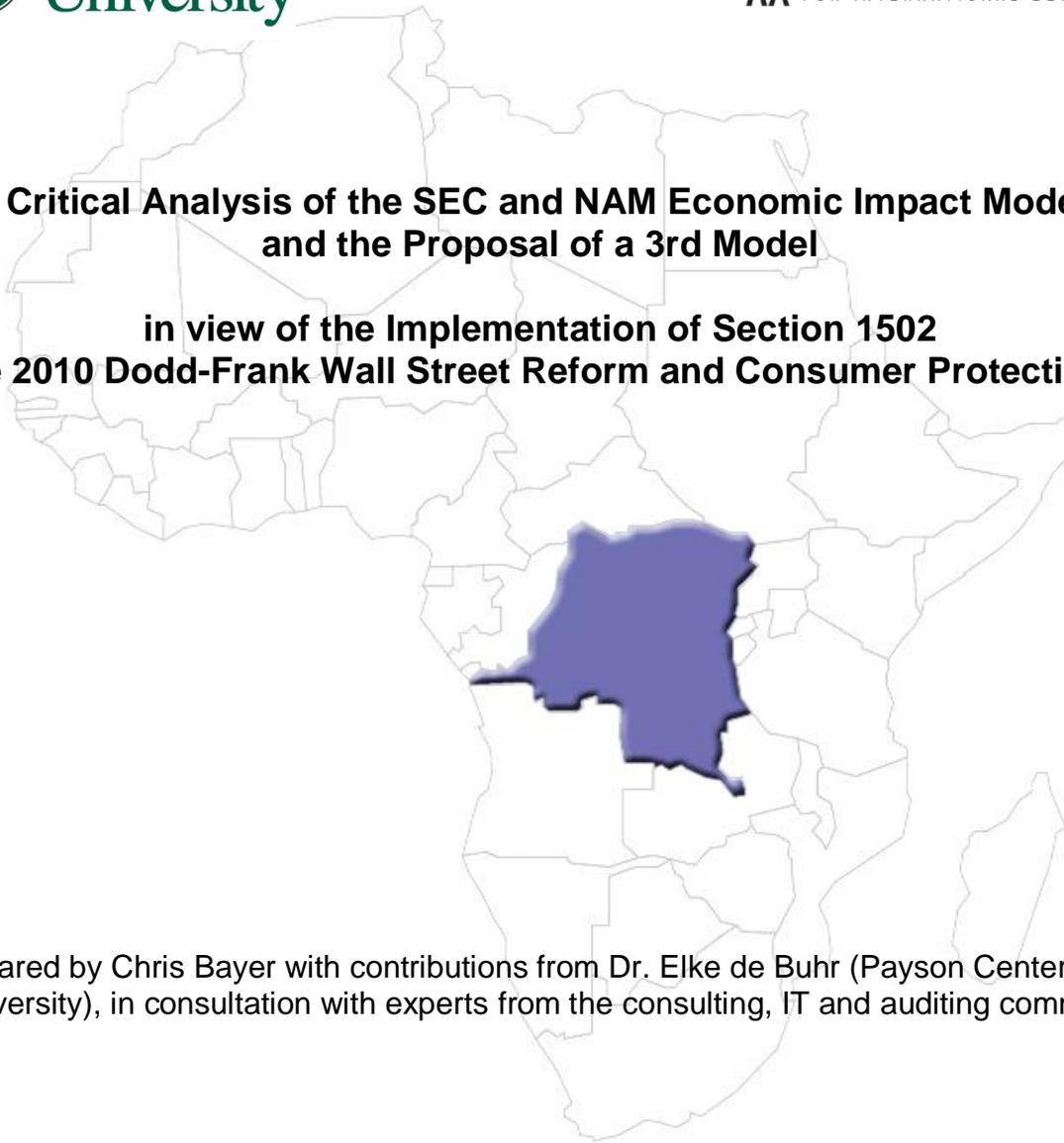




**A Critical Analysis of the SEC and NAM Economic Impact Models
and the Proposal of a 3rd Model**

**in view of the Implementation of Section 1502
of the 2010 Dodd-Frank Wall Street Reform and Consumer Protection Act**



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I. Executive Summary

The Democratic Republic of Congo (DRC) holds vast resources of minerals, and many of the mines are controlled by parties that have perpetrated severe human rights abuses in the region. In an effort to enhance transparency in the minerals supply chain, Section 1502 of the 2010 *Dodd-Frank Wall Street Reform and Consumer Protection Act* mandates company disclosure of the mineral origin contained in their products. Pursuant to the charge of formulating specific regulation, the Securities and Exchange Commission (SEC) is in the process of drafting rules for this provision. A realistic economic impact estimate is important as the careful consideration of the most salient cost drivers informs the precise formulation of rules, which in turn enables implementation.

Our analysis shows that the published figure of \$71.2 million by the SEC underestimates the implementation cost, in part because it does not take into account the range of actors affected by the statutory law. In light of Section 1502, substantial traceability reforms would need to be implemented throughout the supply chain – from the mine to final product manufacturing – in order for disclosure to work.

On the other hand, the NAM estimate of \$9-16 billion overstates these costs by inflating the supplier number and not taking into account significant overlap in supplier/customer relationships, as well as cost efficiencies from existing (and developing) information exchange platforms.

We present a third model focusing on the burden to the affected issuers and their 1st tier suppliers estimating that the actual cost to and of implementing the law is \$7.93 billion. Almost half of the total cost – \$3.4 billion – would be met with in-house company personnel time, and the rest – \$4.5 billion – would comprise outflows to 3rd parties for consulting, IT systems and audits. Comparing the costs to the issuers vs. the suppliers, the bulk of the total costs – \$5.1 billion or 65% – would be incurred by the suppliers (the group not included in SEC’s analysis), while the smaller portion of the total – \$2.8 billion or 35% – would be carried by the issuers.

The implementation costs would however be borne by thousands of individual firms in lucrative industries such as the industrial, aerospace, healthcare, automotive, chemicals, electronics/high tech, retail and jewelry industries. Nevertheless, we regard Section 1502 as a “major” rule as its effect on the economy will exceed \$100 million per year.

II. Background

Due to the linkages between mineral extraction and the Second Congo War which has thus far directly and indirectly lead to the deaths of 5.4 million Congolese since 1998,¹ a

¹ Robinson, Simon. *The Deadliest War In The World*. Time Magazine. May 28, 2006.

groundswell of support for conflict-free minerals originating from central Africa emerged in recent years, largely led by civil society organizations such as the Enough Project, Global Witness, Raise Hope for Congo, Conflictminerals.org and Congo Siasa. For years, the mineral extraction sector in eastern Congo has been controlled by militia groups and foreign and domestic military forces, proceeds flowing into the informal market or benefiting neighboring countries rather than effectively translating into revenue which could strengthening the Congolese state and allowing it to assert control over its rich natural resources and the eastern regions of the country. A catch 22.

The US Conflict Minerals Act (Section 1502) in the 2010 *Dodd-Frank Wall Street Reform and Consumer Protection Act* is intended to help put an end to abusive labor practices and conflict in the DRC by requiring US registered companies to disclose whether the minerals they source originate from the DRC or its neighboring countries. In short, the goal of the law is to provide transparency of material origin and allow customers to make purchasing decisions based on that information. Moreover, companies in the mineral and metal sectors are collectively charged with taking responsible measures that identify and respond to risks – and in doing so help mitigate conflict and systemic human rights violations in Central Africa.

The four minerals from DRC mines or adjoining countries defined as “conflict minerals” in Section 1502(e)(4) of the Act are cassiterite (tin), columbite-tantalite² (tantalum) and wolframite (tungsten)³ – also referred to as the “3Ts” and gold. The act furthermore enables the U.S. Secretary of State to designate any other mineral or its derivatives as “conflict minerals” to be financing conflict in the DRC and neighboring countries.

According to figures and estimations compiled by the Enough Project based on sources including the DRC government and the U.S. Geology Survey, the DRC accounts for approximately 15-20% of global tantalum ore production, 6-8% of global tin ore production, 2-4% of global tungsten ore production, and less than 1% of global gold production.⁴ Thousands of manufacturers – ranging from Fortune 500 companies to companies with \$10 million in annual sales – in the industrial, aerospace, healthcare, automotive, chemicals, electronics/high tech, retail and jewelry industries are consumers of these metals, and thus affected by the new law.

Sponsored by Senators Sam Brownback, Russ Feingold, and Dick Durbin as well as Representative McDermott, the intended effect of the legislation is that the public disclosure of mineral chain of custody from extraction to production – and the prospect of steep fines for noncompliance – would discourage companies from supporting the production of “conflict minerals” but rather encourage ethical sourcing. The law however

<http://www.time.com/time/magazine/article/0,9171,1198921,00.html>

² Commonly referred to as “coltan,” a colloquial shorthand for columbite-tantalite, refers to the ore itself rather than a refined product.

³ Tungsten is also produced from another mineral (scheelite), but that ore and the tungsten derived therefrom is not within the scope of the law.

⁴ Enough Project. *A Comprehensive Approach to Congo's Conflict Minerals*. April 2009.

<http://www.enoughproject.org/files/publications/Comprehensive%20Approach%20to%20Congo's%20Conflict%20Minerals.pdf>

does not ban or prohibit the purchase/use of conflict minerals, nor are there any legal penalties for purchasing/using conflict minerals.⁵ There is also no mandate to find or evaluate alternative materials, suppliers or sources.

Recognition for urgently needed action also is expressed by the nation's largest trade association, the National Association of Manufacturers (NAM). In the introduction of the comments submitted to the SEC, NAM states: "We support the underlying goal of Sec. 1502 to address the atrocities occurring in the Democratic Republic of Congo (DRC) and adjoining countries and are actively working with other stakeholders to help address the problem."⁶ General Electric (GE) for example, the diversified industrial conglomerate ranked by Fortune as the 6th largest company in the U.S., is cognizant of the issue: "Recognition of this link between the minerals trade and the financing of armed groups in the DRC has moved companies like GE to identify their use of potential conflict minerals and find ways to sever the link between these minerals and the armed groups."⁷ Many corporations are consequently in the process of devising – some with the help of experts – compliance strategies based on the new law.

Companies however recognize that individual corporate action – in the absence of collective action – will not suffice. As Motorola, the co-chair of the Electronics Industry Citizenship Coalition (EICC) - Global e-Sustainability Initiative (GeSI), stated: "If the goal is to stop the flow of money to illegal armed groups then, like stopping the flow of water in a river, the dam must be built all the way across."⁸ GE agrees, positing that "companies with overlapping supply chains have greater influence over their suppliers when acting together, enabling them to encourage greater transparency and action."⁹

Even the DRC, arguably the biggest stakeholder in the matter, has appealed to the SEC to craft regulation that follows due-diligence guidance developed by the United Nations and the OECD, and to prevent the rules from causing a "*de-facto* embargo" on trade from the Central African nation.¹⁰

⁵ Section 1502(c) requires the Secretary of State, in conjunction with USAID, to develop "a strategy to address the linkages between human rights abuses, armed groups, mining of conflict minerals, and commercial products," which includes "A description of punitive measures that could be taken against individuals or entities whose commercial activities are supporting armed groups and human rights violations in the Democratic Republic of the Congo." As yet, no information has been made available concerning the punitive measures.

⁶ National Association of Manufacturers (NAM). *Comments submitted to the SEC*. March 2, 2011. <http://www.sec.gov/comments/s7-40-10/s74010-212.pdf>

⁷ General Electric. *Conflict Minerals and the Democratic Republic of Congo: Expanding Supply Chain Efforts*. August 24, 2011. <http://www.gecitizenship.com/conflict-minerals-and-the-democratic-republic-of-congo/>

⁸ Enough Project. *Getting to Conflict Free*. December 2010.

http://www.enoughproject.org/files/publications/corporate_action-1.pdf

⁹ Ibid.

¹⁰ Kavanagh, Michael. *Congo Government Asks U.S. to Use OECD Guidance for Conflict-Mineral Rules*. Bloomberg. July 28, 2011.

<http://www.bloomberg.com/news/2011-07-28/congo-government-asks-u-s-to-use-oecd-guidance-for-conflict-mineral-rules.html>

At the heart of the debate is the extent of the economic cost impact and how best to structure the regulations such that objectives are met without placing undue burden on actors who seek to conform to the law. While the SEC estimates that the cost to the affected companies would come to \$71.2 million, the National Association of Manufacturers (NAM) “believes that the proposed rule is a significant rulemaking and will cost U.S. industry between \$9-16 billion to implement.”¹¹ Part of the reason for this discrepancy is the general ambiguity in the current language of Section 1502 – which lends itself to a host of interpretations. Perhaps the biggest reason for the discrepancy between models is the question how many actors are affected by the new rules. While the SEC considers 20% of the 5,994 publicly traded companies will be required to implement all aspects of the law – an estimated 1,199 actors – it has not taken into consideration the number of privately held and supplier companies affected. NAM on the other hand claims that on average there are 2,000 suppliers to each issuer – theoretically 5,994 companies – and therefore close to 12 million companies could be affected.¹² As another example, the SEC and NAM are applying differing operational definitions of what constitutes relevant due diligence and what constitutes “audits.”

Currently, the SEC is drafting the “rules” for this provision which will clarify how companies should concretely implement the law. The challenge is how to mandate in favor of principles of transparency and accountability in the value chains that source minerals from the Congo and surrounding countries, however without excessively burdening the private sector actors and driving smaller enterprises out of business.

III. Objective of White Paper

On September 26, 2011, faculty members Dr. Elke de Buhr and Dr. Laura Haas at Tulane University’s Payson Center for International Development were contacted by Jessica Simon of Senator Durbin’s office with a specific request for help in providing a detailed estimate of what it would cost companies to implement the Congo Conflict Mineral Act. This request was met by a Tulane team agreeing to prepare this paper.

At the heart of the debate is how the SEC should calibrate regulation that implements the law in a manner consistent with the goals of the legislation without needlessly burdening industry and undermining American competitiveness.

The various possible regulation formulations function as parameters to determine the act’s economic impact. This paper analyzes and critiques both the SEC and NAM economic impact models – as both models contain significant shortcomings – and proposes a more accurate 3rd model. By honing in on the main deliverables under Dodd-Frank, focusing on actual costs, assigning fair valuations, and basing the extrapolation to

¹¹ National Association of Manufacturers (NAM). *Comments submitted to the SEC*. March 2, 2011. <http://www.sec.gov/comments/s7-40-10/s74010-212.pdf>

¹² as for example per NAM’s calculation on page 24 of their March 2011 comments to the SEC.

the macro-level on the best available figures, this model may help shed light on central issues at the heart of the discussion and inform the crafting of practicable regulation.

IV. Analysis of the SEC Economic Impact Model

A. Issue #1: Affected companies

SEC estimated that 1,199 companies will require a full Conflict Minerals Report (CMR). The method the SEC employed to derive this figure, as explained in its proposed rules,¹³ was to find the amount of tantalum produced by the DRC in comparison to global production (15% – 20%), then select the higher figure, 20%, and multiply that by the total number of affected issuers, which they stated is 5,994.¹⁴ By reasoning that since an estimated 20% of all minerals in question originate from the DRC, therefore only 20% of companies – 1,199 – would be affected by the new rules, the SEC committed a *non-sequitur*. For two principal reasons:

1) Conflict minerals are as omnipresent as the ballpoint pen – and that is not just a metaphor. Tungsten, particularly resistant to deforming, is used to manufacture the ball in the ballpoint pen. Metals such as tin and tantalum are ubiquitous in products such as electronics, medical devices, tools, canned goods, automobiles and jet engines/turbines, and many alloys contain only small percentages of minerals in their total composition. Specific recipes of various metal powders are turned into an array of products used in such things as computer motherboards, capacitors and carbides for example. It is therefore much more plausible, as the NAM has stated, that in fact the bulk of the 5,994 publicly-traded companies will be affected. IPC,¹⁵ agreeing with NAM, characterizes the SEC figure as based on “a flawed assumption because 1) the minerals supplied by the DRC may be distributed such that they account for 20% of the supply for 100% of users, and 2) the vast majority of users will be unable to identify the origin of their conflict minerals, especially until more viable audit and tracking systems are in place, and therefore will need to complete a CMR.” IPC concludes that it expects “that nearly 100% of affected issuers will need to complete a CMR, especially in the initial years of the regulation.”¹⁶ This is supported by NAM as they pointed out that the proposed regulation requires a CMR even for issuers who – after reasonable inquiry – are unable to determine the origin of their materials.¹⁷ In short, a more realistic assessment yields that the bulk of U.S. based issuers, 5,994 would be required to complete the full CMR – a figure which becomes important as it comprises the denominator of affected companies with which to calculate the full cost implications.

¹³ Fed. Reg. 80948 et. seq. (Dec. 23, 2010)

¹⁴ 75 Fed. Reg. 80966

¹⁵ IPC is an industry association within the electronics industry. IPC also conducted research into the economic impact of the proposal on its membership and submitted comments to SEC.

¹⁶ SEC also recognizes that first year implementation costs will be higher. 75. Fed. Reg 80966.

¹⁷ See NAM comments, p. 25 and 75 Fed. Reg. 80958.

2) SEC made no estimate of the impact of the rule on suppliers or privately-held companies in issuers' supply chains. Even while privately-held companies are not subject to SEC's filing requirements or the focus of the current law, they will however be requested by their customers – the issuers – to undertake due diligence in order for the issuers to provide the information necessary to meet their SEC obligations under the conflict minerals law. According to the law firm Dykema Gossett, the CM requirements “will have a significant impact on countless U.S. suppliers of automotive, consumer and other products that use certain common minerals in their products, including suppliers who themselves are not publicly traded companies.”¹⁸ NAM put it like this in comments submitted to the SEC: “While the new reporting mandate only applies to companies required to report to the SEC, we expect these requirements will rapidly be passed through the entire supply chain. The requirements will effectively force suppliers not subject to SEC reporting to maintain extensive records of their source materials...” On a similar note, IPC's study stated: “privately held companies, which represented two thirds of respondents, anticipated being impacted by the requirements of the rule despite not being directly regulated.”¹⁹ This paper estimates the number of affected suppliers in Section V.B. Issue #2.

B. Issue #2: Lack of materiality threshold clause

In its proposed rules for conflict minerals, the SEC states that it does not propose “to include a materiality threshold for the disclosure or reporting requirements in our proposed rules.” NAM, in its corresponding comments, however argues that a “*de minimis* standard is not a loophole or exemption, and, if properly designed, it will not materially decrease efforts to increase supply chain transparency. Rather, it would allow the SEC and issuers to focus on the products containing a significant amount of the conflict minerals in a manner that will change supply chain behavior. It thus avoids a very high cost and burden associated with tracing miniscule amounts of materials with little corresponding effect on ameliorating the DRC-region atrocities.”²⁰ We agree. A materiality threshold would reduce the number of companies who would unduly be burdened to implement programs and incur undue costs, and more appropriately place the burden on companies with the largest consumption and so provide an opportunity for the biggest cost/benefit. Although such a threshold is not reflected in the language of the law, it would be appropriate and beneficial for SEC to establish one, eliminating costs and efforts where they are not truly justified.

Setting a very low *de minimus* threshold would effectively rule out free-riding – a situation which would undermine the efforts of all other companies complying with the law. We therefore agree with NAM's fairly reasonable suggestion, “that the conflict minerals must trigger a threshold content value of 0.1 percent or greater of the part or component.”

¹⁸ Paul M. Laurenza, Sheryl L. Toby and Ronald L. Rose. Conflict Minerals Act will have widespread impact on global supply chain. Dykema Gossett PLLC. April 27, 2011.

<http://www.lexology.com/library/detail.aspx?g=688bf426-82b4-43a9-b45e-292de61d554a>

¹⁹ IPC Comments on SEC Proposed Rule on Conflict Minerals, March 2, 2011, p. 20

<http://www.sec.gov/comments/s7-40-10/s74010-131.pdf>

²⁰ NAM Comments. p. 20

However, we do suggest that the term “part or component” be clearly defined, as well as whether the 0.1 percent refers to “percent by weight” or “percent by volume.”

C. Issue #3: Recycled/scrap materials

The SEC proposal formulated amendments such that recycled or scrap minerals would be partially exempted from the due diligence and CMR requirements. It reasons that if a “conflict mineral was obtained from recycled or scrap minerals, that mineral would be considered DRC conflict free. This approach for recycled or scrap minerals is not included in the Conflict Minerals Provision, but we believe it is appropriate because such conflict minerals would not be implicating the concerns that prompted the enactment of this statutory provision.”²¹

We agree with the SEC. In its comments to the SEC, NAM also emphasized that “treating recycled materials as ‘conflict full’ intrinsically does not make sense.”²² This is truly justified as recycled materials are fundamentally not equivalent to newly mined ore in the context of the law or as a conflict funding source. Many companies impacted by this are scrap companies which are overwhelmingly small, privately-held companies in a highly fragmented industry. Industry anticipates that SEC’s final regulations will provide a substantive exclusion for scrap materials. Although such an exemption is not reflected in the language of the statutory law, it would be reasonable and beneficial for SEC to establish such an amendment, appropriately eliminating extraneous cost and effort. However, we point out that a specific and consistently-applied definition of the term “recycled” and “scrap material” is necessary.

D. Issue #4: Indeterminate origin

NAM’s request for allowing an “indeterminate origin” exception to be in effect over a transition period is valid as the necessary documentation with which to determine origin may just not exist, especially in the first year of the rule’s implementation. The IPC survey of companies within the electronics industry found that on average 18% of their companies could not determine the origin of their minerals / metals.²³ In the absence of operational rules for Section 1502, and such rules having yet to be implemented, gaps do exist in traceability documentation or chain-of-custody documentation for pertinent minerals and metals. Such concerns are furthermore valid in the case of recycled (or scrap) material, where oftentimes there is no paper trail.

While it therefore may be most appropriate to allow such a “indeterminate origin” status over an initial transition period, it should however be backed up with a 3rd party audit to

²¹ 75 Fed. Reg. 80963.

²² NAM Comments. p. 22

²³ Results of an IPC Survey on the Impact of U.S. Conflict Minerals Reporting Requirements, February 2011

verify the veracity of the management system the company relied on to come to the determination. A robust oversight mechanism, heavily policed through audits, would comprise a disincentive to use it. A \$25,000 to \$100,000 charge to have an audit performed – with the uncertainty of what the audit determination would be – is not a prospect any company would take lightly. In short, an “indeterminate origin” provision in effect only for a transitional period which, if invoked by a company would incur an audit, would not constitute a loophole.

E. Issue #5: Phase-in

The provision of a phase-in period for the rules, to be finalized by the SEC within 2011, makes sense for multiple reasons. From a management and disclosure perspective, considerable time and effort will be required to establish, on a company level, the management systems, render them operational, and commission the audits and prepare the related reports and SEC forms. NAM argues that transition rules apply for an implementation period which “is needed for the disclosure requirements, for inventory already at smelters, for products made from existing inventories, and for acquisitions.”²⁴ We agree with NAM that at least a year would be needed before issuers may be able to provide conflict minerals disclosures. Conversely, if the entire industry was jolted by the rules going into effect immediately without a transition phase, and the required time to build systems and align procedures was not permitted, the *de facto* embargo against the minerals of the Central African region, against which NAM cautions, could become entrenched. Since April 2011, owing to the decision of EICC companies to stop sourcing from the DRC if the material is not fully traceable, a *de facto* embargo on Congolese-sources minerals is currently in effect.

F. Issue #6: USDS endorsement of the OECD Guidelines

Section 1502 instructs the SEC, in consultation with the Department of State (USDS), to promulgate regulations requiring, in part, certain companies to submit annually a description of the measures taken to exercise due diligence on the source and chain of custody of the four "conflict minerals." As of July 2011, the U.S. State Department endorsed *The OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas* – a guide which provides recommendations for global responsible supply chains of minerals and helps companies to respect human rights and avoid contributing to conflict through their mineral or metal purchasing decisions and practices. *“The Department specifically endorses the guidance issued by the Organization for Economic Cooperation and Development (OECD) and encourages companies to draw upon this guidance as they establish their due diligence practices. We encourage companies, whether or not they are subject to the Section 1502 disclosure requirement, that are within the supply chain of these minerals to exercise due diligence based on the OECD guidance and framework as a means of responding to*

²⁴ NAM Comments. p. 15

requests from subject suppliers and customers.”²⁵ Furthermore, according to IPC, “it is anticipated that the U.S. Securities and Exchange Commission (SEC) may base regulatory compliance with the Dodd-Frank conflict minerals laws on the OECD guidance.”

While the OECD guidelines advance the concept of progressive due diligence principles and improvement of mining circumstances in the central African region, some aspects of the scope of the due diligence process and audits have been critiqued as presenting significant issues and potential inconsistencies with SEC auditor standards.²⁶ The “final” OECD guidelines (issued by the Organization as *Final* in May 2011), are now being tested by 50 companies globally in a real world setting, in participation with the IPC and six IPC-member companies, through a “pilot evaluation program to review and refine the (OECD) due diligence guidance for conflict minerals.”²⁷ This pilot, sponsored by the OECD itself, is considered by some to be an acknowledgement by the Organization that the framework at this stage remains more theoretical than pragmatic.²⁸ This pilot study is therefore vitally important for all industries impacted by CM rules: having streamlined and actionable due diligence rules is vital for the prospect of their being implemented.

However, the timing of OECD’s guidelines testing – scheduled to be completed in June 2012 (which arguably should have been completed *prior to* the Organization’s issuance of their “final” version) – is not aligned with the SEC’s final rulemaking schedule.²⁹ Precisely because the SEC and USDS have both directly stated their support for, and clear intention to rely upon, the OECD Guidelines, we caution that without careful consideration of consistency with US standards, liabilities and deadlines, compliance risks and additional latent penalties/costs may be created for industry.

V. Analysis of the NAM Economic Impact Model

As stated in its comments to the SEC, “NAM believes that the proposed rule is a significant rulemaking and will cost U.S. industry between \$9-16 billion to implement.”³⁰

²⁵ USDS. *Statement Concerning Implementation of Section 1502 of the Dodd-Frank Legislation Concerning Conflict Minerals Due Diligence*. July 15, 2011. <http://www.state.gov/e/eeb/diamonds/docs/168632.htm>

²⁶ NAM Comments, p. 14; The Elm Consulting Group International LLC, *OECD to SEC: Make us the Conflict Minerals Due Diligence/Audit Standard for the US*. July 7, 2011. <http://elmconsultinggroup.wordpress.com/2011/07/07/oecd-to-sec-make-us-the-conflict-minerals-due-diligenceaudit-standard-for-the-us/>

²⁷ IPC. *IPC Invited to Participate in Pilot Evaluation of OECD Conflict Minerals Due Diligence Guide - Six Member Companies Join Pilot Implementation*. September 2, 2011. <http://www.ipc.org/ContentPage.aspx?pageid=IPC-Invited-to-Participate-in-Pilot-Evaluation-of-OECD-Conflict-Minerals-Due-Diligence-Guide>

²⁸ The Elm Consulting Group International LLC, *OECD Backs Up A Step on Conflict Minerals Guidance*. September 8, 2011. <http://elmconsultinggroup.wordpress.com/2011/09/08/oecd-backs-up-a-step/>

²⁹ The first meeting by OECD to discuss the status of the pilot is scheduled for late November 2011.

³⁰ NAM Comments, p. 2

To determine whether this figure comprises a fair estimate, this paper will itemize the primary cost drivers and establish whether the cost per unit estimate is reasonable.

A. Issue #1: Not all issuers are created equal

While NAM acknowledges throughout their comments that companies of different sizes will be impacted by the rule, their economic impact analysis did little to identify the differences. To be fair, neither did SEC. As neither SEC nor NAM provided information or guidance on important statistics related to the 5,994 issuers, we refer to the 2011 IPC survey of the impact of the rule on their membership, which was reportedly “balanced in terms of representation by companies of various sizes based on annual sales.” The survey sample was comprised of 32% small companies (under \$10 million in sales), 40% medium-sized companies (in the \$10 million to \$99 million range), and 28% large companies (more than \$100 million in sales). Therefore, the following assumptions and estimates are used throughout this paper relative to the 5,994 potentially impacted issuers:

- We consider annual revenues of \$100 million as the threshold value between “small” and “large” companies.
- Using that revenue threshold – and in the absence of any other authoritative, relevant and credible information – we accept the IPC study benchmarks of 72% small/medium companies and 28% large companies.³¹

B. Issue #2: Number of 1st tier suppliers

A central issue in the discussion of economic impact is the number of suppliers to every issuer. Using NAM’s estimate of an average 2,000 direct (or “1st tier”) suppliers to each issuer, of which there are 5,994, the total number of suppliers comes to 12,000,000. The question that arises at this point: is 12 million a realistic estimate of the number of 1st tier suppliers furnishing 5,994 issuers with 3T and gold?

NAM’s attempt at developing 1st tier supplier estimates is laudable, but misses three critical factors:

1. Supplier overlap/mutuality: A supplier is almost certain to have multiple customers that are issuers, therefore the issuer/supplier connectivity is more complex than a simple 1-to-1 relationship. The 12 million figured implied by the NAM calculation may be reflective of the total number of *business relationships* (i.e., material supply contracts), but we argue that is different from the number of *unique businesses* that must deploy conflict minerals programs. A supplier with multiple customers will not have to expend 100% of CM program development costs

³¹ Results of an IPC Survey on the Impact of U.S. Conflict Minerals Reporting Requirements, February 2011 p. 3

repetitively for each of its customers as implied by NAM's straightforward multiplication calculation. This concept is explained below in detail.

2. Exclusion of suppliers that do not provide CM materials, parts or components:

NAM's estimates assume that 100% of an issuer's 1st tier suppliers will be required to "make substantial changes to their corporate compliance policies and supply chain operating procedures."³² However, such changes are, in reality, only required for suppliers who provide materials, parts or components that are identified as having 3T and gold.³³ Suppliers of such things as services, paper/wood products, fossil fuels, many polymers/plastics/gasses/chemicals and raw textiles (to name but a few) will not need to change their corporate management systems to address the CM requirements.

3. Smaller companies have fewer suppliers: NAM's estimate of 2,000 1st tier suppliers is not likely to be representative of small companies. We believe that a better estimation of the supplier-customer ratio for small companies is the IPC 2011 survey of its members in the electronics supply chain. This is explained in more detail below.

C. Issue #3: Cost of performing internal due diligence reform

In order to evaluate NAM's analysis on due diligence efforts, a framework is necessary. In its 2011 Guidelines, OECD defines due diligence as "as the process through which enterprises can identify, prevent, mitigate and account for how they address their actual and potential adverse impacts as an integral part of business decision-making and risk management systems."³⁴ OECD's framework for risk-based due diligence in the conflict mineral supply chain involves five principal steps.³⁵

- Establish strong company management systems
- Identify and assess risks in the supply chain
- Design and implement a strategy to respond to identified risks
- Carry out independent third-party audit
- Report on supply chain due diligence

The discussion in this section addresses the first three steps within the full due diligence process concerning company-specific policies and procedures that are carried out

³² NAM Comments, p. 24

³³ Non CM suppliers may have to undertake some level of minimal effort to affirmatively prove the absence of CM in the items they manufacture/sell. However, once this is proven, those suppliers will not have to implement internal management systems specific to non-existent CM.

³⁴ OECD. *OECD Guidelines for Multinational Enterprises*. 25 May 2011. <http://www.oecd.org/dataoecd/43/29/48004323.pdf>

³⁵ OECD. *Recommendation of the Council on Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas*. 25 May 2011. C/MIN(2011)12/FINAL. <http://acts.oecd.org/Instruments/ShowInstrumentView.aspx?InstrumentID=268&InstrumentPID=272&Lang=en&Book=False>

internally within a company. The audit and reporting steps are discussed in a separate section within this analysis.

NAM estimates the cost of changing the corporate compliance policies and supply chain operating procedures to be \$1.2 billion, which was calculated as “2 hours x \$50 per hour x 2,000 suppliers x 5,994 companies.” NAM affirms that within a CM due diligence process, “reliable due diligence” must go hand-in-hand with a “commercially practicable effort” with regard to the expected and actual level of effort to be undertaken.³⁶ Yet NAM’s estimate for the issuing companies’ that “at a minimum that two hours of employee time at \$50 per hour will be required to change legal obligations to reflect a company’s new due diligence” is, in our estimation, understated for the following reasons:

1. Incorrect level of effort: two hours to review and revise of wide range of internal policies – from the supplier code of conduct to business practices, from contingency planning to quality assurance – is not enough time. Based on information available from various experts in the industry (as well as our own experiences in other sectors/studies), we believe that if the matter were approached from a management system perspective, this activity involves multiple tasks, including:

- initial reviews of the current policies/procedures/controls (to locate where/which policies, departments and functions will be impacted);³⁷
- developing a gap analysis and compliance plan (identifying what specific modifications are needed for the affected policies/procedures/controls);
- developing draft revised policies/procedures/controls;
- conducting initial testing on those revised policies/procedures/controls to determine if they function correctly in a desktop test setting; and
- implementing them as final, including training of personnel as well as communication to suppliers.

The effort we envision may take multiple people several weeks for a large company with complex business management systems and controls. For small companies it may take one person a full week (40 hours). For large companies affected, we estimate an average of 100 man-hours would be required. In addition, this process may be facilitated by 3rd party, which would entail consultancy fees. We estimate consultancy fees at \$200 per hour³⁸ and expect that large companies will employ consultants less than small companies will. We estimate that approximately one-quarter of the total man-hours for small companies will involve consultants, while that number may be 10% for large

³⁶ NAM Comments, p. 13-14

³⁷ In our view, this step includes the identification, review and analysis of internal risk assessment programs for vendors and related information. We believe it is appropriate to include that element within an overall management system review rather than breaking it out as a separate step as NAM suggests.

³⁸ SEC used a cost of \$400 per hour which generally reflects the rates for Big 4 accounting firms. Although we anticipate that some of this work will be performed by the Big 4 accounting firms, a substantial portion of required consulting work will also be carried out by lower cost environmental and sustainability consulting firms hired for these projects. We thus estimate that the average consultancy charge would be \$200.

companies. These estimates are aligned with SEC’s estimates for consultancy support for the 10-K, 20-F and 40-F forms.³⁹

2. Supplier overlap / mutuality: NAM did not address the concept of *supplier overlap / mutuality*, accounting for the fact that issuers have some (and sometimes many) suppliers in common. We believe there is substantial overlap/mutuality in the relevant business relationships; therefore, once a supplier modifies their management systems to satisfy the CM requirements for one customer, that supplier will not need to wholly replicate those CM program development efforts/costs again for other customers (see *Figure 1* below). Changes to the management system will most likely be addressed at the supplier’s corporate or divisional level. Once established, that management system framework functions the same to serve the needs of all issuers who are that supplier’s customer.⁴⁰ This creates “overlap” or “mutuality” cost efficiencies not recognized in the NAM model. NAM’s methodology multiplying 5,994 by 2,000 incorrectly assumes that separate/unique policy/procedure changes will be required on the part of each supplier to support each individual issuer. That calculus is more determinative of the number of contractual supplier relationships, a concept that is different from the number of unique businesses within the supply chain. We recognize there may be slight differences in information demands on suppliers by various issuers, but we believe those differences will be minor and 100% cost redundancy is not justified.

Figure 1:

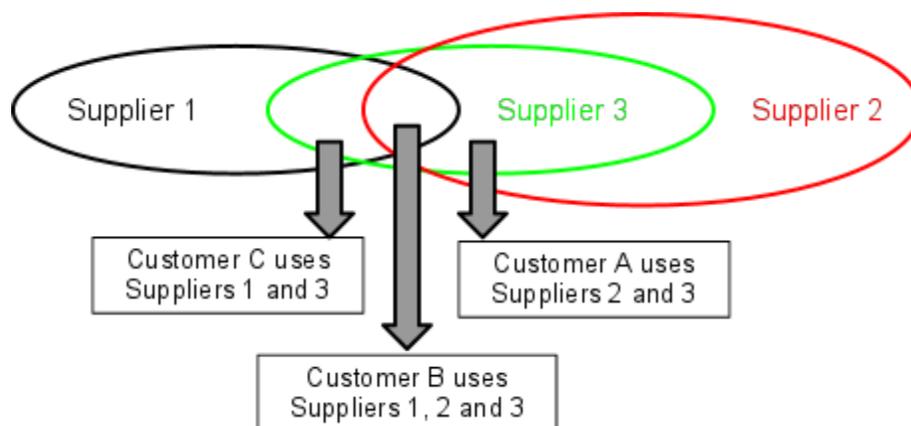


FIGURE 1: Areas of shape overlap illustrate where customers have relationships with multiple suppliers, therefore creating *supplier overlap/mutuality*.

The mineral smelters for example represent obvious choke points at which to differentiate chain of custody tracking and internal controls over the mineral supply chain. CM users can take advantage of the smelters’ position in the supply chain. If smelters

³⁹ 75 Ref. Reg. 80966.

⁴⁰ This has been proven over the past 20 years for management systems developed by companies under international standards (ISO) for quality programs (ISO9001), environmental management (ISO14001), occupational health and safety (OHSAS18001) and more recently by the management systems implemented for the EU RoHS compliance.

are verified as not having or purchasing DRC-sourced materials that contribute to conflict, that information can be distributed up the smelter’s supply chain, which is the intent and theory of the EICC Conflict Free Smelter (CFS) program.⁴¹ Furthermore, the CFS information is made available to other companies and the general public for free, which eliminates costs at other points in the supply chain. There are currently 19 tantalum smelters, 45 Tin smelters, 13 Tungsten smelters and 61 Gold smelters that have enrolled to participate in the CFS program.⁴²

3. Not all 1st tier suppliers require CM management systems: CM management programs are only required for suppliers dealing in materials, parts or components that contain 3T or gold. Many suppliers in each tier furnish products unrelated to minerals (e.g., service vendors, suppliers of paper products, fossil fuels, and raw textiles to name but a few). As only a portion of the NAM-estimated 2,000 1st tier suppliers fall under the mineral / metal category, one must therefore employ a correction factor take into account only those suppliers with relevant materials/products. NAM did not however provide data on what percentage that may be. Therefore, in the absence of other credible, relevant and authoritative data, we rely on data from the IPC study,⁴³ summarized in *Table 1* below:

Table 1:

<i>Respondent Industry</i>	<i>Percentage of supply base known to NOT contain the metals</i>	<i>Percentage of supply base known to contain the metals</i>	<i>Percentage of supply base with unknown status</i>
Electronic Manufacturing Services (EMS)	24	38	38
Printed Circuit Board (PCB) Manufacturers	85	7	8
Materials Industry	49	51	0
Equipment Industry Suppliers	27	47	26
<i>Average</i>	<i>46.25</i>	<i>35.75</i>	<i>18</i>

Given that SEC’s proposed rules requires the same level of effort for unknown sources as for DRC-source materials, we combined the percentages in the last two columns to

⁴¹ The most recent update of the CFS list (May 31, 2011) indicates only 3 companies (limited to tantalum) have been cleared as “compliant” by EICC. The CFS Program Status Update (<http://www.conflictreesmelter.org/CFSandDueDiligenceProgramStatusUpdate.htm>) states that as of September 30, 2011, 12 tantalum companies have been assessed, and only 6 have been deemed “compliant”. As of October 15, 2011, there are no compliant smelters for tin, tungsten or gold. <http://www.conflictreesmelter.org/cfshome.htm>

⁴² EICC-GeSI. CFS and Due Diligence Program Status Update. September 30, 2011. <http://www.conflictreesmelter.org/CFSandDueDiligenceProgramStatusUpdate.htm>

⁴³ Results of an IPC Survey on the Impact of U.S. Conflict Minerals Reporting Requirements, February 2011 p. 5-6

obtain an estimated percent 53% (35% + 18%) of suppliers that deal in minerals and metals that would be subject to CM requirements. Therefore, we estimate that only 53% of the NAM-estimated 2,000 1st tier suppliers (1,060) provide materials, parts or components that contain 3T or gold and would thus be subject to CM management program efforts/costs. However, for complete clarity, it is our opinion that this is actually the number of material supply contracts involved, not the number of unique businesses.

4. Many issuers have fewer 1st tier suppliers: NAM's estimate of 2,000 1st tier suppliers (along with our corrected estimate of 1,060 material supply contracts) is not likely representative of small companies as we have defined that term. We believe that a better estimation of the supplier-customer ratio for small companies is the IPC 2011 survey of its members in the electronics supply chain. Respondents in the IPC survey had a median of 163 direct suppliers.⁴⁴ As with large issuer suppliers, only a portion of the 163 direct suppliers deal in CM materials, parts and components. Applying the same factor as above (53%), the estimated number of 1st tier suppliers who (a) serve small issuers and (b) are expected to need CM management program efforts/costs is 86. Again, we clarify our opinion is that this is actually the number of material supply contracts involved, not the number of unique businesses.

Issuers:

Using the definition of small and large stipulated in Section V.A. *Issue #1*, the calculations below are bifurcated into 72% small issuers (using 40 hours of effort) and 28% large issuers (using 100 hours of effort). To reiterate other assumptions, we believe external consulting will be used for 25% of the labor for small companies, 10% for large companies, and a billing rate of \$200 per hour based on the variety of consultancies that will be hired.

i. Internal (small companies):

5,994 issuers x 72% x (40 man-hours x 75% of total work load) x \$50/hr = \$6,473,520
(internal labor costs)

ii. Internal (large companies):

5,994 issuers x 28% x (100 man-hours x 90% of total work load) x \$50/hr = \$7,552,440
(internal labor costs)

iii. Consultant (small companies):

5,994 issuers x 72% x (40 man-hours x 25% of total work load) x \$200/hr = \$8,631,360
(consultant costs)

iv. Consultant (large companies):

5,994 issuers x 28% x (100 man-hours x 10% of total work load) x \$200/hr = \$3,356,640
(consultant costs)

Thus, the total estimated cost for 5,994 issuers is \$26,013,960.

⁴⁴ IPC Comments on SEC Proposed Rule on Conflict Minerals, March 2, 2011, p. 20
<http://www.sec.gov/comments/s7-40-10/s74010-131.pdf>

Suppliers:

To determine the additional impact on the supplier base to those 5,994 issuers, we employ a supplier-issuer overlap factor of 60%. This factor attempts to differentiate – and correct for – the number of estimated material supply contracts within the scope versus the number of unique businesses impacted. A 60% overlap factor means that the efforts are *reduced* by 60%, and only 40% of the effort/cost is required. Since NAM, SEC and IPC did not provide data on the amount of supplier overlap/mutuality, we based on our estimation that in general there is likely to be greater than a 50% customer overlap/mutuality throughout the supply chain, we chose 60% as a conservative overlap factor.

We furthermore factor in the size of the company employing the same benchmarks for “small” and “large” companies used for issuers as stipulated in Section V.A. *Issue# 1* – an important variable not taken into account in the SEC and NAM models. The calculations below are bifurcated into 72% small companies (using 40 hours of effort) and 28% large companies (using 100 hours of effort).

In order to estimate the number of suppliers, we multiply the issuers by the company size factor (large or small), and multiply the number of relevant 1st tier supplier contracts by the overlap factor.⁴⁵ Our estimate of total suppliers is 860,066, comprised of 148,459 small company and 711,607 big company suppliers.

The calculation estimating the cost of strengthening internal management systems in view of performing due diligence is therefore:

i. Internal (suppliers that are *small* companies):

Suppliers (small companies) = (5,994 issuers x 72%) x (86 relevant 1st tier supplier contracts x .4 overlap factor) = 148,459

Internal labor costs = 148,459 suppliers (small companies) x (40 man-hours x 75% of total work load) x \$50/hr = \$222,688,500

ii. Internal (suppliers that are *large* companies):

Suppliers (large companies) = (5,994 issuers x 28%) x (1060 relevant 1st tier supplier contracts x .4 overlap factor) = 711,607

Internal labor costs = 711,607 suppliers (large companies) x (100 man-hours x 90% of total work load) x \$50/hr = \$3,202,231,500

iii. Consultant (for suppliers that are small companies):

Consultant costs = 148,459 suppliers (small companies) x (40 man-hours x 25% of total work load) x \$200/hr = \$296,918,000

iv. Consultant (for suppliers that are *large* companies):

⁴⁵ A 60% overlap factor converts to 40% in the mathematical equation. The concept of “overlap” *reduces* the number of companies subject to the requirements by 60%, leaving the remaining 40% of the companies subject to the requirements (100% - 60% = 40%, or 0.40).

Consultant costs = 711,607 suppliers (large companies) x (100 man-hours x 10% of total work load) x \$200/hr = \$1,423,214,000

Thus, the estimated total cost to suppliers is \$5.14 billion (\$5,145,052,000). The estimated grand total amount for issuers and suppliers is \$5.17 billion (\$5,171,065,960).

D. Issue #4: Diffusion of solutions and efficiencies

NAM does not recognize or anticipate that common solutions will be developed, migrated across multiple companies/industries and create cost efficiencies. Some of these solutions that already exist or (in advanced development) include EICC-GeSI CFS audits, EICC Supplier Information templates, common cross-industry product content information platforms and consulting firms expertise/tools applied across their client bases. In contrast, NAM's numbers reflect an assumption that each individual company must reinvent the wheel in isolation from other existing or developing solutions.

As discussed above, one assumption underlying most of NAM's calculation is that there is always an exclusive and 1-to-1 relationship between each issuer and each supplier, which is unfounded.⁴⁶ Rather than reinventing the wheel at every link in the supply chain – and therefore repeatedly expending 100% of the costs for developing that CMR and supporting information – a more pertinent metaphor is the Microsoft model. Once the product (the CM information) has been produced, it can be replicated at little to no cost (and is still valid for other links in the supply chain). Work performed once can be diffused to multiple customers who request the same type/scope of conflict minerals information (assuming reasonable consistency in the effort scope and information outputs). With CM information completed, a supplier with only one customer gains no efficiencies in cost or labor – however, if that supplier has many customers, the efficiency gains are significant. Indeed, the supplier-issuer relationship is in many cases complex, and in most cases the issuer's supply chain is not wholly unique. Nevertheless, multiple issuers will almost certainly ultimately receive minerals from the same ore refinery. In other words, once the smelter has developed its CM program, those costs are not repeated for each individual customer conducting business with that smelter, and likewise for other layers in the supply chain. The very structure of the mineral supply chain thus allows for the creation of labor and cost efficiencies due to mutuality of suppliers – a significant efficiency factor not recognized by NAM.

This efficiency gain however assumes that (1) credible, consistent and validated information rolls up to the CMR and SEC filings and (2) there is a reasonable alignment between the supplier's available information and the information needed by its customers. The more exclusive the supplier-customer relationship – the fewer the customers among which the CM program cost/efforts may be spread. The less

⁴⁶ In reality, we believe there is substantial overlap/mutuality in customer relationships; therefore, once a supplier satisfies the CM requirements for one customer, that supplier will not need to wholly replicate their CM program development efforts/costs for other customers. This creates "overlap" or "mutuality" cost efficiencies that are not recognized in the NAM model.

exclusive, the more customers there are, the more pertinent the Microsoft metaphor. Thus, mutuality at certain points in the material flow, e.g. the smelting level, creates overlap which translates into effort reduction and cost efficiency.

E. Issue #5: Nature, scope and cost of CMR audit

The nature and scope of the audit, while a principle cost factor determinant, has not yet been clearly defined by the SEC. Neither the law nor the SEC's proposal specifies the requirements for the scope or execution of a due diligence process for the Conflict Minerals Report or the related audit. Instead, SEC has stated that it would be inappropriate for them to prescribe any specific guidance on the due diligence efforts.⁴⁷ This allows companies/industries to develop a framework reflecting their own unique circumstances, products and supply chain. However, the scope of the effort and the information relied upon must be specifically described in the Report.⁴⁸

Consequently, interpretations vary of what constitutes a "due diligence process" or the related "audit." If one were to follow the OECD Guidance, mineral traceability audits and chain of custody audits would be required as well along the supply chain. The variability in defining the audit scope thus also accounts for differing implementation cost estimations.

Due diligence not only involves company-led management system development and implementation, the CMR to be submitted to the SEC must contain a certified audit which "shall constitute a critical component of due diligence in establishing the source and chain of custody of such minerals."⁴⁹ As a part of the due diligence requirement, NAM estimates that 75% of issuers (4,500) would have to conduct a CMR audit.⁵⁰ NAM goes on to posit that suppliers will "be asked to use the same diligence as issuers," which includes audits,⁵¹ and continues by estimating that this audit mandate will impact 20% of the nation's 278,000 small companies (55,600). At the same time, using other figures provided NAM, the collective number of material supply contracts potentially subject to audits under their scenario could be 12 million (2,000 x 5,995 = 11,990,000).

Yet there is no requirement in the rule or law that suppliers be audited – only the issuers who are subject to the regulations must conduct audits of their CMRs.⁵² Suppliers will be subject to auditing only if they are (a) themselves also an issuer, or (b) required to do so by their customers. The burden and cost for such audits are voluntary in the context of the regulation and the impetus for such audits is likely to be reduced if issuers are

⁴⁷ 75 Fed. Reg 80961.

⁴⁸ 75 Fed. Reg. 80958, 80972 - 80975

⁴⁹ Exchange Act Section 13(p)(1)(B).

⁵⁰ Page 25 of the NAM reports states: "We conservatively estimate that 75 percent, or 4,500, of the nearly 6,000 affected issuers will have to submit a CMR."

⁵¹ NAM comments, p. 26.

⁵² See Section 1502(b) and the preamble discussion at 75 Fed. Reg 80958. Further, the OECD Guidance only discusses audits of smelters – not other points in the supply chain, not even from the mine to the smelter.

allowed to use “reasonably reliable representations” from suppliers, a concept that is both included in SEC’s proposal⁵³ and supported by NAM. Therefore, because supplier audits are outside the regulation and the driver of/need for such audits is likely to be reduced by “reasonably reliable representations” from suppliers, we are excluding those from our analysis and we focus on issuers only.

By applying the small/large company ratios to the NAM estimate of 4,500 issuers:

- 4500 x 72% = 3240 small company issuers required to develop/audit a CMR;
- 4500 x 28% = 1260 large company issuers required to develop/audit a CMR.

As specified in Section 1502(b) of the law, the audits undertaken by issuers must be conducted in accordance with SEC audit/auditor standards⁵⁴ and focus on the existence, functionality and controls of the issuers’ CM management processes that are included in the CMR (i.e., a management system audit). It is critical to understand that a management system audit reviews and assesses how (or *if*) the audited entity:⁵⁵

- establishes, maintains and communicates standards/expectations of behaviors;
- obtains, reviews and verifies relevant information;
- establishes and implements related control mechanisms;
- uses information in its decision-making;
- documents, tracks and reports data/decisions; and
- conducts follow-up on problems, concerns or issues that are identified within their business processes, audits or from external parties.

In performing such an audit – and in establishing expectations for the efforts and results – certain key factors must be considered:

- As with other SEC audit scopes, the CMR audits will provide “*credible and/or reasonable assurance*” – not absolute assurance, certainty or guarantees;
- As in any audit scope/process, limitations will exist in the quality and quantity of data;
- The instability in DRC and the region sets the stage for rapid and unforeseen changes in location/scope of conflict areas. While a mine or transportation route may be identified as “conflict free” at a point in time during supplier due diligence and the CMR development, supply chain reviews and audit process, it is possible for the status to change subsequent to the due diligence/CMR activities;⁵⁶
- CM management systems and controls will be tested within the audit process, which means that a sampling of the technical supporting data will be assessed. Sample size determination factors and methodologies are incorporated in SEC audit standards; in many cases, the sample size will be less than 100%.

⁵³ 75 Fed. Reg 80957.

⁵⁴ Such as *Government Auditing Standards: July 2007 Revision* (GAO-07-731G), commonly referred to as the “Yellow Book.” This publication is referenced in SEC’s proposal as the appropriate standard recommended by the GAO (see Footnote 101 at 75 Fed. Reg 80958). The Yellow Book incorporates many audit/auditor standards of the American Institute of Certified Public Accountants (AICPA).

⁵⁵ This is the general framework used for audits conducted under Sarbanes-Oxley, certain other financial auditing processes and certification systems such as ISO9001, ISO14001 and OHSAS18001.

⁵⁶ NAM concurs. See NAM Comments, p.14

To summarize, a CMR audit is not intended to confirm the technical accuracy of the material content, product certifications, supply chain linkages or other supporting data. Instead, the CMR audit will determine what, if any, internal processes exist to obtain appropriate technical information on product content, the supply chain flow, and how that information is assessed, used and reported by the audited company.⁵⁷

Given the above, the scope of CMR audits is *highly dependent* on the complexity of an issuer's management systems and *less dependent* on the number of suppliers within the supply chain. We assume that larger companies have more complex management systems than smaller companies⁵⁸ and agree that NAM's unit cost estimates of \$25,000 (small company) and \$100,000 (large company) are reasonable. Therefore, our audit cost estimates are as follows:

Small issuers:

- 3240 x \$25,000 per CMR audit = \$81,000,000

Large issuers:

- 1260 x \$100,000 per CMR audit = \$126,000,000

Thus, the total cost for CMR audits of small and large issuers will come to \$207,000,000 per year as issuers are to file the CMR including a certified audit with the SEC on an annual basis.

F. Issue #6: The use of information technology for record keeping

Apart from preparing the policies, procedures and controls, a significant level of effort is further required to implement the program at the issuer and supplier level. According to IHS,⁵⁹ as seen in the electronics sector faced with the EU-RoHS directive; and the chemical, process and manufacturing sectors for the EU-REACH regulation, it takes time to adopt and develop standards (what information, in what format, updated in what frequency, communicated via what mechanism, etc.). Even when standards are in place, companies commonly are faced with the "diversity of data" problem. Obtaining the appropriate content from suppliers is a major challenge: some suppliers provide documents explaining their compliance, some may not provide much useful information (e.g. e Yes/No compliance), some provide full material disclosure (FMD), some provide FMD but omit portions they consider a trade secret, others provide test reports. Generally speaking, considerable effort is usually required to obtain and transform supplier-furnished information into a usable parametric format that applications can

⁵⁷ A position that NAM also seems to take – see comments on "reliable due diligence" and "commercially practicable effort", p.13

⁵⁸ This assumption is supported by our analysis of IT systems and costs in Issue #6.

⁵⁹ IHS is a global information company in the pivotal areas such as energy, economics, geopolitical risk, sustainability and supply chain management. (<http://www.ihs.com>)

understand and be useful to engineers, procurement personnel, auditors and regulators.⁶⁰

NAM's comments to SEC state that: *“issuers must collect information and maintain auditable records for the SEC. To do so, issuers may need to develop new IT systems to collect information on their suppliers. Most manufacturers and suppliers may have to develop new computer systems or revise existing systems to track, store, and exchange data regarding mineral origins. Because of the global nature of supply chains, these systems will need to be available globally, have high storage capacities, and advanced communication, and data transfer functionalities. Based on previous changes to supply chain computer systems over the last several years, the cost per company is likely to range from \$1 million to \$25 million depending on the size and complexity of the supply chain. Again making a conservative estimate of \$1 million per IT system, the collective cost would be \$6 billion (\$1 million X 5,994 = \$6.0 billion).”*⁶¹

While among the 5,994 issuers there are large companies that would typically use highly sophisticated enterprise systems (such as SAP or Oracle) in order to manage complex supply chains, the remainder of the 5,994 companies should be estimated using a lower unit cost. Therefore, using the IPC survey as an indication of company size distribution, the total annual revenues of the small and medium companies would in no reasonable way support the idea that all 5,994 issues have IT requirements that justify a \$1 million modification each.

Moreover, in its economic impact analysis NAM apparently did not consider the possibility of shared software solutions and shared product information platforms. In the business world, a ubiquitous *modus operandum* is that once a software company has developed an appropriate piece of software tailored to the information capture and storage needs of an issuer, it is sold or licensed to other companies in the same market. Examples also abound of shared product information platforms, such as in the chemical industry. IHS' Design & Supply Chain group for example provides critical information and insight typically in the form of reference databases on a wide variety of goods including electronic components – including compliance with regulations such as RoHS and REACH. IHS explains:⁶²

We aggregate content from suppliers, we standardized and classify the content, and we “describe” parts and materials in standard ways to allow part research, comparison, selection and reporting. This is labor-intensive work that many companies choose to outsource. In the IHS model we make these value-added databases available to our subscribers where the cost of content collection, processing and maintenance is shared across our installed base. This typically saves our subscribers considerable expense. Of course, not all parts or materials that all our subscribers use are in our database – so we offer content services to obtain this content specifically for them. This is especially true for their custom parts. Sourcing and processing individual parts for a client is very cost-intensive.

⁶⁰ written correspondence with IHS. October 1, 2011.

⁶¹ NAM Comments, p. 24

⁶² written correspondence with IHS. October 1, 2011.

We've seen ranges of prices in industry of about \$5/part to more than \$30/part for chemical compliance information over the last 5 years. With a reference database the prices reduce considerably. For "mature" databases, developed over an estimated 5 years, companies would be able to match up to 60% of their parts and would reduce their annual "build and maintain" cost/part by up to 80% for matched parts.

In sum, the efficiency effect due to replication and adaptation of a viable software solution seems not to have been considered by NAM. Furthermore, the Internet and encryption – commonplace in viable businesses – could serve in the place of the “data transfer functionalities.” Indeed, this has already begun with the EICC-GeSI Supplier Information Template Tool.⁶³

Based on its 2011 survey, IPC found that “anticipated costs for information technology modifications ranged from 12,500 to 750,000 dollars.”⁶⁴ The survey result details indicate an average unit cost of \$205,000 for IT system changes, which was skewed by the single largest value of \$750,000.⁶⁵ According to their survey demographics, 72% of the respondents are companies with revenues less than \$100 million. In looking at the data as a whole, the IPC study supports the position that the actual number of companies likely to incur IT system modification expense levels as posited by NAM is much smaller than 5,994.

Small issuers:

We apply the small company ratio of the 5,994 issuers to the small company cost estimates from IPC: $5,994 \times 72\% \times \$205,000 = \$884,714,400$

Large issuers:

The large company costs from NAM may then be applied to the large company ratio of the 5,994 issuers: $5,994 \times 28\% \times \$1,000,000 = \$1,678,320,000$

Thus, the total estimated cost to issuers for instituting the necessary IT systems modification in view of conforming with the Conflict Mineral Act is \$2.56 billion.

VI. A Third Economic Impact Model

A. Estimated number of affected companies

1. Width and depth of mineral/metal supply chain

⁶³ EICC & GeSI. *GeSI and the EICC® Launch Conflict Minerals Reporting Template and Dashboard*. August 3, 2011.

<http://eicc.info/PDF/GeSI%20and%20the%20EICC%20Launch%20Conflict%20Minerals%20Reporting%20Template%20and%20Dashboard.pdf>

⁶⁴ IPC Comments on SEC Proposed Rule on Conflict Minerals, March 2, 2011, p. 21

⁶⁵ If the outlier figure is factored out, the average drops more than 50% to \$96,000.

Each company has its own supply chain, consisting of a certain number of direct or 1st tier suppliers and each of those direct suppliers has its own set of suppliers. In the analysis below, we use the term “width” to refer to the number of suppliers across each supplier tier and “depth” to refer to the number of tiers between the company and the mine. Clearly, each company’s width is variable. Issuers will not readily know the width of their supply base beyond the 1st tier, but generalized estimates can be made by using industry association data and basic inquiries to points within the supply chain.⁶⁶

In addition, not every supplier in each tier will be subject to conflict minerals activities (e.g., service vendors, suppliers of paper products, fossil fuels, and raw textiles to name but a few). Therefore, the width of a company’s supply chain reasonably expected to be subject to CM efforts is a percentage (less than 100%) of their total supply base. The width for purposes of CM efforts consists only of materials/products that contain CM.

For many companies/industries (especially in the electronics industry and supply chain), a significant amount of product content information is likely to exist already within information management systems required by other laws in the US and EU.⁶⁷ As an example, we refer to the results of the IPC survey replicated in *Table 1* above indicated that 35.75% of the supply base was known to contain the conflict mineral, whereas 46.25% of the supply base was known not to contain the conflict mineral.⁶⁸

A typical supply chain also consists of multiple layers (depth), but the number of layers is wholly dependent on the type of product, the distance from the ore source and/or ultimate final product. Therefore, each company’s supply chain depth is variable. Companies may obtain information on their supply chain from publically available information, industry association data and basic inquiries to suppliers.⁶⁹

Figure 2 below illustrates the width and depth concept in the mineral supply chain, which takes on an hourglass shape. The upstream supply chain is best defined as companies handling mineral concentrate, and the downstream supply chain as companies using refined metal, separated by the smelter / refinery link. The figure furthermore depicts the conflict minerals flow through the various mineral and metal supply chains. The top section blue background (A.) marks the sectors considered by this paper’s economic impact model. The bottom light yellow background (B.) denotes tiers not considered by this paper’s economic impact model.⁷⁰

⁶⁶ For instance, Figure 1 of *Comments on SEC Regulatory Initiatives Under the Dodd-Frank Act Title XV: Miscellaneous Provisions- Section 1502 Conflict Minerals (P.L. 111-203)*, IPC-Association Connecting Electronics Industries, November 22, 2010.

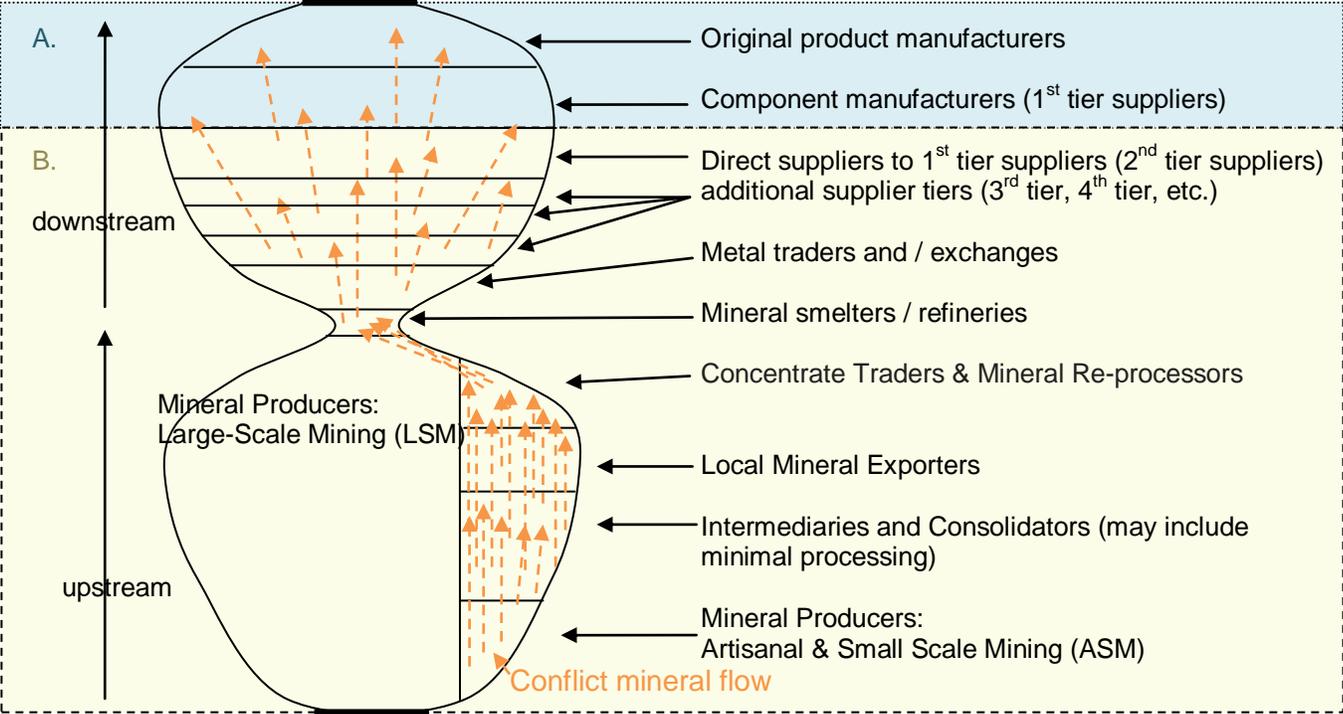
⁶⁷ More details on this matter are provided in Issue #6 on software systems.

⁶⁸ Results of an IPC Survey on the Impact of U.S. Conflict Minerals Reporting Requirements, February 2011 p. 5-6

⁶⁹ Figure 1 of *Comments on SEC Regulatory Initiatives Under the Dodd-Frank Act Title XV: Miscellaneous Provisions- Section 1502 Conflict Minerals (P.L. 111-203)*, IPC-Association Connecting Electronics Industries, November 22, 2010. <http://www.sec.gov/comments/df-title-xv/specialized-disclosures/specializeddisclosures-78.pdf>

⁷⁰ Neither does SEC or NAM: SEC (Vol. 75, No. 246) only considers the burden to issuers; NAM (in its Comments to the SEC) only considers costs to the issuers and 1st tier suppliers.

Figure 2: Width and depth illustration of mineral/metal supply chain



Source: supply chain sequence adapted from OECD publication⁷¹

Yet to begin to determine the economic impact also on the lower tiers of the supply chain, we propose a formula. The following formula applies previously discussed concepts to estimate the total number of suppliers within a company’s supply base that may reasonably be expected to address CM requirements:

$$S_{CM} = \sum_{i=1}^n (S_T * x\% * .4)$$

Where:

S_{CM} = Estimated total number of the company’s* suppliers subject to CM due diligence efforts

n = Estimated number of tiers in the company’s supply chain (i.e., depth) back to mine of origin

S_T = Estimated number of suppliers in each tier n (i.e., width)

x = Percent of materials/product per each tier n identified (or estimated) as containing 3TG.** This factor will (a) increase as the supply tier nears the smelter, and becomes 100% for tiers between the smelter and the mine, and (b) probably decrease as the supply tier moves closer to the final product.

⁷¹ OECD (2011), *OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas*, OECD Publishing. <http://www.oecd.org/dataoecd/62/30/46740847.pdf>

.4 = The mathematical factor reflecting supplier overlap. A constant, this factor converts the number of contractual relationships to the number of unique businesses that would be required to implement CM programs.

* In this context, “the company” refers to a single business entity that is located at any point in the supply chain.

** Determination made based on screening activities. This is not the overlap factor, but screens out suppliers in each tier that provide services or materials that do not contain 3TG such as fuel, copy paper, etc.

2. Traceability in the conflict mineral supply chain

A distinction needs to be made between traceability of minerals from mine to smelter (upstream) and from smelter to end product (downstream) as is illustrated in *Figure 2* above. An investigation by the Enough Project provides general contours of the upstream supply chain of conflict minerals from the eastern Congo.⁷² The 5 principal upstream links in the conflict mineral supply chain, between each of which are providers of material transportation, are:

1. *Mines:*
 - 13 major mines and approximately 200 total mines in the region
2. *Trading hubs:*
 - Minerals: two major trading hubs in the region, Bukavu and Goma;
 - Gold: Butembo and Uvira are also key trading hubs
3. *Exporters:*
 - There are currently 17 exporter companies based in Bukavu and 24 based in Goma
4. *Neighboring transit countries:*
 - Rwanda, Uganda, Burundi, Tanzania, Kenya
5. *Smelters and Refineries:*
 - *Tin:* 10 main smelting companies process over 80 percent of the world’s tin, almost all of which are based in East Asia
 - *Tantalum:* four companies make up the overwhelming majority of the market based in Germany, the U.S., China, and Kazakhstan
 - *Tungsten:* several processing companies in China, Austria, and Russia.
 - *Congolese Gold:* Dubai, Switzerland, Italy, and Belgium

Based on this study, the upstream supply chain of conflict minerals appears to be a significant and definable sub-set of the mineral supply chain universe that involve many more countries than just the DRC.

The smelter level, representing the choke point in the hourglass figure above is a critical link. The EICC Conflict Free Smelter (CFS) program for example specifically reviews the documentation from mine to smelter. While the CFS program does not certify products,

⁷² Enough Project. *From Mine to Mobile Phone: The Conflict Minerals Supply Chain*. Nov 10, 2009. <http://www.enoughproject.org/files/publications/minetomobile.pdf>

it approves smelters. According to UL-STR, auditor of the EICC Conflict Free Smelter program, the key point of the program is that smelters are *100% input verified*, which means “an approved smelter has undergone a 100% documentation review for all purchases of minerals in the audit period.”⁷³ Consequently, inputs used to manufacture a given product are conflict-free. An additional benefit is that 100% input verification does not require internal lot traceability, a rather tedious process which involves controlling which raw material lots were processed into which final product lots. Thus, 100% input verification appears to be the easier approach than internal lot traceability. Furthermore, the 100% input verification approach is progressive in that it is concerned with recent purchases only.⁷⁴

The information is then made available “upwards” to their customers, such that actors within higher tiers can track their minerals back to the smelter and match the results to the publicly available list of “conflict-free” smelters. Downstream traceability is enabled when suppliers in lower tiers submitting the same information as the 1st tier suppliers in effect establishing a chain of custody system.

While it is not within the scope of this white paper to describe in detail and provide the economic impact analysis also for the upstream supply chain, we point to the International Tin Research Institute's (ITRI) Tin Supply Chain Initiative (iTSCi) which, *inter alia*, seeks to provide verifiable mineral chain of custody information auditable by the smelter validation programme of downstream industry as recommended by the OECD Guidelines, and enable relevant US companies to report on due diligence efforts to the SEC as required by the Dodd-Frank Wall Street Reform and Consumer Protection Act.⁷⁵ ITRI argues that a 3-month pilot project in North and South Kivu and Maniema in late 2010 proved the concept of rapid and simple implementation of chain of custody (employing bag-and-tag system as well as certification system) in the ‘conflict affected’ areas of the DRC activity. ITRI’s 5-year plan, authored in February 2011, provides details and costs projections on how much it costs to build a clean supply chain for tin, estimated in the tens of millions. As the iTSCi establishes a viable paradigm for a clean tin supply chain, it may also serve as a model for doing the same for tungsten, tantalum and gold.

Implementing upstream traceability in Central Africa is however associated with a host of challenges which differ significantly from those in the downstream supply chain. Field-proof systems are required to ensure traceability of DRC sourced material, and the costs and challenges (including the rapidly changing security situation) may surpass the management systems approach. Aside from the need for lower tier levels to adapt/revise management systems to respond to CM customer requirements, technical requirements of tagging and bagging minerals generate other, non-management system related costs. Other cost factors include the need for additional capacity for mine inspectors, police, and customs officials. Thus, the challenges associated with

⁷³ Written correspondence with UL-STR. October 17, 2011. <http://www.strquality.com>

⁷⁴ Ibid.

⁷⁵ International Tin Research Institute. iTSCi 5-Year Plan: DRC & Rwanda. February 2011. <http://www.sec.gov/comments/s7-40-10/s74010-326.pdf><http://www.sec.gov/comments/s7-40-10/s74010-326.pdf>

strengthening the infrastructure and institutional capacity of the country of origin present significant obstacles to traceability in the supply chain of the DRC and certain neighboring countries.⁷⁶

B. Efficiencies, overlap and synergies in the implementation of Section 1502

i. Mutuality / overlap

As we have discussed above in various sections of this analysis, each company's program development and implementation costs are only *partially* proportional to the depth and width ("D/W") of their supply chain. Due to the overlap in supplier relationships, per-company program costs may increase to some extent as D/W increases, but the incremental cost for each supplier/tier is not 100% as NAM assumes. Most of the CM program is a management system – a framework of policies, procedures, training, internal controls and monitoring that will be developed at a corporate/business unit level to be applied across the company's operations and through the supply chain as determined by S_{CM} (i.e., the "Microsoft model"). Certain on-going information management activities within the program will be directly proportional to S_{CM} , but the operational tasks supporting those activities will be governed by this overarching management structure, the development of which is not repeated for each supplier (assuming reasonable consistency in information demands through the supply chain).

NAM assumes that all CM program costs will be fully replicated for each company in the supply chain. As we explained above, this assumption is incorrect as it should be anticipated that companies will share suppliers of certain products/materials. Where overlap exists, the incremental costs for CM program development will be generally reduced as explained above. This is most clearly demonstrated at the smelter level, which is generally considered by industry to be the "choke point" for CM material flow. Ores must be processed into commercially usable material by the smelters and there are a limited number of smelters worldwide; therefore smelters are the point in the supply chain that has the highest degree of mutuality. Mutuality will occur at other points in the supply chain, but perhaps not to the extent as seen in smelting. Regardless, as mutuality increases, the lower the incremental costs for implementing overarching management systems.

ii. Correction factors

The NAM estimate fails to recognize a number of important factors impacting costs. This paper applies three correction factors in order to properly gauge the extent of economic impact:

1. Large / small companies: As previously discussed, we divide the issuers and their suppliers into two groups: big and small. We estimate that 72% of issuers are small and 28% of issuers are large.

⁷⁶ Written correspondence with UL-STR. October 17, 2011. <http://www.strquality.com>

2. Non-CM mineral suppliers: based on findings from the IPC survey, only 53% of 1st tier suppliers provide materials, parts or components that contain 3T or gold and would thus be subject to CM management program efforts/costs.
3. Overlap / mutuality of suppliers: this correction factor accounts for the fact that issuers have some (possibly many) suppliers in common and so controls for overlapping issuer-supplier business relationships. This paper operationalizes this overlap factor as 60%, which means on the aggregate only 40% of the number of 3TG material supply contracts unique effort/cost is required.

iii. Technology transfer efficiencies

The NAM model implies that each company implementing CM programs will do so wholly independently. In reality, this is not likely. There are already a number of initiatives and services in the market that allow companies to take advantage of “shared solutions.”

These include:

- Shared platforms: Industry initiatives (such as in the electronics and tin mining industries) are already creating common platforms for information collection, tracking, reporting and even auditing to reduce the labor effort/cost burden on companies. This includes various material declaration and certification programs and standards that currently exist, such as IPC 1752 Materials Declaration standard for electronic data exchange of product materials information. Other current initiatives include the EICC-GeSI CFS and Supplier Reporting Template, the ITRI “Bag and Tag”, and the recently announced Public-Private Alliance for Responsible Minerals Trade (PPA).⁷⁷
- Internal information management systems: As mentioned in Section V.F. Issue #6 above, many companies impacted by the CM law are also subject to other regulations related to product content, such as the EU Regulation on *Registration, Evaluation, Authorisation and Restriction of Chemicals* (REACH) and *Reduction of Hazardous Substances* (RoHS). REACH is a chemical registration and authorization legislation with a growing list of chemicals that require manufacturers to register the use of those chemicals if used or released by products above certain amounts as well as reporting to customers upon request the presence of any of those chemicals about certain limits. RoHS and its 2011 update (known as “RoHS recast”) set threshold amounts for certain elements in a variety of product types that require manufacturers to restrict their use. Information required by REACH and RoHS regulations is managed in a similar manner even though the restrictions, information reporting and registration requirements are quite different. At the heart of each of these regulations is the need for information collection and management systems to ensure that all the needed data is gathered from the supply chain and that it is consistently reviewed, updated, verified and ultimately disseminated to customers and regulators. These

⁷⁷ U.S. Department of State. Under Secretary for Democracy and Global Affairs Maria Otero Travels to the Democratic Republic of Congo. Oct. 6, 2011.

http://kinshasa.usembassy.gov/pressrelease_english_10062011.html

systems contain substantial overlap with the information tracking needs for CM programs. There are many vendors for IT-based systems for managing REACH and RoHS data.

iv. Human resource efficiencies

- Cross-cutting consulting firms: Consultancies provide management system development, supply chain due diligence and audit services that leverage their experience in management systems development/implementation, material traceability, sourcing, information management systems, auditing and specifically conflict minerals programs. Companies choosing to use such firms/services are likely to see improved process development and launch times as compared to internal program development in a vacuum.
- Cross-cutting law firms: Law firms that are developing expertise in the subject area who can advise multiple clients and cross-pollinate best practices across their client base.

v. Customer/supplier synergies

We have referenced the idea of “reasonable consistency in information demands through the supply chain” within this analysis. SEC’s final regulations will create the platform for such reasonable consistency, therefore providing opportunities for cost efficiencies. In addition, it is expected that suppliers will also communicate with their customers to ensure alignment between their mutual CM data needs, which will also support reasonable consistency and cost efficiency.

C. Model comparison SEC vs. NAM vs. Third model

With our Third model’s cost estimations previously justified, *Table 2* below juxtaposes SEC’s and NAM’s economic impact model with that of our Third model, itemizing the main cost drivers as laid out in the SEC proposed rule and NAM comments. As with the NAM and SEC estimates our Third model only takes into account the economic impact incurred by issuers (5,994) and 1st tier suppliers (860,066), and not all the actors throughout the entire mineral/metal supply chain. However, unlike NAM and SEC, our paper provides a conceptual mathematical model that can be applied to estimate companies beyond the 1st tier. Thus, the geographical scope of all three models focuses on companies operating within U.S. jurisdiction, or those who directly supply U.S. issuers.

Table 2:

<i>Task</i>	<i>SEC estimation of costs</i>	<i>NAM estimation of costs (low end estimate)</i>	<i>Third model estimation of costs</i>
1. Strengthening internal management	“an aggregate estimate of \$16.5 million for the	\$1.2 billion (which is calculated as 2 hours x	\$26 million for the 5,994 issuers; \$5.14 billion for

systems in view of performing due diligence	1,199 issuers”	\$50 per hour x 2000 suppliers x 5,994 companies	1 st tier suppliers to those issuers, for a total of \$5.17 billion
2. Instituting the necessary IT systems (to collect information and maintain auditable records for the SEC)		\$6.0 billion (\$1 million x 5,994)	\$884 million for issuers who are small companies; \$1.68 billion for issuers who are large companies, for a total of \$2.56 billion
3. Commissioning CMR audit	“We estimate that the 1,199 affected issuers’ \$25,000 cost would result in to an industry wide audit of approximately \$29,975,000.”	Big companies: \$450 million (\$100,000 x 4,500 issuers) Small and Medium sized companies: \$1.39 billion (278,000 companies x .2 x \$25,000)	As only issuers are required to conduct audits: \$81 million for issuers who are small companies; \$126 million for issuers who are large companies, for a total of \$207 million
4. issuer-led implementation of risk-based programs that use company control processes to verify that suppliers are providing credible information		\$300 million (1000 X \$50= \$50,000; \$50,000 X 5,994)	(We believe task 4 and 5 are embedded in the first activity scope and cost within management system modifications. Therefore we are not costing out these elements individually.)
5. cost of filing SEC forms	\$24,768,000		
<i>Total</i>	<i>\$ 71,243,000 (not including internal company labor)</i>	<i>\$9.34 billion (including internal company labor)</i>	<i>\$7.93 billion (including internal company labor)</i>

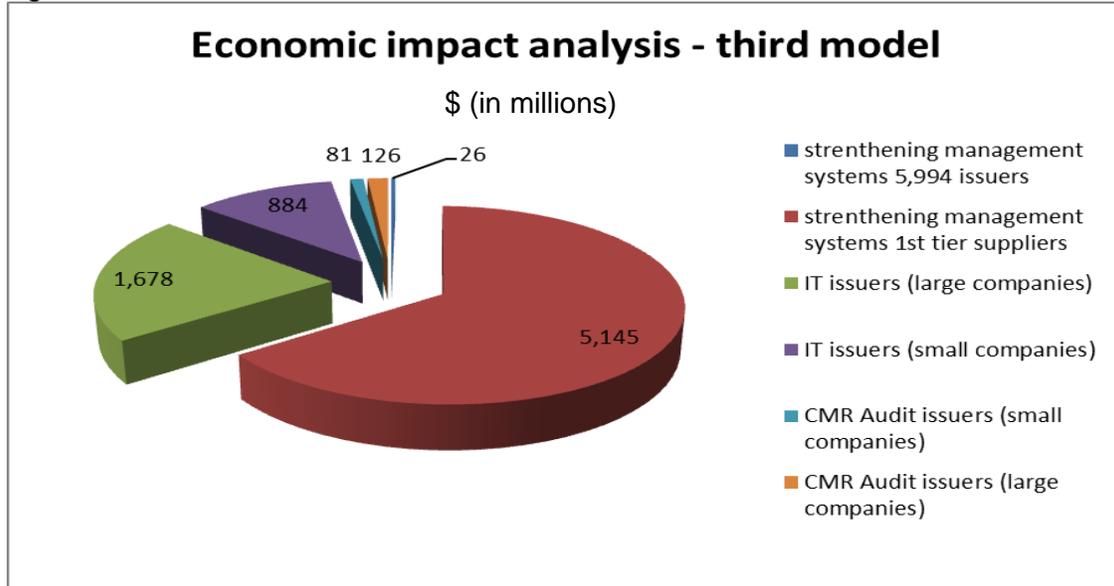
Thus, the total charge to implement due diligence according to our Third model, as itemized in the table above, would come to \$7.93 billion. We thus regard Section 1502 as a “major” rule as it will have an annually effect the economy exceeding \$100 million.⁷⁸

Yet the order of magnitude of \$7.93 billion must also be viewed relative to the size of the industries that depend on these minerals – including the industrial, aerospace, healthcare, automotive, chemicals, electronics/high tech, retail and jewelry sectors – and the trillions of dollars in wealth creation these sectors combined generate.

Figure 3 below visualizes the costs breakdown per task and per implementer.

⁷⁸ According to the designation as per the Small Business Regulatory Enforcement Fairness Act of 1996 (“SBREFA”)

Figure 3:



D. Internal versus external company costs

Indeed, \$7.93 billion represents considerable resources that would need to be dedicated to the fulfillment of the law. Yet it should also be considered what proportion of that amount comprise costs that can be covered with “in-house” human resources that may already exist within the individual companies (effectively diverting internal resources), and what proportion of those resources would go to cover external costs. *Table 3* below delineates each type of “cost.”

Table 3: In-house resource costs vs. money outflows

Task	Internal human resource costs	Money outflows
1. Strengthening internal management systems in view of performing due diligence	<u>Issuers:</u> (internal costs) small companies: \$6,473,520 large companies: \$7,552,440 <u>Suppliers:</u> (internal costs) small companies: \$222,688,500 large companies: \$3,202,231,500	<u>Issuers:</u> (consultant costs) small companies: \$8,631,360 large companies: \$3,356,640 <u>Suppliers:</u> (consultant costs) small companies: \$296,918,000 large companies: \$1,423,214,000
2. Instituting the necessary IT systems	(Some company personnel time would be required for operating the IT systems)	<u>Small issuers:</u> \$884,714,400 <u>Large issuers:</u> \$1,678,320,000
3. Commissioning CMR audit	(Some company personnel time would be required for working with the auditors)	\$207,000,000
<i>Total</i>	<i>\$3,438,945,960</i>	<i>\$4,502,154,400</i>

The delineation above shows that slightly more than half of resources expended for the law would comprise resource outflows – money paid to 3rd parties for consulting, IT systems and audits. Yet almost half of the \$7.93 billion burden may be covered with “in-house” human resources that may already exist within the companies affected by the law.

E. Economic costs to issuers versus suppliers

A further object of analysis is the supplier / issuer breakdown of economic cost. Simply re-arranging the organization of costs as presented in *Table 3* above, *Table 4* below tabulates the issuers / suppliers costs.

Table 4: Economic costs to issuers versus suppliers

<i>Task</i>	<i>Economic cost to issuer</i>	<i>Economic cost to suppliers</i>
1. Strengthening internal management systems in view of performing due diligence	<u>Issuers: (internal costs)</u> small companies: \$6,473,520 large companies: \$7,552,440 <u>Issuers: (consultant costs)</u> small companies: \$8,631,360 large companies: \$3,356,640	<u>Suppliers: (internal costs)</u> small companies: \$222,688,500 large companies: \$3,202,231,500 <u>Suppliers: (consultant costs)</u> small companies: \$296,918,000 large companies: \$1,423,214,000
2. Instituting the necessary IT systems	<u>Small issuers:</u> \$884,714,400 <u>Large issuers:</u> \$1,678,320,000	(minor costs may be incurred by suppliers conforming with the issuer IT parameters)
3. Commissioning CMR audit	\$207,000,000	-
<i>Total</i>	<i>\$2,796,048,360</i>	<i>\$5,145,052,000</i>

As the issuers/suppliers cost comparison reveals, the bulk (65%) of the total cost – \$5.1 billion, would be incurred by the suppliers, while the smaller portion (35%) of the total – \$2.8 billion – would be carried by the issuers. This is due to the fact that there are multiple suppliers for each issuer, even taking into consideration our various correction factors. As we noted earlier, SEC’s analysis failed to include the impact on – and associated costs incurred by – the suppliers.

If one were only to consider the efforts/costs necessary at the issuer level – which SEC effectively did – the economic impact according to our model is \$2.8 billion. However, since in light of Section 1502 the entire supply chain needs to be reformed in order for traceability/chain-of-custody to work from mine to CMR disclosure – and arrive at an accurate determination of whether "conflict" is in the mineral – the suppliers along the supply chain must also be factored into the economic impact equation.

F. Sunk versus recurring economic costs

While there would be some internal operational costs associated with performing ongoing due diligence and maintaining the necessary IT systems on a company-to-company basis over the years, the initial implementation of these efforts could be considered “sunk costs” in the economic sense in that they are one-off costs in exchange for services which cannot be thereafter sold or the value otherwise recuperated. Once the management systems are place, the codes of conduct have been revised, the new procedures are instituted, etc., the recurring cost of operating same is very low compared with the initial implementation. Thus, the estimated \$7.73 billion it would take to implement Section 1502 (without taking into consideration the annual \$207 million expenditure in independent CMR audits), would constitute a one-time cost/investment. Thereafter, the most notable “external” cost the issuers would incur on an annually recurring basis is a \$207 million expenditure in commissioning independent CMR audits.

VII. Conclusion

All parties seem to agree that the Dodd-Frank Section 1502 is an important catalyst for action, and that only collective action can implement systems that will be able to track and account for the source of the minerals originating from Central Africa. Our model contends that affected companies in the U.S. would need to carry out three principal actions in order to be in a position to comply with the new law: (1.) strengthening internal management systems in view of performing due diligence, (2.) instituting the necessary IT systems, and (3.) commissioning CMR audits. We estimate that the cost of implementing these actions comes to \$7.93 billion. However, almost half of the total cost – \$3.4 billion – would be met with in-house company personnel time, and the rest – \$4.5 billion – would comprise outflows to 3rd parties for consulting, IT systems and audits. Comparing the costs to the issuers vs. the suppliers, the bulk of the total costs – \$5.1 billion or 65% – would be incurred by the suppliers (the group not included in SEC’s analysis), while the smaller portion of the total – \$2.8 billion or 35% – would be carried by the issuers. These implementation costs would however be borne by thousands of individual firms in lucrative industries such as the industrial, aerospace, healthcare, automotive, chemicals, electronics/high tech, retail and jewelry industries.

This white paper estimates the economic impact of the law to the issuers and 1st tier suppliers, and thus focuses on the impact to companies and their suppliers operating within U.S. jurisdiction. Yet costs will also be incurred throughout the upstream and smelter supply chain links. While promising traceability initiatives – such as the ITRI’s Tin Supply Chain Initiative (iTSCi) and the Conflict Free Smelter (CFS) program – demonstrate market viability, law enforcement and customs protocols in affected central African countries would need to be significantly strengthened to make such schemes truly viable.

As this economic impact analysis demonstrates, transparency and disclosure in the mineral / metal sector will come at a significant cost. As a sweeping law affecting a multitude of industries in the U.S., we regard Section 1502 as a “major” rule as its effect on the economy will exceed \$100 million per year. The challenge facing the SEC is to fashion regulation that enforces the spirit of transparency and disclosure as envisioned by Dodd-Frank Section 1502, yet promulgate circumspect regulation that prevents undue burden being placed on the industries involved in the mineral / metal sector, and so avert whole industries extricating themselves from DRC originating minerals.

IX. Definitions

<i>Term</i>	<i>Definition</i>
1 st tier supplier	Companies that supply materials/products to original product manufacturers. retailers and issuers.
2 nd tier supplier	Companies that directly supply the 1 st tier suppliers.
3T	Tantalum, tin and tungsten
3TG	Tantalum, tin, tungsten and gold
Chain of custody	The ability to physically track the minerals at all points along their trading chain, from their source in the mine to their point of export and delivery to the smelter/refinery.
CM	Conflict Mineral
CMR	Conflict Mineral Report
Downstream	Companies using refined metal
Due diligence	“The process through which enterprises can identify, prevent, mitigate and account for how they address their actual and potential adverse impacts as an integral part of business decision-making and risk management systems.” ⁷⁹
Issuer	“An organization that registers, distributes, and sells a security on the primary market.” ⁸⁰ An issuer is thus an organization that sells securities (stock) to the public.
Upstream	Individuals and companies handling raw ore or slightly processed ore products such as mineral concentrate

⁷⁹ OECD. *OECD Guidelines for Multinational Enterprises*. 25 May 2011.

<http://www.oecd.org/dataoecd/43/29/48004323.pdf>

⁸⁰ Farlex Financial Dictionary. 2009.