill Millman of AVX believes that the quantity of material coming out of DRC from non-conflict areas is going to be very small in the near term. “To grow requires a huge amount of expansion, education, training, capacity building,” he said. And many voiced the opinion that the development of a legitimate Congolese mining sector was dependent on many factors over which the companies themselves had little influence, such as the success and expansion of the conflict-free smelter program and the improvement of the government and military situation in Congo.

Though the challenges are great, and their direct influence may be limited, some executives do see benefits in sourcing minerals that originate in the DRC. “We’d like to see minerals coming out of the DRC,” said Gary Niekerk of Intel, citing the humanitarian benefits of supporting a mining sector there that does not fuel conflict. Vic Chance of Johnson & Johnson says the company’s intention is to allow trade with smelters “that have the right pedigree” so as not to needlessly cut off the DRC and surrounding regions. Others see straight-forward business advantages to developing the Congolese mining sector: “The more sources, the greater the availability of minerals,” one executive declared.

¹⁵ *Brookings.edu*. Proc. of Transparency, Conflict Minerals and Natural Resources: What You Don't Know About Dodd-Frank, National Press Club, Washington, D.C. Brookings Institution and Global Witness, 13 Dec. 2011. Web. 19 Jan. 2012.

Advice

The Section 1502 requirements will present businesses with both costs and benefits. The costs are guaranteed (if not fully understood yet), while benefits need to be cultivated. It will take planning and collaboration to manage costs. And it will take some vision to make the most of the potential benefits. This section summarizes our advice to companies affected by the Section 1502 rules.

Collaborate and Standardize to Minimize Costs

The challenge and the opportunity of the conflict minerals regulations is that supply chains can be large and complex. Any solutions require collaboration, not only with suppliers, but with other companies who may share suppliers, and other industries. Companies should be sure they are taking full advantage of opportunities to work with and through industry groups such as EICC, GeSI, IPC, the Responsible Jewelry Council, the World Gold Council, AIAG, and cross-industry groups and public-private partnerships such as the Public-Private Alliance for Responsible Minerals Trade, recently launched by the US Department of State with the early involvement of over a dozen companies. The goal should be developing infrastructure and capacity for a responsible minerals trade, including standardized processes and formats and data repositories wherever commercially appropriate.

Use Regulations as Innovation Opportunities

Regulations are a form of constraint, and constraints have the potential to unlock creativity and innovation. Companies should involve creative thinkers, product development staff and strategists in the Section 1052 process to look for innovation and new business opportunities. Companies should consider the following questions as they frame their response to Section 1502:

- What capabilities does the new information we are collecting give us?
- How is the competitive landscape shifting, and how can we take advantage of it?
- Are there new product or sourcing opportunities open to us?
- Is this a time to explore streamlining our supply base?

Leverage the Information to Improve Risk Management

As companies achieve compliance with Section 1502 they will be able to obtain more information than ever before about the totality of their supply chains. Rather than just “checking the box” of compliance, companies should assess their risk management processes and look for opportunities to enhance them with this new information. After the Japan tsunami and the flooding in Thailand, for instance, some companies are paying increased attention to the risks of geographic concentration in their supply base and are starting to invest in developing contingency plans in the event of geography-related supply interruptions. Others are contemplating the adequacy of their insurance coverage. In a recent survey¹⁶ corporate risk managers expressed concern over their suppliers' sources. Thirty-five percent said they are very concerned about upstream supply chain exposures; another 48 percent said they are somewhat concerned. Possessing high-quality country-of-origin information may even help companies lower the

¹⁶ Federation of European Risk Management Associations. *Survey Confirms Concerns with Supply Chain Insurance*. FERMA. FERMA, 21 Dec. 2011. Web. 19 Jan. 2012.

cost of obtaining contingent business interruption insurance, according to Bindiya Vakil, president of Resilinc, a supply chain risk management systems vendor.

Educate Customers

There are signs that coverage of the topic of conflict minerals is increasing in the consumer media. Given the complexity of this issue, it will be easy for customers to misunderstand companies' actions and commitments in this area. All companies with any exposure to this issue should be sure to educate their customers about the problem, what the company's response is and will be, how that links to the company's broader strategy and values and what the company's and the industry's progress are to date. In particular, it is vital that companies that are showing progress toward becoming DRC conflict free and are committing to sourcing minerals from legitimate Congolese sources do not get penalized if they are unable to immediately declare all of their products conflict free.

Build for the Future

The days of selling products containing substances of indeterminate origin produced under unknown conditions are coming to an end. The trend toward greater supply chain visibility and accountability, driven by rising expectations of responsible corporate behavior on the part of customers, investors, employees, NGOs and regulators, is set, as a number of our interview subjects agree. Section 1502 presents an opportunity for companies to think about the impact of this trend on their businesses, and design their processes and systems for the long term. Processes should support country-of-origin tracking; maintenance and auditing of chain-of-custody information; and tracking at the company and the part or product level. Companies should be prepared to conduct robust—and transparent—due diligence processes to ensure they really know their supply chains and can credibly attest that their purchases are not being used to fuel human rights abuses. And there will be new, as yet unforeseen requirements. So flexibility should be a prime design goal.

Study Methodology

The core of Green Research's products is the perspective and opinion of Green Research's professionals. Green Research analysts are immersed in the industries they cover through ongoing contact with corporate, technology, governmental and NGO leaders; daily study of trends and events in clean tech, alternative energy and sustainability; and their collective professional experience.

Analysts' perspectives are enhanced and refined through Green Research–designed market research. Green Research uses many data research tools, including consumer surveys, systematic polling of leading industry executives and a rigorous approach to building market forecasting models.

This report benefited from interviews with executives at over 20 companies affected by Dodd-Frank Section 1502. All have global operations and represent a variety of industries including electronic components, computers, consumer health care, automotive and retail. Despite multiple attempts, we were not able to secure interviews with representatives of the jewelry industry. The companies interviewed ranged in size from about a half billion dollars to over \$120 billion in annual revenues. We also spoke with several industry associations, consulting firms and software providers. Green Research

recruited the interview participants via e-mail or telephone solicitation. In some cases, the companies interviewed had supplied the SEC with comments on the legislation and the proposed rules. Global Witness provided introductions to some of the companies. Interview subjects were told about the purpose of the study and, if they asked, the identity of the study's sponsor. Interviews were conducted in December 2011 and January 2012.

In addition to the interviews, we consulted a range of other sources including the language of the Dodd-Frank legislation, SEC documents, comments submitted to the SEC, company websites and reports by industry associations, NGOs and research groups.

While this study is sponsored by Global Witness, Green Research conducted the research independently. The findings are our own.

Companies Interviewed for this Report

Green Research would like to thank the following companies for sharing information that appears in this report:

- Anonymous
- Advance Micro Devices Inc.
- Alcatel-Lucent
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- ArcelorMittal
- Automotive Industry Action Group (AIAG)
- AVX Corporation
- Claigan Environmental
- Dell
- Elm Consulting Group International LLC
- Ford Motor Company
- Intel
- Johnson & Johnson
- KEMET Corporation
- PTC
- Retail Industry Leaders Association (RILA)
- Resilinc
- Seagate Corporation
- Target Corporation
- Toyota Motor Engineering & Manufacturing NA
- TriQuint Semiconductor, Inc.
- Xerox Corporation

About Green Research

Green Research is a research, advisory and consulting firm focusing on clean tech, alternative energy and corporate sustainability. We provide best practices and benchmarking research to sustainability executives and market analysis to vendors of clean tech and sustainability products and services. To deliver successful projects, we draw on our network of industry experts, a proven research methodology and decades of experience in market research and technology strategy consulting. For more information about Green Research visit greenresearch.com, e-mail info@greenresearch.com or call +1 646-783-8337.



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