Standards Outcome Report

RESOURCE TRANSFORMATION

SASB Standards Development Team
September 11, 2014

Table of Contents

Executive Summary 4

Table I: Summary of IWG Feedback on Issues 5

Table II: Summary of IWG Materiality Feedback 6

I. Disclosure Topics for Reconsideration 7

1. Aerospace & Defense 7

a. Water & Waste Management in Manufacturing – Change focus to Hazardous Waste Management 7

b. Product Lifecycle Management & Innovation –Retain Issue / Revise Metrics 10

c. Management of the Legal and Regulatory Environment – Exclude 13

d. Supply Chain Management & Materials Sourcing – Retain Issue 15

e. Business Ethics – Retain Issue / Revise Metric 17

2. Industrial Machinery & Goods 20

a. Water Management – Exclude 20

b. Waste Management – Exclude 22

3. Containers & Packaging 24

a. Product Lifecycle Management & Innovation – Keep Issue / Revise Metrics 24

II. Disclosure Topics with Weak Evidence of Interest 28

III. Suggested Additional Issues 29

1. Chemicals 30

a. Energy Management – Add 30

b. Community Relations – Exclude 30

c. Supply Chain Management & Materials Sourcing – Exclude 30

2. Aerospace & Defense 30

a. Employee Health & Safety – Exclude 30

b. Employee Recruitment, Development & Retention – Exclude 30

c. Intelligent Procurement – Exclude 31

3. Industrial Machinery & Goods 31

a. GHG Emissions – Exclude 31

b. Employee Health & Safety – Add 31

c. Supply Chain Management and Materials Sourcing - Exclude 32

d. Employee Recruitment, Development, and Inclusion - Exclude 32

4. Electrical Equipment 33

a. Water Management – Exclude 33

b. Employee Health & Safety – Add 33

5. Containers & Packaging 33

a. Employee Health & Safety – Exclude 33
b. Labor Relations – Exclude 34
Appendix I: Draft List of Disclosure Topics for Public Comment 35
Appendix II: Sample Accounting Metrics 36

Executive Summary

This report provides a reference and framework for the SASB Standards Council Resource Transformation sector standards outcome review on September 18, 2014.

In the second quarter of 2014, SASB's Standards Development Team identified the sustainability disclosure topics and related accounting metrics (herein after referred to as "issue(s)" and "metric(s)") that impact shareholder value in five industries in the Resource Transformation sector:

- Chemicals,
- Aerospace & Defense,
- Electrical / Electronic Equipment,
- Industrial Machinery & Goods, and
- Containers & Packaging.

These issues and the associated metrics have subsequently been vetted by external stakeholders through the Industry Working Group (IWG). This process allowed for each issue and metric to be evaluated on the basis of materiality, investor interest, and cost-benefit analysis. Based on this feedback and additional research, revised issues and metrics, together with their technical protocol will open a 90-day public comment period (PCP) starting on October 7, 2014.

This report provides the Standards Council with an update on SASB's evaluation of IWG feedback and additional evidence research, which form the basis for the revised set of issues and metrics for public comment.

- **Table I** (next page) shows the list of issues by industry that were presented to the IWG and SASB's initial assessment and process for revising each of those issues.
- **Table II** shows the extent to which over 75 percent of IWG participants agreed on the materiality of issues; ~79 percent of topics across all industries were deemed by participants to be material.
- **Section I: Issues for Reconsideration** focuses on issues that received relatively low IWG feedback (<75 percent) and/or reservations on materiality and where SASB will reconsider evidence of materiality based on IWG feedback and internal SASB research.
- **Section II: Issues with Weak Evidence of Materiality** typically provides SASB's review of, and response to, specific IWG feedback on weak issues (<50 percent agreement). However, no issues scored lower than 50 percent agreement in this sector.
- **Section III: Suggested Additional Issues** presents a summary of SASB's evidence research on and decision whether to include additional issues proposed by IWG participants.
- **Appendix I** contains a draft list of issues that SASB will present for public comment on October 7, 2014.
- **Appendix II** provides sample accounting metrics for the Containers & Packaging Industry, for reference.

A supplement to this report provides a detailed materiality assessment of each disclosure topic by the IWG, and a list of all IWG comments on issues. Additional internal documents track the detailed evolution of the metrics between the IWG and PCP stages.

Table I: Summary of IWG Feedback on Issues

	Chemicals	Aerospace & Defense	Electrical / Electronic Equipment	Industrial Machinery & Goods	Containers & Packaging
Environment	Greenhouse Gas Emissions	Energy Management	Energy Management	Energy Management	Greenhouse Gas Emissions & Energy Management
	Air Quality	Water & Waste Management in Manufacturing	Air Emissions & Waste Management	Waste Management	Air Emissions & Waste Management
	Water Management			Water Management	Water Management
	Hazardous Materials Management				
Social Capital		Data Security	Product Quality & Safety		Product Quality & Safety
Human Capital	Employee Health & Safety				
Business Model & Innovation	Product Lifecycle Management & Innovation	Product Lifecycle Management & Innovation	Product Lifecycle Management & Innovation	Product Lifecycle Management & Innovation	Product Lifecycle Management & Innovation
		Product Quality & Safety			
Leadership & Governance	Management of the Legal & Regulatory Environment	Management of the Legal & Regulatory Environment			
	Process Safety, Emergency Management & Response	Supply Chain Management & Materials Sourcing	Supply Chain Management & Materials Sourcing		Supply Chain Management & Materials Sourcing
		Business Ethics	Business Ethics & Competitive Behavior		

Legend:
SASB's initial assessment and process for reviewing each issue, following IWG:
General agreement, with some reservations - Section I (>75%)
Significant concerns, seeking additional evidence & inputs – Section I (>50% <75%)
Issue with weak evidence of interest – Not applicable for this sector

Table I: Summary of IWG Feedback on Issues (cont.)

	Chemicals	Aerospace & Defense	Electrical / Electronic Equipment	Industrial Machinery & Goods	Containers & Packaging
Additional Issues Suggested by IWG	Energy Management		Water Management	GHG Emissions	
	Community Relations	Employee Health & Safety	Employee Health & Safety	Employee Health & Safety	Employee Health & Safety
	Supply Chain Management & Materials Sourcing	Employee Recruitment, Development, and Inclusion		Supply Chain Management & Materials Sourcing	Labor Relations

Table II: Summary of IWG Materiality Feedback

Industry	Completed Surveys	Average Approval	Lowest Agreement
Chemicals	42	87%	83%
Aerospace & Defense	16	73%	50%
Electrical / Electronic Equipment	13	85%	77%
Industrial Machinery & Goods	23	65%	48%
Containers & Packaging	23	82%	70%

I. Disclosure Topics for Reconsideration

This section focuses on issues that received relatively low IWG feedback (less than 75 percent of respondents agreed that the issue is material) and where SASB is reconsidering evidence of materiality based on IWG feedback and internal SASB research. Issues are analyzed by industry, looking at (i) **evidence of interest** from SASB's heat map and detailed IWG feedback and (ii) **evidence of financial impact** from existing research in industry briefs complemented by additional research**.** An **assessment** of all evidence is then provided, together with a final **recommendation** for inclusion of removal of the issue.

1. AEROSPACE & DEFENSE

a. Water & Waste Management in Manufacturing – Change focus to Hazardous Waste Management

Evidence of Interest

Heat Map Tests

The heat map score is 73 out of 100, which is the third highest among the issues for this industry and indicates a medium level of interest.

IWG Feedback

Issue priority

The average priority ranking of the issue was very low, ranked 8th out of a total of 8 issues.

Issue materiality

Eight out of the 16 IWG respondents (50 percent) agreed that the issue is material to the Aerospace & Defense industry. Four respondents (25 percent) had reservations about the materiality of the issue, and 4 respondents (25 percent) disagreed that the issue is material.

RESPONSES TO MATERIALITY OF WATER & WASTE MANAGEMENT IN MANUFACTURING IN THE A&D INDUSTRY

Materiality	Corporations	Market Participant	Public Interest & Intermediaries	Grand Total	% of Total
Yes. It is material	2	3	3	**8**	50%
Yes, but with reservations	2	1	1	**4**	25%
No. It is not material	--	4	--	**4**	25%
Grand Total	**4**	**8**	**4**	**16**	

Comments from IWG respondents

The table below highlights some of the key comments received from IWG participants. In general there was some discrepancy over how material the issue of water and waste in manufacturing is and whether or not it should include BOTH water and waste. There was also concern over the angle of how to incorporate legacy/superfund issues as opposed to ongoing efficiency issues. Some respondents also suggested new metrics such as "unrecovered orbital space debris" or "intelligent procurement".

Stakeholder Type	Material ?	Stakeholder Comment
Corporations	Maybe	*Water management is important in how it **impacts energy use** business-wide and **water levels in water-stressed regions only**. A significant portion of facilities energy use stems from heating, cooling and circulating water in operations. We seek to emphasize focus on water quality and reduction at facilities located in water-stressed regions.*
Corporations	Yes	*The materiality of **water management** **will not be relevant to every aspect of an aerospace and defense business**. Some manufacturing processes i.e. aircraft manufacture do not require any water. It may be worth considering also **enabling companies to highlight which parts of the business have a particularly high water intensity**. **Waste management** can also be thought of within the context of **'intelligent procurement'** i.e. avoiding waste right at the material purchase stage rather than further down the chain. It may therefore make sense to define an indicator that asks how companies procure to avoid waste.*
Public Interest & Intermediaries	Maybe	*When looking at the brief, it appears that about half of the content for supporting the argument for water and waste inclusion is based on **costs or concerns from legacy matters rather than ongoing operations**. However, when one looks at the SASB metrics to be reported, **none address legacy concerns and all are associated with ongoing water use or waste generated in active manufacturing**. Legacy concerns are already covered in the financial statements, if they are material. Therefore I would remove the text and the associated environmental liability and superfund references on page 7, as these matters are covered elsewhere and also have no relation to the proposed Water and Waste reporting metrics, which only address impacts from active operations. […]*

Evidence of Financial Impact

Initial SASB Research (Excerpt from Industry Brief for IWGs)

Water-stressed regions exist around the world, and given the global nature of the aerospace and defense industry it is not surprising that many companies operate in these regions. United Technologies Corporation (UTC), a multinational conglomerate whose operations include a significant presence in the aerospace and defense industry, has acknowledged the impacts of water scarcity on their business. UTC, like many of its peers, uses the World Business Council for Sustainable Development's (WBCSD) Water Tool, along with other resources, to identify water scarcity risks within their global operations.[i] In their 2013 Carbon Disclosure reporting the company stated "UTC uses 1.7 billion gallons of water in our manufacturing operations, many of which are located in water constrained parts of the world. An increased probability of droughts means greater potential costs for our operation and a greater likelihood of operational disruption during extreme drought periods."[ii]

Lockheed Martin's 2013 Carbon Disclosure Project filing outlines the extent to which the company is exposed to risk related to operations in water-scare regions. In total 63 percent of the company's total operations, measured by employee headcount, are in water-stressed areas. The majority of the affected operations are in the U.S., where approximately 59 percent of their total operations are exposed to water scarcity, the remaining four percent are located in Mexico, Australia and the United Kingdom.[iii]

Seven out of the top ten U.S.-listed companies, by revenue, mention environmental liabilities as a material risk in their Form 10-K filings for fiscal year 2013.[iv] For example, Raytheon in the Risk Factors

section of its' Form 10-K states, "our operations expose us to the risk of material environmental liabilities." The disclosure further highlights that criminal violations of U.S. federal environmental statues could result in a facility being placed on the "Excluded Parties List" used by the General Services Administration (GSA). Inclusion in the Excluded Parties List bars a facility from performing any U.S. Government contract. This highlights the impact this issue can have on existing market share. Environmental statutes that would subject a facility to scrutiny on this matter include the Federal Clean Air Act and the Clean Water Act. Raytheon points out "we incur, and expect to continue to incur, capital and operating costs to comply with these laws and regulations."[v]

United Technology Corporation's Form 10-K discloses that the company has 710 locations where they may have remediation liability, and they have resolved their liability at 322 locations. The company has also been identified as a potentially responsible party at 124 Superfund sites. The filings state "the number of Superfund sites, in and of itself, does not represent a relevant measure of liability because the nature and extent of environmental concerns vary from site to site and our share of responsibility varies from sole responsibility to very little responsibility. […] At December 31, 2013 and 2012, we had $936 million and $847 million reserved for environmental remediation, respectively."[vi] This disclosure demonstrates the scale of complexity in managing the issue. Proper management can insulate companies in this industry from regulatory recourse while also maximizing cost efficiencies.

Analysis

The issue of water quantity seems NOT to be material for the industry. Only one of the major companies in the industry discloses water usage in its CSR report (Boeing); while others only mention their water targets and/or programs briefly. Some companies reported that it was not deemed material to their business. The analysis of BBG ESG data for 2012 has data points for 6 A&D companies; the average amount of water that these companies use (3,553 thousand cubic meters) is well below the industry averages for Chemicals (136,338) and Electrical Equipment (21,534).

The table below outlines some of the topics identified by IWG respondents that need additional research, as well as a brief summary of SASB's proposed recommendation and response.

Key Takeaway Notes/ Action Items	SASB Response
Consider focusing on water use in water stressed areas and for heating/cooling purposes	The issue of water quantity was not deemed material based on low usage.
How important is water versus waste?	Heat Map tests show that waste management and effluents is a top quartile issue for the industry, including in form 10-Ks. On the other hand, water management falls between the 3rd and 4th quartile of issues.
1) How much water does this sector really use (across the industries?) 2) Is intelligent procurement and/or some metric that better defines cost savings worth pursuing for waste?	1) SASB's cross-cutting issues research for A&D revealed that overall industry usage is low and the opportunity for improvement was small 2) Intelligent procurement was discussed during post-IWG meetings and it was determined to overlap with other issues (such as Product LCM)
Is it true water is not part of the RFP process?	Violations of the Clean Water Act were identified in multiple 10-k filings as a material risk for not obtaining government contracts/RFPs. This risk could be elevated with the introduction of hazardous waste or other effluents.

1) Consider if legacy issues argument is relevant; consider removing Superfund info as part of this section 2) Determine how "hazardous"/significant the waste really is 3) Determine if "orbital space debris" is relevant to consider?	1) Legacy issues may be relevant when considering the likelihood of Clean Water Act violations. 2) The Aerospace Products and Parts Manufacturing share of hazardous waste was ranked as the 16th highest industry in the EPA's list of the top 50 largest quantities of hazardous waste generated. Proper management of the waste is important to stay in compliance and avoid regulatory fines and potentially losing the license to operate and/or apply for government contracts. 3) Orbital space is not relevant across all companies in the A&D industry

Recommendation

- Retain issue but focus on management of hazardous waste.
    - A&D was ranked the 16th largest industry for the quantity of hazardous waste generated, therefore hazardous waste is still relevant to consider.
    - Conduct additional research on waste management fines and enforcements to determine the implication on the company, and potential for clean water violations.
    - Review Oil & Gas/other industries to compare/benchmark hazardous waste impact.
    - Focus on management of current issues (vs. legacy ones)

- Exclude angles of (i) water quantity/scarcity and (ii) non-hazardous waste
    - For consistency with SASB's approach in focusing on industries with higher water withdrawal rates, and to recognize the relatively low scores it received on the IWG feedback. Water quantity is not considered to be material for this sector, but should be added to the "emerging issues" list for future consideration.
    - For non-hazardous waste end of life waste is covered under product lifecycle.

b. Product Lifecycle Management & Innovation –Retain Issue / Revise Metrics

Evidence of Interest

Heat Map Tests
The issue received a high score of 90 out of 100

IWG Feedback

Issue priority
The average ranking of the issue by IWG respondents was 5th out of 8 issues.

Issue materiality
Eleven out of 16 respondents (69 percent) agreed that the issue is material to the industry. Only two respondents disagreed, and neither were corporations.

RESPONSES TO MATERIALITY OF PRODUCT LIFECYCLE MANAGEMENT IN A&D INDUSTRY

Materiality	Corporations	Market Participant	Public Interest & Intermediaries	Grand Total	Percent of Total
Yes. It is material	**2**	**6**	**3**	11	**69%**
Yes, but with reservations	**2**	**1**	**--**	3	**19%**
No. It is not material	**--**	**1**	**1**	2	**13%**
Grand Total	4	8	4	16	

Comments from IWG respondents

Given the unique role that government customers play throughout the contractual lifecycle of the product (from RFP design to end of life use), some IWG respondents had reservations about the extent of control a business can have in this process. Other respondents were hesitant about subjectivity in comparing companies against each other, particularly given the state of flux in LCM measurement. The two participants that did not think this topic was material were primarily concerned with losing competitive advantage through disclosure, and also that not all companies market products (vs. services).

Stakeholder Type	Material?	Stakeholder Comment
Corporations	Maybe	*Our **end-of-life product requirements are contractually dictated by the customer**, which in most cases is the U.S. Government. At this time, we are **unable to control the collection/ disposal method of these materials**. There is a Government protocol as much of this is considered government-furnished equipment (GFE).*
Corporations	Maybe	*This **indicator will not be relevant across aerospace and defense** as some product development will be client driven and as such environmental considerations may be difficult to incorporate simply because the customer may not be requiring it. Not clear therefore what this metric is trying to tell us and how that links into materiality. It may be helpful to frame this indicator/factor within the context of 'intelligent procurement' as mentioned elsewhere in this response i.e. linking to cost savings, efficiencies that are gained from better procurement as a result of design innovation, material choice, etc.* *The product lifecycle development phases differ in the defense industry compared to the FMCG industry, as Government customers scope the product that they want and a company responds with a product design incorporating energy efficiencies and technologies that drive sustainability. So a **company's response to tender can influence design decisions and product scope, but cannot make a customer incorporate them into the agreed product contract**.*
Market Participant	Yes	*Product lifecycle management is perhaps a bit more **subjective to measure** for the Aerospace and Defense sector - there are "new" platforms, new aircraft, new cockpits, re-engineered aircraft, etc.*
Public Interest & Intermediaries	Maybe	*Product Lifecycle Management & Innovation are constantly in a state of flux. Measurement controls are not likely to have a relevant factor in sustainability practices.*

Evidence of Financial Impact

Initial SASB Research (Excerpt from Industry Brief for IWGs)

For the transportation sector the environmental burden is large enough that regulatory compliance costs are emerging, these costs will have customers and clients of the aerospace and defense industry demanding products with lower emissions. The latest EPA data shows for 2011, transportation accounted for 27 percent of U.S. greenhouse gas emissions, of which 6.1 percent came from commercial aircraft. Over 99 percent of these emissions are in the form of carbon dioxide.[vii] Additionally, because of the altitude at which the emissions occur, the effects on the climate can be magnified because they are unable to be absorbed by trees and plants, nature's carbon "scrubbers."[viii] Under the Clean Air Act, the EPA is currently evaluating whether aircraft emissions endanger society, the results of which could lead to regulatory measures.[ix]

The fuel efficiency of aircraft has several drivers, including aircraft design, route selection, and load factor. Newer aircraft are more fuel-efficient, and one report estimates that every 10 years, the aircraft being built are 10 to 15 percent more efficient.[x] However, existing aircraft can be retrofitted for efficiency; for example, adding winglets can increase fuel efficiency by 1.8 percent,[xi] and replacing an engine on an existing aircraft can improve efficiency by 15 percent.[xii]

Boeing is working with NASA on the development of the X-48C, an unmanned scale model of a heavy-lift blended wing aircraft. The triangular, tailless design produces lift from the whole craft, not just the wings, and is lighter and simpler to manufacture. This translates into greater range, fuel economy, reliability and lifecycle savings, as well as lower manufacturing costs. The company estimates blended-wing-body designs could lead to substantial increases in energy efficiency for cargo aircraft, with fuel cost savings of 18 to 60 percent compared to existing models.[xiii]

It is estimated that, in the next 20 years, 12,000 aircraft are destined for the junk yard.[xiv] Feeling both pressure and opportunity, industry players like Boeing formed the Aircraft Fleet Recycling Association (AFRA) to increase the recyclability of aircraft, including through the use of advanced composite carbon fibers, aluminum and other metals. In 2010, AFRA set a target recycling rate of 90 percent by 2016.[xv]

The DoD, the largest customer in the defense industry, has highlighted climate change and energy security in their strategic planning announcements. Every four years, the DoD releases the Quadrennial Defense Review. The document describes the strategic planning of the agency. The 2014 Quadrennial Defense Review describes a long-term approach to managing climate adaptation, stating "the impacts of climate change may increase the frequency, scale and complexity of future missions […]. Our actions to increase energy and water security, including investments in energy efficiency, new technologies, and renewable energy sources, will increase the resilience of our installations and help mitigate these effects." The agency makes it clear that its demand for products from defense primes will prioritize product lifecycle management in order to fulfill the U.S. defense strategy.[xvi]

The DoD is increasingly focused on energy efficiency, driven by two reinforcing factors. First, energy efficiency impacts the amount and frequency of delivery of fuel to troops during military operations and can therefore minimize military's exposure to vulnerable supply lines. Second, the benefit of energy efficiency is compounded by the extreme energy costs the military incurs when transporting fuel to operations in remote or dangerous locations. These two aspects are reflected in fuel logistics considerations for the DoD in its capability requirements and acquisition decision processes, which focus on Energy Key Performance Parameters as well as the Fully Burdened Cost of Energy, a measure of the cost of not just buying fuel but also of transporting it to the battlefield and protecting it from enemy attacks.[xvii]

Lockheed Martin outlines in their Sustainability Report that the "leading cause of battlefield casualties relates to the delivery of fuel and water to troops, and the largest consumer of fuel in the battlefield is generator systems." This indicates that generator, vehicle, and equipment fuel and water efficiency is

material to military operations. By offering resource efficient products, defense contractors can save the lives of their customers and ensure higher mission success rates. The U.S military puts environmental criteria into evaluating contract bids. For example, in 2012 Lockheed Martin was awarded a new contract to design and develop a Solid Oxide Fuel Cell (SOFC) generator. The new product integrates solar panels in order to use up to 50 percent less energy in tactical situations.[xviii]

Recommendation

- Analysis of IWG feedback indicates that while the issue is likely to be material, the challenge lies in designing metrics that are relevant and comparable across companies with a variety of different subsectors.
    - The metric proposed to the IWG will be modified for the PCP and include the technical protocol, which will enhance relevance and comparability.

c. Management of the Legal and Regulatory Environment – Exclude

Evidence of Interest

Heat Map Tests
The issue received a very low score of 5 out of 100

IWG Feedback

Issue priority
The average ranking of the issue by IWG respondents was 7th out of 8 issues.

Issue materiality
Twelve out of 16 respondents (75 percent) agreed that the issue is material to the industry. Three respondents agreed, but had reservations about whether or not the issue was material, and only one respondent disagreed.

RESPONSES TO MATERIALITY OF MANAGEMENT OF THE LEGAL AND REGULATORY ENVIRONMENT IN A&D INDUSTRY

Materiality	Corporations	Market Participant	Public Interest & Intermediaries	Grand Total	Percent of Total
Yes. It is material	3	5	4	**12**	75%
Yes, but with reservations	1	2	--	**3**	19%
No. It is not material	--	1	--	**1**	6%
Grand Total	**4**	**8**	**4**	**16**	

Comments from IWG respondents
Respondents that indicated they had reservations about the materiality were particularly concerned about how to measure/compare political contributions and also whether or not the issue is broad enough to justify the title.

Stakeholder Type	Material?	Stakeholder Comment
Corporations	Maybe	*The title of this indicator is somewhat misleading. Perhaps best to **retitle it to Political contributions and lobbying** which is supportive of the data that*

		will be gathered for it? *The definition and content for this issue is **too narrow** within the briefing document. As a company representative, the information we presume that should appear below this heading would include **export control and product legislation**. If this issue is to focus only on lobbying, then the heading needs to change to appropriately focus the stakeholder on the issue.* *At [Company X], our **Lobbying and Political Support Policy sets out the standards** to be followed by anyone engaged in lobbying or other political engagement on behalf of [Company X], including those from outside the business. …*
Market Participant	No	*Although political spending is rising, it **doesn't have a direct effect** on company financials and is **never discussed on earnings calls**.*
Market Participant	Maybe	*How this would be **measured is not clear**. If it is dollars spent on legal and regulatory oversight, this would seem to be highly subjective and also potentially something that companies would be highly averse to disclosing (though today spending on lobbying is being required, which is somewhat similar but a bit more specifically measurable).*
Public Interest & Intermediaries	Maybe	*The management of the legal and regulatory environment is also **difficult to measure** based upon prevailing attitudes and trends in a court of law.*

Evidence of Financial Impact

Initial SASB Research (Excerpt from Industry Brief for IWGs)

The aerospace and defense industry has a strong history of political spending. Every year since 2008 companies have spent over $50 million collectively on lobbying efforts, with Boeing, United Technologies Corporation, and Lockheed Martin routinely spending $10 to $20 million each.[xix]

Northrop Grumman, one of the largest defense contractors and naval vessel builders has a proactive approach to political contribution disclosure. Their website features a Political Contributions landing page within their Investor Relations material. The company communicates it's their strategy on political contributions with claims like "participation in the public policy process is important to enhancing shareholder value," and lays out their policies and mechanisms for participation in the political environment. One such mechanism is the company's Employee Political Action Committee (PAC), which accepts contributions from eligible employees and allocates them to campaigns, national political organizations and Political Action Committees (PACs). A breakdown of all the contributions is disclosed on the company website with 2012 contributions totaling $2,145,250.[xx]

Analysis

- For consistency of how this sector is assessed, SASB reviewed the title and content of this topic across other industries, in the Non-Renewable Resources (NRR) sector such as: Oil & Gas Exploration/Refining/Services.
    - The issue of Management of the Legal and Regulatory Environment, (related to the issue commonly known as political lobbying or contributions), was included as an issue for Oil and Gas, and Coal industries, given that the Securities and Exchange Commission (SEC) was said to be considering related disclosure. More recently, the US SIF reported that over one million comments have been submitted to the SEC on this topic, calling on the agency to take immediate steps to require publicly traded corporations to disclose their use of corporate resources for political purposes to their shareholders.
    - Even though defense spending lobbying ranked ~#20 out of 121 industries, there is a stronger correlation and case study examples linked to lobbying for short term goals in the Oil & Gas Industry.

Recommendation

- SASB will remove this topic because the industry has relatively lower spending on lobbying and the spending is mainly directed toward awarding defense contracts (vs influencing pending laws).
- The issue may be considered as an emerging issue since the SEC and congress are still considering mandatory disclosure of this topic.

d. Supply Chain Management & Materials Sourcing – Retain Issue

Evidence of Interest

Heat Map Tests
The issue received a low score of 30 out of 100

IWG Feedback

Issue priority
The average ranking of the issue by IWG respondents was 2nd out of 8 issues.

Issue materiality
Ten out of 16 respondents (63 percent) agreed that the issue is material to the industry. Six respondents (38 percent) agreed, but had reservations about whether or not it was material and no respondents disagreed.

RESPONSES TO MATERIALITY OF SUPPLY CHAIN MANAGEMENT & MATERIALS SOURCING IN A&D INDUSTRY

Materiality	Corporations	Market Participant	Public Interest & Intermediaries	Grand Total	Percent of Total
Yes. It is material	2	4	4	**10**	63%
Yes, but with reservations	2	4	--	**6**	38%
Grand Total	**4**	**8**	**4**	**16**	

Comments from IWG respondents
IWG respondents noted that supply chain reliability is essential to this sector, however, one respondent had hesitations that current metrics do not define the material factors that impact supply chain reliability. Some participants noted that providing just a quantitative measure of components can be misleading. There was also concern that the scope of this issue was too narrowly focused on conflict minerals and counterfeit products. Finally, there were concerns of comparability of data for counterfeit products and potential overlap with the product quality and safety issue.

Stakeholder Type	Material?	Stakeholder Comment
Corporations	Maybe	*Supply chain **reliability is essential** to this sector, and will be increasingly so as global aerospace production increases in response to expanding demand in developing economies and the replacement of the existing global airline fleet. **None of the metrics suggested define a material issue**, nor do any define an issue that should significantly impact supply chain reliability.*
Corporations	Maybe	*The indicator on counterfeit components is **not equally applicable/relevant** to every aerospace and defense company. As a consequence, the consistency and comparability of data will therefore be misleading. It can also be argued that this indicator overlaps with product quality and safety.*

		With respect to critical materials, providing just a quantitative measure can be misleading as it is possible that a critical component may only make up 0.1% of one company's revenue whereas another company may have 10% of its revenues from critical components, but it does not necessarily mean the higher number is a negative signal. The quantitative numbers therefore need to be put into context to avoid misinterpretation of the data as it is equally important to understand what companies are doing to manage the issues around critical components. The ***numbers alone can be misleading****.* *The definition and content for this issue is* ***too narrowly focused on conflict minerals and counterfeit products*** *within the industry brief. To address sustainability issues across supply chain, the* ***content would also need to incorporate a broader set of supply chain standards/metrics including bribery and corruption, employee standards and human rights.*** *…*
Market Participant	Maybe	*Supply chain management* ***metrics tends to focus on the percentage of material input costs that are purchased*** *are competitive bid for an entire company (rather than divisions or individual businesses) - this is readily quantifiable and verifiable and should be highly relevant for investors.*
Public Interest & Intermediaries	Yes	*Support for the supply chain threat of a lack in rare earth elements can be found in the United States Magnet Materials Association (****USMMA's****) February 2010 six-point plan to address what they describe as the "****impending rare earth crisis****" which they assert poses a significant threat to the economy and national security of the United States. …*

Evidence of Financial Impact

Initial SASB Research (Excerpt from Industry Brief for IWGs)

Concerns over counterfeit parts in the U.S. industry were significant enough to be examined by the Senate Armed Services Committee as part of a 2012 report.[xxi] The investigation found counterfeit parts, usually from China, in at least seven aircraft, including Lockheed Martin's C-130J transport aircraft, Boeing's P-8A Poseidon transport aircraft, and L-3 Communication's 27J Spartan transport aircraft. Some of these planes have been deployed to Afghanistan. The report elaborated "suspect electronic parts from China were installed on military systems and subsystems that were manufactured by Raytheon Co., L-3 Communications and Boeing," demonstrating that this problem affects major companies across the industry. While there are no links to injuries resulting from the parts, Michigan Senator Carl Levin stated that the committee "identified lots of places where, unless correction was made, there was real fear that those kind of disastrous consequences could take place." At the same time, the Pentagon was conducting 255 investigations into defective and substandard parts which may involve counterfeit products.[xxii]

Aerospace and defense companies face potential disruptions in the sourcing of materials within their supply chain. Several critical components in aerospace and defense products depend on minerals that have the potential to fuel conflict, human rights violations and illicit activities in regions where they are mined. The industry also depends on rare earth minerals, also used by several other industries, the global production of which is limited and prices subject to volatility.

Aerospace and defense companies represent a significant amount of the global use of "conflict minerals." Artisanal and small-scale mining in the DRC is responsible for much of the current global output of conflict minerals. While such mining is an important source of livelihood to the local population, it also is helping to finance armed conflict in the region and has significant ecological impacts. Several legislative and project-based efforts are underway globally to improve traceability and due diligence of the supply of minerals from the DRC. These have the potential to affect aerospace and defense companies and their suppliers, including providing incentives and resources for leadership in supply chain management.

Companies are also motivated to manage the social impacts of their supply chains by potential impacts on their brand value from consumer and NGO campaigns.

In the U.S., the SEC estimates that costs to comply with the Conflict Minerals provision of the Dodd-Frank Act will include a total of $3 to $4 billion in the first year and at least $200 million each year afterward. Other estimates suggest compliance costs may be as high as $16 billion.[xxiii] However, the SEC expects that non-reporting companies that are part of reporting companies' supply chains will bear much of the cost of the final rule.[xxiv] The new disclosure rule was expected to affect approximately 6,000 issuers and their 275,000 suppliers.[xxv]

Apart from regulatory costs, global input prices of 3TG have shown volatility, sometimes directly related to the conflict in the DRC. A 31 percent increase in tin prices in 2008 coincided with a rebel offensive against the DRC's primary tin trading center. The DRC also leads in the global production of tantalum, with various estimates suggesting it is responsible for eight to 20 percent of global production.[xxvi] Due to supply constraints and rising demand, the price of tantalum increased from $110 in 2011 to nearly $300 in 2012.[xxvii]

Analysis
SASB has had several additional follow-up interviews with industry experts to better understand the industry's supply chain management and sourcing processes. The issue scored well because sourcing and procurement is highly important to these companies and there is a lot of internal efforts focused on procurement.

Recommendation -- Retain Issue / Revise Metric

- Retain issue but revise metrics to address the IWG concerns noted above.
- The critical material metric will be changed to a discussion and analysis (instead of a quantitative measure) to address concerns around potentially misleading information.
- Management of conflict and critical materials was deemed relevant following additional research.

e. Business Ethics – Retain Issue / Revise Metric

Evidence of Interest

Heat Map Tests
The issue received a high score of 80 out of 100

IWG Feedback

Issue priority
The average ranking of the issue by IWG respondents was 4th out of 8 issues.

Issue materiality
Twelve out of 16 respondents (75 percent) agreed that the issue is material to the industry, and these responses were from an even mix of stakeholders (corporations, market participants, and intermediaries). Four respondents (25 percent) disagreed, and all were market participants.

RESPONSES TO MATERIALITY OF BUSINESS ETHICS IN A&D INDUSTRY

Materiality	Corporations	Market Participant	Public Interest & Intermediaries	Grand Total	Percent of Total
Yes. It is material	4	4	4	**12**	75%
No. It is not material	--	4	--	**4**	25%

Grand Total	**4**	**8**	**4**	**16**	

Comments from IWG respondents
The four market participants that did not believe this is a material issue noted concerns about how to consistently measuring this topic across a peer set, relatively small fines, the classified nature of some investigations, and that responses were likely be "window dressing" as opposed to concrete disclosures. One respondent also noted that the briefing should be expanded to address external legislation and respond to external stakeholder concerns.

Stakeholder Type	Material?	Stakeholder Comment
Corporations	Yes	*Important to maintaining license to operate. However also worth considering the way that fines are paid given that investigations, etc. can drag out over many years before the fine is actually paid by which time the company has learned from the mistake and implemented the appropriate measures and is a different company to what it was when the issue that led to the fine came up.* *The briefing paper focuses on the legislative environment, when it could be **broaden to include what a company is doing to respond to external legislation and to respond to external stakeholder concerns**.*
Market Participant	No	*The industry brief gave an example of United Technologies Corporation pleading guilty to knowingly violating US regulations, with **relatively small fines** that would not have a material impact on financials of the company. Business ethics is simply **not an issue** that comes up very much with companies in the industry.*
Market Participant	Yes	*Important to maintaining **license to operate**. However also worth considering the way that fines are paid given that investigations, etc. can drag out over many years before the fine is actually paid by which time the company has learned from the mistake and implemented the appropriate measures and is a different company to what it was when the issue that led to the fine came up.*
Market Participant	No	*Any disclosure on this topic would likely be window dressing as opposed to concrete, supported disclosure.*

Evidence of Financial Impact

Initial SASB Research (Excerpt from Industry Brief for IWGs)
In 2012 Pratt & Whitney Canada (P&WC), owned by United Technologies Corporation, pled guilty to knowingly violating the State Department's International Traffic in Arms Regulations.[xxviii] Per ITAR's regulations, the U.S. does not export U.S. defense articles or services to China. UTC's violation is the result of an effort from China to develop an attack helicopter masked by a program to develop a civilian helicopter, for which P&WC supplied engines and control software. At the request of the client, the software was modified in a way that enabled military applications and violated requirements of the State Department. For exporting military enabled software developed in the U.S., UTC faced total penalties of $75 million, of which $20 million must be dedicated to future compliance. The Office of Defense Trade Controls Compliance also imposed a partial debarment of P&WC from ITAR license privileges for at least one year.[xxix]

The first large-scale undercover investigation for FCPA enforcement involved the defense industry. The operation was aided by FBI informant, Richard Bistrong, who aided the authorities in collecting audio and video evidence to prove that the defendants had engaged in a complicated scheme to pay a $1.5 million

bribe to the Gabonese defense minister in exchange for a piece of a $15 million contract to outfit the Gabonese presidential guard. The result was the arrest of 22 executives of multiple mid-sized police and military equipment companies for violating the FCPA.

Mr. Bistrong's was approached to be an informant in the case as a result of his own crimes. He was involved in bribery schemes while working for Armor Holdings (later bought by BAE Systems) in Nigeria and the Netherlands, where he bribed officials to win contracts from the United Nations. For his crimes Bistrong spent time in prison, was fired from Armor Holdings, who paid more than $15 million in fines.[xxx]

Recommendation – Retain Issue/Revise Metric

- SASB feels comfortable with keeping the fines and settlements metrics – which received a high score for comparability (89.6%) – and the management system metric, which is complementary as predictive/forward looking.
- SASB is looking into an alternative metric for weapons sales in embargoed countries.
- The technical protocol will provide details on definitions and scope of metrics to ensure relevance and comparability.

2. INDUSTRIAL MACHINERY & GOODS

a. Water Management – Exclude

Evidence of Interest

Heat Map Tests
The issue received a relatively low score of 45 out of 100

IWG Feedback

Issue priority
The average ranking of the issue by IWG respondents was 3rd out of 4 issues.

Issue materiality
Twelve out of 23 respondents (52 percent) agreed that the issue is material to the industry. Eight respondents (35%) had reservations about the materiality, and three respondents did not think it was material.

RESPONSES TO MATERIALITY OF WATER MANAGEMENT IN INDUSTRIAL MACHINERY & GOODS INDUSTRY

Materiality	Corporations	Market Participant	Public Interest & Intermediaries	Grand Total	Percent of Total
Yes. It is material	4	6	2	12	52%
Yes, but with reservations	--	5	3	8	35%
No. It is not material	2	--	1	3	13%
Grand Total	**6**	**11**	**6**	**23**	

Comments from IWG respondents
Respondents with reservations about whether or not this issue is material had concerns about how direct an impact water usage has on these companies, particularly given the relatively low withdrawal/usage rates. However, the topic was more of an interest in areas with potential water scarcity.

Stakeholder Type	Material?	Stakeholder Comment
Public Interest & Intermediaries	Yes	*Water management is **not now a significant proportion of costs of goods sold**, but is **important for industrial facilities "license to operate"** in communities concerned about water resource management.*
Corporations	No	*The **level of significance and current uncertainty regarding water management measures is the rationale for selecting the issue as 'not material'**. Generally, as an industry, up-stream industrial machine manufacturers, have **significantly lower levels of water withdrawal/use in comparison to other industries** such as the chemical or garment industry. Although, we see that expenses related to water use may rise in the future and availability may be an issue in certain countries, based on current costs and usage it does not appear to be a strong enough issue to constitute materiality based on the definition provided to us. […]*
Public Interest & Intermediaries	No	*This type of activity **does not consume much water**, nor do most of the machines built, so the issue is not material; compared to such industries*

		as paper and pulp, or energy production, water management is not essential.
Market Participant	Maybe	*Water management **generally does not have a direct material impact** on companies in the Industrial Machinery & Goods Industry as the five representative companies in the study noted nothing material in their 10K filings.* *However, mismanagement of water, including **excessive use or working in regions with scarcity issues could have a material impact** on company operations.*

Evidence of Financial Impact

Initial SASB Research (Excerpt from Industry Brief for IWGs)
Several major machinery manufacturing companies report annual water consumption along with the percentage of facilities located in areas of water stress, an indication of company interest in the issue. Water use at industrial manufacturing companies tends to be lower relative to other manufacturing industries, such as chemicals.[xxxi] However, as discussed above, disclosure of company operations in water stressed areas indicate water-related operational risks in addition to increased operating costs. For the year 2012, General Electric reported that of the company's 65 manufacturing sites that use more than 15 million gallons of water per year, five were in areas of potential extreme water stress,[1] while 19 sites were in regions of medium water stress. Fifteen percent of the company's total water consumption occurred in areas of water scarcity.[xxxii]

John Deere committed to reducing its overall water use by 15 percent from 2012 to 2018, especially in areas designated as water-scarce.[xxxiii] Similarly, Cummins determined that its highest priority water risk sites are currently in India and Mexico, and the company has focused water conservation and community outreach in these and other locations of water stress. [xxxiv] Disclosure of company interest in water availability and operations located in designated areas of water stress reflects the industry's concern with water risk. While not all companies disclosure their potential exposure to water-stress, water consumption and conservation efforts are more commonly reported. Caterpillar, one of the largest machinery manufacturers, has set a goal of maintaining water levels at 2006 baseline levels through 2020. The company reported that its 2012 water consumption was 17 percent below 2006 levels due to water conservation efforts.[xxxv]

Analysis

- SASB analyzed the water usage within specific companies (total amounts and water-stressed regions) as well as the industry as a whole (relative to other industries) and did not determine water usage to be a material issue for the industry.
- SASB also reached out to discuss this topic with a major corporation who also confirmed that its water usage was relatively low (similar to an office park) since it primarily involved the design and assembly of pre-manufactured parts.
- SASB found no evidence of water-related financial impact within top companies in the industry. However, there is concern at the company level about operations in water-stressed regions – evidence of interest.

Recommendation

- Exclude water management, for consistency with SASB approach in focusing on industries with higher water withdrawal rates, and to recognize the relatively low scores it received on the heat map and IWG feedback.

[1] According to the Maplecroft Water Stress Index. [http://maplecroft.com/about/news/water_stress_index.html]

- Water is not considered to currently be material for this sector, but should be added to the "emerging issues" list for future consideration.

b. Waste Management – Exclude

Evidence of Interest

Heat Map Tests
The issue received a medium-low score of 55 out of 100

IWG Feedback

Issue priority
The average ranking of the issue by IWG respondents was 4th out of 4 issues.

Issue materiality
Eleven out of 23 respondents (48 percent) agreed that the issue is material to the industry. An additional 10 respondents (43 percent) agreed, but had reservations about the materiality. Two respondents disagreed, and both were corporations.

RESPONSES TO MATERIALITY OF WASTE MANAGEMENT IN INDUSTRIAL MACHINERY & GOODS INDUSTRY

Materiality	Corporations	Market Participant	Public Interest & Intermediaries	Grand Total	Percent of Total
Yes. It is material	2	6	3	11	48%
Yes, but with reservations	2	5	3	10	43%
No. It is not material	2	--	--	2	9%
Grand Total	**6**	**11**	**6**	**23**	

Comments from IWG respondents
Two corporations indicated this was not material, due to 1) low costs associated with disposing/recycling waste streams and 2) voluntary efforts that go "beyond compliance" don't provide enough additional context to rise to the level of material information. Several respondents noted that waste management is material (and a potentially long-term liability) if depicting a risk or cost that is associated with US CERCLA, RCRA, or other site cleanup obligations.

Stakeholder Type	Material?	Stakeholder Comment
Corporations	Yes	*Effectiveness in minimizing waste (particularly hazardous waste) is a reasonable surrogate indicator to understand potential pollution liability.*
Corporations	No	*It is assumed that companies are complying with governing waste management laws, and the specifics of that compliance plus any* ***voluntary efforts that go "beyond compliance" don't provide enough additional context to rise to the level of material information****. The only waste management information depicting a* ***risk or cost that is material is that describing US CERCLA or other site cleanup obligations****, and the reserves established for those obligations are already required reporting.*

Stakeholder Type	Material?	Stakeholder Comment
Corporations	No	*The company spent **less than $1 million for disposing /recycling** its waste streams. Even if we include the potential Superfund type of liabilities associated with the disposing / recycling of these wastes, I still don't believe waste management should constitute material information pertaining to companies in this industry.*
Corporations	Maybe	***Clarity is needed on companies touting 0 waste to landfill** in terms of a consistent definition. Some companies consider waste going to combustion for energy recovery as decrease in amount sent to landfill, yet combustion ash is sent to landfill. Other companies consider combustion ash residuals going to landfill as counting toward landfill disposal. In addition, **waste minimization programs can actually COST more money** due to fluctuations in commodity pricing as well as distance recovered materials may need to be shipped.*
Market Participant	Maybe	*Waste management generally **does not have a direct material impact** on companies in the Industrial Machinery & Goods Industry as the **five representative companies in the study noted nothing material** in their 10K filings.* *However, **mismanagement of waste, can lead to fines** from regulatory bodies and additional clean-up costs.*

Evidence of Financial Impact

Initial SASB Research (Excerpt from Industry Brief for IWGs)

According to the EPA, solid waste operating and capital expenditures related to solid waste pollution abatement totaled $635 million for the transportation equipment and machinery manufacturing industries in 2005. This comprised 10.6 percent of total manufacturing sector solid waste abatement costs.[xxxvi]

Top manufacturers reveal strong waste recycling rates in recent years. John Deere and Caterpillar report recycling rates of 60 and 95 percent in 2012, respectively.[xxxvii] This may be due to a high percentage of easily recyclable materials used at many manufacturing companies; 55 percent of Cummins' waste consisted of scrap metal in 2012.[xxxviii] Waste-related costs can be significant, especially pertaining to waste remediation. Past financial disclosures suggest that waste can have material impacts on manufacturers. Navistar, a major diesel engine and truck manufacturer, states waste reduction in two out of four core expectations for the company's financial performance as key aspects of its lean enterprise and financial growth expectations.[xxxix] In its 2013 Form 10-K, Parker Hannifin reports that, "The Company's estimated total liability for environmental matters ranges from a minimum of $12.5 million to a maximum of $80.1 million. The largest range for any one site is approximately $15.1 million."[xl]

Analysis

- Waste disposal is not a significant expense, as **rates of reuse** of the greatest waste streams (commonly metals/plastics) is high.
- Mentions of hazardous material in company disclosure are rare.
- The volume of waste generated is relatively low compared to total waste stream (steel etc.) and to other industries.
- Waste from manufacturing does not appear to be material; end of life waste is covered under product lifecycle.

Recommendation

- Remove this issue based on low heat map and IWG scores and feedback, in addition to the analysis noted above that indicates this is not a material issue for this industry.

3. CONTAINERS & PACKAGING

a. Product Lifecycle Management & Innovation – Keep Issue / Revise Metrics

Evidence of Interest

Heat Map Tests
The issue received the highest score of 55 out of 100

IWG Feedback

Issue priority
The average ranking of the issue by IWG respondents was 2nd out of 6 issues.

Issue materiality
Sixteen out of 23 respondents (70 percent) agreed that the issue is material to the industry. Six respondents (26 percent) had reservations, and one person disagreed that it was material.

RESPONSES TO MATERIALITY PRODUCT LIFECYCLE MANAGEMENT & INNOVATION IN INDUSTRIAL MACHINERY & GOODS INDUSTRY

Materiality	Corporations	Market Participant	Public Interest & Intermediaries	Grand Total	Percent of Total
Yes. It is material	6	5	5	16	70%
Yes, but with reservations	4	--	1	6	26%
No. It is not material	1	--	--	1	4%
Grand Total	**11**	**5**	**6**	**23**	

Comments from IWG respondents
Respondents that answered yes to this issue generally commented that companies with innovative uses for resources within their product and/or supply chain are generally better positioned for premium pricing and long-term value creation. Respondents that had reservations about the materiality were concerned about the comparability and measurability of LCA data, particularly across multiple companies and products; particularly given certain constraints on the design mandates (from both clients and consumers). The corporate respondent that did not think it was material also noted that the diversity of products within the sector make it harder for certain companies to obtain value from innovation and that it is difficult to assign metrics that would give investors clear insight into the current and future performance of the company.

Stakeholder Type	Material?	Stakeholder Comment
Corporations	Yes	*The paper packaging industry provides packaging for large branded Consumer goods companies. Many of these companies are focused on reducing their impact and "designing for the environment". They are* ***starting to look upstream and downstream to their suppliers to provide products and solutions that will assist them in their goals****. Companies that do not take this into account will not be able to develop*

Stakeholder Type	Material?	Stakeholder Comment
		or maintain relationships with these companies. Also see my comments on waste management re. customer interest in LCA, cradle-to-cradle.
Market Participant	Yes	*We view the companies with the most innovative product development in this area as companies that we would **potentially pay a premium price for, long-term beneficiaries**.*
Corporation	No	*Containers and packaging is a highly diverse sector with **broad differences in the ability of companies to obtain value for innovative over commodity offerings**. Additionally, it is difficult to assign relevant metrics that can measure this area in a way that investors have clear insight into the current and future performance of the company.*
Corporation	Maybe	*Paper and paper based packaging is **currently the most recycled and recovered packaging material available.** On a broad scale the topic of has been addressed for the large majority of the industry. This **may be material for a specific sector such as aseptic beverage cartons but not for the broader market and application** of fiber based packaging.*
Corporations	Maybe	*I **don't believe this metric is measurable.*** *LCA data for one packaging industry or material will vary widely for others. Additionally, there is still dispute around some of the LCA data for certain materials (i.e. Virgin paperboard is currently considered to have a better LCA than recycled). Even if this was a disclosure statement, how people **measure lifecycle management varies widely across the industry** based on design thinking processes, software used.* *Often time as packaging manufacturers—**companies will provide us with design specs themselves rendering our ability to influence design**.* *Using metrics like percentage of recycled material or light weighting also opens up additional risks depending on the type of product. Too much light-weighting can cause package failure or as in the example you give in the brief it may be heavy-weighting has a better impact. How would investors compare that? Percentage of recycled material impacts the strength of existing materials—sometime more recycled product is worse.* *Additionally **consumer demand needs to be considered.** […]* *Innovation may often time be customer driven and proprietary for a period of time making disclosure on innovation difficult.*
Public Interest & Intermediaries	Maybe	*It seems to be inclusive of many of the other disclosure topics. When I think of life cycle management, I am thinking about material sourcing through production emissions and product end of life. I am not sure that it needs to be a stand-alone piece.*

Evidence of Financial Impact

Initial SASB Research (Excerpt from Industry Brief for IWGs)

In 2011, containers and packaging in the U.S. generated 75.6 million tons of waste, or 30.2 percent of total municipal solid waste generated.[xli] As concerns over the amount of waste generated and landfill space rise, the recyclability of containers and packaging material will play an important role in the perceptual direction of the industry.[xlii] Recycling rates vary widely for different types of containers and packaging. In 2011, as a percentage of total generation the following materials were recycled and diverted from landfills at the given rates: corrugated boxes at 91 percent, gable/aseptic beverage cartons

at 6.5 percent, aluminum cans at 54.5 percent, total steel packaging at 72 percent, plastic (PET) bottles at 29.2 percent, and total glass packaging at 34.2 percent.[xliii] As there are various hurdles for improving the recyclability of containers and packaging including the use of various labels, inks, coatings, and attachments, there is often a disconnect between the designers of packaging and the current recycling systems that prevent materials from being recovered and thus ending up in landfills.[xliv] For example, aseptic cartons, which are recycled at a 6.5 percent rate, utilize layers of paper, plastic and aluminum which make the package difficult to recycle because special processes are necessary to separate these various layers. Designers of packaging play a critical role in how the package is ultimately recycled which is essential in developing a closed-loop system for the packaging material and can ultimately drive a consumer's sustainability perception.[xlv,xlvi] Other barriers to recovery include consumer behavior and lack of a recycling infrastructure around the U.S. [xlvii] This dynamic is discussed below in the Supply Chain Management section.

Recycling materials has obvious economic and environmental benefits, as typically much less energy and raw materials are needed to create and process a new container using recycled material.[xlviii] Some materials like glass and aluminum are indefinitely recyclable—100 percent recycled forever without loss of quality.[xlix, l] Aluminum cans using recycled material reduces the embodied energy by about 95 percent compared with product made of virgin materials.[li] Similarly, recycling of other materials like plastic can reduce embodied energy by 84 percent and subsequently GHG emission by about 72 percent compared with products made with virgin materials.[lii] Recycled materials can have significant benefits for producers, for example, by utilizing cullet in the production process; glass manufacturers can reduce the energy costs to produce new bottles, as cullet melts at a lower temperature than raw materials.[liii] These characteristics may play an important role into the perception of the environmental friendliness of materials and can drive the reputation for specific packaging.

While the overall sustainability performance of a package or container depends largely on its use and recyclability, the benefits of recycling can help form the public perception of the environmental friendliness of a packaging material, which can lead to shifts in consumers demand away from materials perceived to be environmentally unfriendly. Poor end of life management and perception of plastic water bottles has led to a negative perception on the consumption of disposable water bottles.[liv] This perception is the likely source for many laws looking to ban the use of plastic bottles. For example, the city of San Francisco approved to ban the sale of plastic disposable bottles at events held on city property.[lv] Other cities and national parks have placed similar bans including Concord, Mass., and over 24 national parks.[lvi, lvii] These bans may have significant impacts on sales, especially if more cities and establishments follow suit, and highlights the importance of managing the lifecycle sustainability characteristics of a particular material.

Innovations in packaging design and material advances are transforming the sustainability initiatives in the containers and packaging industry. Processes like light-weighting, reducing material used, are helping customers save on transportation costs and can reduce GHG emissions. Apple Inc. found that by reducing iPhone packaging by 28 percent it helped the company ship 60 percent more boxes in airline containers, reducing the number of flights needed.[lviii] Coca-Cola estimated a cost savings of over $180 million over a two year period, by reducing the amount of material needed in its plastic, glass, and aluminum cans and bottles.[lix]

As mentioned, the sustainability performance of various packaging depends largely on its use. What may appear economical and environmentally friendly for disposable containers may be the opposite for reusable containers and packaging. Grief Inc., a manufacturer of large reusable industrial drums and containers, conducted a life-cycle-assessment and found that instead of light-weighting its containers to save weight for transportation and improve environmental impacts, it saved more money and improved its environmental impact by making the containers heavier and more durable thus prolonging their useful life.[lx]

New initiatives like the Bioplastic Feedstock Alliance, backed by large corporations are looking to advance the progress of creating plastics out of renewable sources like plants rather than traditional fossil

fuels, helping to improve the environmental impact of the plastic.[lxi] In 2011, Pepsi launched its first 100 percent plant based plastic bottled, claiming it will significantly reduce the company's carbon footprint. If trials are successful, the company hopes to launch the product for full scale production.[lxii] Many of these mentioned products and innovations are expected to drive the sustainable packaging market to $244 billion by 2018.[lxiii] Managing the sustainability characteristics of specific containers and packaging may provide manufacturers with opportunities to capture this developing market.

Analysis

This section outlines some of the key concerns identified by IWG respondents (and SASB) that need additional research, as well as a brief summary of SASB's analysis.

- There is a fairly strong interest in this issue topic as indicated by the heat map and IWG rankings, however, there was more concern in how to effectively measure and compare performance on this issue given the variety of industry segments.
- There is ambivalence about the angle of weight reduction, which can have positive or negative benefits depending on the product. Also, client requests and product safety/compliance issues restrict companies' ability to design for LCM.
- The SASB team interviewed a number of industry experts from major corporations in the attempt to better understand and capture specificities within the industry and design metrics that are applicable to all or most sub-segments.

Recommendation – Retain Issue / Revise Metrics

- Revise overall metrics and include the technical protocol to ensure relevance and comparability across companies in different sub-segments.
- Remove the weight reduction angle to avoid discrepancy and better account for different sub-segments and product needs.

II. Disclosure Topics with Weak Evidence of Interest

No issues scored less than 50% from IWG respondents.

III. Suggested Additional Issues

The following additional topics were suggested by industry working group members, and reviewed by SASB. Often these topics include those already considered by the Standards Development team as part of the initial research process. This is followed by SASB's decision on the issues, based on additional evidence research. The standards development team is conducting further research, including analysis of Form 10-K disclosure, and discussion with industry experts to determine materiality of the topics suggested. In some cases, it may result in addition of an angle and relevant metrics to an existing issue or inclusion of a new issue.

Industry	Topics Proposed by IWG Members
Chemicals	Energy Management
	Community Relations
	Supply Chain Management & Materials Sourcing
Aerospace & Defense	Employee Health & Safety
	Employee Recruitment, Development, and Inclusion
	Intelligent Procurement
Industrial Machinery & Goods	GHG Emissions
	Employee Health & Safety
	Supply Chain Management & Materials Sourcing
	Employee Recruitment, Development, and Inclusion
Electrical / Electronic Equipment	Water Management
	Employee Health & Safety
Containers & Packaging	Employee Health & Safety
	Labor Relations

1. CHEMICALS

a. **Energy Management** – Add

- **Analysis:** According to CDP and Bloomberg data, the Chemicals industry had the highest average amount of Scope 1 and Scope 2 (energy) emissions in the RT sector. In general, approximately 2/3 of total emissions in this industry are from Scope emissions (on site process emissions and energy generation) and the remaining 1/3 is from purchased electricity.

- **Recommendation**:
  - Add a new issue to include energy management

b. Community Relations – Exclude

- **Analysis**: This angle is already captured in the risk exposure metric in Air Quality (it can also be used by analysts as a proxy for water risk exposure).
- **Recommendation:**
  - Do not include as a separate issue

c. **Supply Chain Management & Materials Sourcing** – Exclude

- **Analysis**: This issue is not of material significance to the industry.
- **Recommendation:**
  - Do not include as a separate issue.

2. AEROSPACE & DEFENSE

a. Employee Health & Safety – Exclude

- **IWG Comments:** One corporate stakeholder commented: *"Striving for an injury-free workplace results in a **better quality of life for employees, higher job performance, product excellence and mission success for our customers**"*
- **Analysis:** SASB's initial cross-cutting issues research deemed this issue as likely NOT to be material since heat map scores and incidence rates were relatively low.
  - Heat map score = 50 out of 100
  - BLS data was reviewed and the overall rates were determined to be lower than industry averages. The non-fatal accident rate = 3.1; cases with days away from work = 0.6 (both of which are below industry standards).
- **Recommendation:**
  - Exclude this issue based on low heat map scores and low incidence rates for both fatal and non-fatal accidents that are below industry averages.

b. Employee Recruitment, Development & Retention – Exclude

- **IWG Comments:** Two companies suggested this topic, stating the following reasons:
  - *"With a highly skilled workforce that includes nearly 60,000 scientists, engineers and technologists, we consider **ensuring safety, fostering diversity and creating an inclusive work environment as key components of our business strategy**. The efforts to attract, develop and retain a robust, diverse talent pipeline are complex. They are impacted by the **limited supply of science, technology, engineering and***

mathematics (STEM) students *and professionals to fill available jobs. Efforts are also impacted by the* ***unique compliance requirements for U.S. federal contractors****, all of which must be balanced with customer budget uncertainties."*

- *"There is a* ***shortage of qualified engineering and technology graduates*** *globally. There is a need for more young people to consider careers in science, technology, engineering and mathematics to fill this gap and support future growth."*

- **Analysis:**
  - SASB's initial cross-cutting research indicated that this might be applicable to STEM and diversity issues. However, for consistency, it was not deemed to be on par with the same industry drivers that were analyzed by SASB for other sectors.
  - Turnover rates were also deemed to be low in this sector.
- **Recommendation:**
  - Do not include as a material issue

c. Intelligent Procurement – Exclude

- **Recommendation:**
  - Exclude this as a new topic since it is already incorporated into product lifecycle management and other metrics.

3. INDUSTRIAL MACHINERY & GOODS

a. GHG Emissions – Exclude

- **IWG Comments:**
  - Industrial Equipment & Machinery Sector contributes about 14% of the total GHG emission in the US. and the environmental sustainability is incomplete if the emission from the sector is not monitored and measured.
- **Analysis** to determine if there are significant emissions beyond scope 2.
  - SASB's initial cross-cutting research did not deem this issue as material. GHG was left out as a standalone issue because most energy use is scope 2 and therefore it is as an energy management issue (which is already included). See the CDP Average Emissions chart in Section III, 1, a.
  - Furthermore, the U.S. Census Bureau's, 2011 Annual Survey of Manufacturers REFRESH report was also reviewed to analyze the relative costs of purchased fuels, usage rates were deemed to be low.
- **Recommendation:**
  - Do not include as a standalone issue since it is already incorporated into energy management and has lower overall GHG emissions (and thus less regulatory risk) than the Chemicals and C&P industries.

b. Employee Health & Safety – Add

- **IWG Comments**: Corporate, market participants, and public interest groups all proposed this topic:
  - *Machinery manufacturing takes place in* ***a high risk environment, where accidents, illness, and injury can play a material role in the company's success through***

lawsuits (individual and class action), compliance violations, and insurance (workers compensation).
    - *Management of health and safety within the business. Specific indicators such as fatalities (employee and contractor) and lost time incident frequency rate would be useful.*
    - *There is **a direct cost correlation between the impact of lost-time and productivity in factories** related to the human capital investments the company makes regarding the health and safety of manufacturing employees. The current global standards can be **verified against widely accepted ISO14001 and/or OHSAS 18001**. This could potentially be reviewed as a disclosure topic.*
- **Analysis:**
    - Based on SASB's initial research, this issue seemed to be material for the industry; however no major company-specific pieces of evidence were initially found to support the financial impact of the issue. The SICS Industrial Machinery is comprised of several segments including Industrial Machinery and Goods, and Transportation Equipment. Both of these segments have NAICS equivalents, and data from the BLS shows that fatal and non-fatal occupational injuries are above the average for the whole NAICS' manufacturing sector.
- **Recommendation:**
    - Add as a new issue based on heat map results, IWG comments, and higher than industry average fatality risk. Continue to search for additional financial evidence from companies in this industry.

c. Supply Chain Management and Materials Sourcing - Exclude

- **IWG Comments:**
    - The majority of risk for manufacturers is contained within its supply chain and materials sourcing. **Frank Dodd** is a good example of how **manufacturers need to be aware of the issues facing their material sources** and be aware of **regulatory issues** in that region. In addition, **efficiencies in logistics could significantly impact the cost to manufacture the good**.
    - Transportation in the supply chain represents a significant source of GHGs, particularly with increasing globalization.
- **Analysis:**
    - Logistics/transportation within the supply chain were not deemed as material based on feedback from expert interviews.
- **Recommendation:**
    - Do not include as a separate issue.

d. Employee Recruitment, Development, and Inclusion - Exclude

- **IWG Comments:**
    - *While harder to quantify, non-environmental metrics are also important to investors. Whether the company is a good place in which to work affects financial performance. Recruitment and retention data can be useful and somewhat "hard" data points to gauge this topic.*
    - *"An important driver for this industry is represented by innovation. Without qualified workers to take the next step in innovation, the company may lose significant opportunities. Therefore the retention of qualified workers should be considered."*
- **Analysis:**

- SASB's initial cross-cutting research indicated that this might be applicable to STEM and diversity issues. However, for consistency, it was not deemed to be on par with the same industry drivers that were analyzed by SASB for other sectors.
- Turnover rates were also deemed to be low in this sector.

- **Recommendation:**
  - Do not include as a material issue

4. ELECTRICAL EQUIPMENT

a. Water Management – Exclude

- **IWG Comments:**
  - Some types of equipment and certain parts of the value chain will consume large amounts of water in the production process.
- **Analysis:**
  - SASB's cross-cutting issue research initially deemed this issue as NOT material: "**Issue seems NOT to be material for this industry.** There is very little disclosure on water as compared to other issues in the CSR reports of the top 3 companies. ABB even acknowledges that their manufacturing process does not use significant amounts of water. Average water consumption from 11 companies in the industry were also reviewed.
- **Recommendation:** Do not include as a material issue due to the relatively low amounts of water used industry-wide.

b. Employee Health & Safety – Add

- **Analysis:**
  - According to several sources, the manufacturing sector (as a whole) has higher than average risk factors for non-fatal occupational injuries.
  - This issue received a high score on SASB's heat map and also has higher than industry average results for both fatal and non-fatal injuries according to BLS data. There is also potential for additional exposure risk to chemicals in this industry.
  -
- **Recommendation:**
  - Include this issue based on heat map score, IWG responses and individual corporate differentiation within the industry, as well as Schneider Electric case study linkage to affecting financial performance.

5. CONTAINERS & PACKAGING

a. Employee Health & Safety – Exclude

- **IWG Comments:**
  - All packaging companies are part manufacturing companies, with high risks regarding workers' health and safety. The safety management systems and performance directly impact the bottom line and are therefore important for investors.
  - Although as an industry we may outperform the National average, performance amongst companies varies widely.

    - The C&P sector is highly labour intensive, with often dangerous working environments, relatively high turnover of staff, with potential for missed training etc. This is an industry with a **very high level of workplace incidents and accidents**, which can lead to further e.g. OSHA fines and loss of reputation.
    - In terms of ""material metrics"", I would again like to highlight the importance of ""Workplace practices, Labour management and H&S"", as our experience is that these issues are highly relevant in the C&P sector. "
- **Analysis:** This issue was reviewed in our initial research and deemed to be not material, however, it was in a gray area where additional feedback would be considered useful.
    - SASB's initial cross-cutting issues research deemed this topic to be not material based on the industry as a whole performing above average national standards.
    - Heat map score = 100 out of 100
    - SASB conducted interviews with several industry experts and associations who had mixed opinions on whether or not this was material to their sector.
        - Overall, they felt the industry was doing well as a whole and did not necessarily need this indicator, though they all considered safety to be an important issue internally.
        - Some mentioned that it might be of interest to investors, and several companies noted in their stakeholder materiality map (which includes investor opinions) that it ranked among the top 4 for corporate priorities.
        - Financial impacts don't just affect OSHA fines, but also include lost work time, time and costs for temporary replacements, employee engagement/morale (particularly for more severe cases), etc.

- **Recommendation:**
    - Exclude this issue based on heat map score, IWG responses and individual corporate differentiation within the industry, as well as low linkage to affecting financial performance. SASB's cross-cutting analysis of this issue deemed this industry to be at a lower risk than other industries in the Resource Transformation sector.

b. Labor Relations – Exclude

- **IWG Comment:**
    - "Companies with poor labor management can be exposed disruptions (strikes)"
- **Recommendation:**
    - Exclude this issue based on additional feedback from industry experts, minimal evidence and relatively low unionization rates according to Bloomberg ESG data.

Appendix I: Draft List of Disclosure Topics for Public Comment

The following table comprises issues that are likely to be presented for Public Comment on October 7, 2014, based on SASB's review of IWG comments and additional research. Note these issues are not final and are subject to change.

	Chemicals	Aerospace & Defense	Electrical / Electronic Equipment	Industrial Machinery & Goods	Containers & Packaging
Environment	Greenhouse Gas Emissions				Greenhouse Gas Emissions
	Energy Management	Energy Management	Energy Management	Energy Management	Energy Management
	Air Quality	~~Water & Waste Management in Manufacturing~~	Air Quality	~~Waste Management~~	Air Quality
	Hazardous Waste Management	Hazardous Waste Management	Hazardous Waste Management		Hazardous Waste Management
	Water Management			~~Water Management~~	Water Management
Social Capital		Data Security			
		Product Quality & Safety	Product Quality & Safety		Product Quality & Safety
Human Capital	Employee Health & Safety		Employee Health & Safety	Employee Health & Safety	
Business Model & Innovation	Product Lifecycle Management & Innovation	Product Lifecycle Management & Innovation	Product Lifecycle Management & Innovation	Product Lifecycle Management & Innovation	Product Lifecycle Management & Innovation
Leadership & Governance	Management of the Legal & Regulatory Environment	~~Management of the Legal & Regulatory Environment~~			
	Process Safety, Emergency Management & Response				
		Supply Chain Management & Materials Sourcing	Supply Chain Management & Materials Sourcing		Supply Chain Management & Materials Sourcing
		Business Ethics	Business Ethics & Competitive Behavior		

Appendix II: Sample Accounting Metrics

The following table lists the disclosure items (metrics), as they stand currently, for the sustainability topics determined by SASB to be material for the Containers & Packaging Industry following IWG feedback. This table provides sample metrics for reference only. The accounting metrics are currently being revised, and final metrics put forward for public comment may be different from the ones outlined below.

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE
Greenhouse Gas Emissions & Energy Management	Gross global Scope 1 emissions, percentage covered under a regulatory program	Quantitative	Metric tons CO_2-e, Percentage	RT0101-01
	Total energy consumed, percentage grid electricity, percentage renewable energy	Quantitative	Gigajoules (GJ), Percentage (%)	RT0101-02
	Description of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	n/a	RT0101-03
Air Quality	Air emissions for the following pollutants: NO_x (excluding N_2O), SO_x, particulate matter (PM), and volatile organic compounds (VOCs)	Quantitative	Metric tons	RT0101-04
	Number of production facilities in or near areas of dense population	Quantitative	Percentage (%)	RT0101-05
Water Management	Total water withdrawn, percentage recycled, percentage in regions with High or Extremely High Baseline Water Stress	Quantitative	Cubic Meters (m^3), Percentage (%)	RT0101-06
	Total chemical oxygen demand of effluent, number of incidents of non-compliance with water quality permits, standards, and regulations[2]	Quantitative	Metric tons O_2, Number	RT0101-07
Hazardous Materials Management	Amount of hazardous waste from production, percentage recycled[3]	Quantitative	Tons (t), Percentage (%)	RT0101-08
Employee Health & Safety	(1) Total Recordable Injury Rate (TRIR) and (2) Near Miss Frequency Rate	Quantitative	Rate	RT0101-09
	Discussion of efforts to assess, monitor, and reduce exposure of employees and contract workers to long-term (chronic) health risks	Discussion and Analysis	n/a	RT0101-10

[2] Note to RT0101-07 – Disclosure shall include a discussion of the severity of impact of significant non-compliance incidents.
[3] Note to RT0101-08 – Disclosure shall include a discussion of efforts to improve recycling rates.

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