Towards transparent supply chains

Closing intercompany information gaps to create resilient & responsible supply chains
Abstract

Over the past decades supply chains have become increasingly more extended, more complex and more global. This increased the exposure to risks in the supply chain. As a result we have witnessed more and more incidents related to e.g. labour conditions, environmental issues and human rights in the past decades. As the dependence on suppliers has grown for many companies, they are in the process of taking measures to manage the increased exposure to supply chain risks. Consequently, the way supply chains are managed have changed radically in the last decades and it is still evolving. However, this is not an easy task for organizations, as companies will need to acquire and interpret information from outside the company to make the right management decisions. Moreover, the reliability, accuracy and timeliness of this intercompany information provide challenges. To overcome these challenges, more and more companies leverage technology to acquire such data. Cloud technology can help to close information gaps that exist between companies.
1. Supply chain risks, performance and compliance are on the rise

Globalization and specialization changed the world and the way we work. Proponents will claim that globalization represents free trade which promotes global economic growth; creates jobs, makes companies more competitive, and lowers prices for consumers. But at the same time, it made supply chains much more complex and a more prominent potential source of business risks. Recent research shows us that business interruption, including supply chain disruption and vulnerability, are the main risks for companies worldwide. Especially for companies in the sectors Manufacturing, Power & Utilities and Transportation.1

As the supply chain grew to a complex global network of organizations, the level of uncertainty increased and often the span of control decreased. As a consequence companies, as well as consumers, have become less aware where the primary resources of their products and supplies came from, and under which conditions it was produced. In this sense, globalization has created governance gaps where companies are able to ‘abuse’ human rights without being sanctioned by independent third parties and consumers. These gaps result in a non-allocation of responsibilities that makes the problem of social conflicts within dispersed supply chains very likely to endure. Particularly without collaborative approaches to remedy these deficiencies.

At the same time the desire for transparency has never been larger. Consumers have an increasing awareness of sustainability impacts such as child labour and environmental impacts. Over the past decades we have seen plenty of cases of supply chain failures with well-known brands. This included child labour, human rights, labour conditions and environmental scandals. We witnessed for example the collapse of the Rana Plaza building in Bangladesh in 2013. Rana Plaza had five garment factories which supplied to international fashion brands. Several large European brands were held responsible for the incident although they did not directly owned the production facilities themselves. There is no doubt that these incidents created huge reputation damage for the companies involved.

Besides reputational damage, there are also financial implications if suppliers cannot meet the agreed standards or number of products. Although the garment sector, with its many subcontractors, is perhaps the most challenging sector when it concerns supply chains risks, there are many other sectors where supply chain disruptions can have a huge effect. An aircraft company was for example not capable to deliver some aircrafts because of delivery problems at one of the suppliers of chairs and toilets in 2015. Although the supplier denied the identified issue at first, it had mayor consequences for the aircraft company. In the end it had also negative consequences for the supplier because it was not allowed to deliver a type of product anymore.

Research shows that companies do not quickly recover from the negative effects of these kind of disruptions. Moreover, we witnessed in several cases a negative effect on the stock prices. Nine percent is the average decrease in stock price associated with companies that announced a supply chain disruption.2

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1 Allianz Risk Barometer, Top Business Risks 2017, Allianz, 2017
2 The Effect of Supply Chain Disruptions on Long-term Shareholder Value, Profitability, and Share Price Volatility, K. Hendricks, V. R. Singhal, 2005

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**Figure 1: supply chain responsibility & resiliency visualized**

<table>
<thead>
<tr>
<th>Responsible</th>
<th>Sustainable supplychain</th>
<th>Resilient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliance &amp; due diligence</td>
<td>▶ Risk &amp; crisis management</td>
<td></td>
</tr>
<tr>
<td>Environmental performance</td>
<td>▶ Climate change</td>
<td></td>
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<tr>
<td>Product quality &amp; end use</td>
<td>▶ Business continuity</td>
<td></td>
</tr>
<tr>
<td>Labour and human rights</td>
<td>▶ Supplier financial stability</td>
<td></td>
</tr>
<tr>
<td>Health and safety</td>
<td>▶ Availability of (shared) data</td>
<td></td>
</tr>
</tbody>
</table>

Understands and mitigates the social, environmental and economic risks and impacts connected to the life cycle of a product or service

Understands and adapts to external factors that may impact a company’s ability to produce a product or deliver a service

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White paper: Towards transparent supply chains
Governments are also increasingly challenged to understand and manage risks across supply chains. It has led to the introduction of new legislation and agreements to minimise risks in supply chains. For instance in the UK, the modern slavery act was implemented to tackle human trafficking and slavery. The act requires that any commercial organisation which supplies goods or services, and carries on a business or part of a business in the UK with a turnover above £36 million, must publish an annual slavery and human trafficking statement. This to ensure there is no modern slavery in their own business and their supply chains.

The Dodd-Frank act in the US laid down a conflict minerals legislation for ‘3TG’ (Tin, Tantalum, Tungsten & Gold) metals. At present an EU conflict minerals directive is being implemented. In the conflict minerals legislation example, companies are required to perform ‘due diligence’ procedures in their supply chain. In practice it means that companies will have to perform chain of custody tracking to track the materials all the way to its initial source up the supply chain. The Restriction of Hazardous Substances (RoHS) also had its effect on supply chain management in the electrical and electronic industry. The legislation limits the amount of lead, mercury and several other materials in individual electronic components. Hence companies have to work with their suppliers to design out these materials and to implement control procedures.

The Duty of “Care of Parent Companies and Ordering Companies” legislation in France is another good example of the increased pressure on supply chain management. It is applicable for companies with head offices in France (> 5,000 employees) and head offices abroad (> 10,000 employees) and needs to consider not only all subsidiaries and controlled companies, but more important, all subcontractors or suppliers.

Figure 2: Events, legislation and guidelines in supply chains - The last 10 years
How the Dutch government promotes supply chain sustainability in the garments and textile sector

The Dutch government promotes supply chain sustainability in the garments and textile sector by means of the Agreement on Sustainable Garments and Textile. Affiliated companies cooperate to tackle issues like discrimination, child labour and forced labour. Besides, the agreement aims to reduce the environmental impact of raw materials. Interactive self-assessments are adapted to the affiliated companies’ profiles in order to guide them towards sustainable supply chain processes. The platform suggests an action plan based on the entered data. The platform allows the SER to monitor the progress of the companies and it functions as an industry benchmark in a user friendly and secure environment.

“It is very encouraging that many people from a large number of companies use the tool and gain insight into their own supply chain and the problems that may arise in it.”

Jef Wintermans, Coordinator agreement sustainable garment and textile sector at Social Economic Council (SER)
2. The implications for companies

The increased exposure to supply chain risks, demand for better performance, and legislation has profound implications on how companies manage their supply chain. It forces companies to acquire a much deeper understanding about the goods and services that are supplied to them. And this is not limited to just tier-1 suppliers but covers - in some cases - large parts of the supply chain up to e.g. the excavation of raw materials. This provides huge challenges to for instance procurement departments who need to define novel approaches to manage their supply chain. There are critical and evolving elements associated with this new reality including the following:

Stay focused on material risks
First of all, organizations in the supply chain exchange a lot of information with each other. And in many cases standard information requests are used. It is not clear if a generic and broad information request to suppliers regarding environmental and social performance is adequate. The information request needs to be targeted at material risks and performance categories only. Until organizations identify the material supply chain risks, they cannot start to work with their suppliers on solving those problems. Once the material risks are known, organizations are able to request targeted and relevant information at their high risk suppliers only. This will help organizations to reduce their own administrative burden as well as the burden of their suppliers.

Leverage technology
Secondly, we witnessed that with most organizations, “manual” work is being done to close the information gaps. It’s for example necessary that Supplier Code of Conducts with environmental and social criteria are in place, but a deeper understanding and commitment is recommended. We argue that organizations have the possibility to leverage the role of technology better. This is especially relevant in a world where the number of suppliers and the need for data is expanding, and more and more companies have similar requests. Moreover, network technology opens up the possibility to gather information beyond just tier-1 suppliers; at present the visibility beyond tier-1 is limited with the majority of organizations. IT enabled solutions can help organization to alleviate their administrative burden and enhance their insights by means of standardization, automation and advanced analytics. Such tools are already widely in use for compliance to legalisations such as RoHS, but more recently, there is a tendency to adopt technology for other purposes such as traceability of materials and advanced risk analytics.

Creating shared value
Thirdly, the concept of creating shared value is gaining momentum with many companies. In practice this means that the traditional seller-buyer relationship is shifting from “telling” to “asking”, e.g. by conducting joint product development or other forms of cooperation. This has an impact on how procurement works with suppliers. Novel approaches are needed for this including the cooperation with other internal departments such as R&D and product development.

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3 The state of sustainable supply chains - Building responsible and resilient supply chains - EY, 2016
The perception of the CFO

Where Supply Chain Management was previously the responsibility of CPOs, the subject has shifted to C-suite level. This is due to the fact that supply chains and the associated risks hit the heart of the organization. Since CFOs are risk orientated and CPOs more process orientated, we argue that they have to work together for a smooth execution of tasks, to be resilient in the long-turn. Both parties have to cooperate with each other since they still have different perception and opposite interests. Research of EY has shown that CFOs experience currency risks and labour disputes as the biggest risks to the supply chains, while CPOs experience the lack of visibility into outsourcing relationships and unexpected natural events as the biggest risk.4

The emerging role of IT

IT-tools are increasingly being used in order to get more grip on supply chains with their secondary and tertiary suppliers. Tooling, such as blockchain technology, transaction & workflow enablement and data analytics provide organizations with deepened insights which enables better supply chain decisions. For instance, the potential of risk analytics of data from various databases, combined with ‘real’ supply chain data, can provide novel business insights. Thereby it facilitates that companies work together in the supply chains to minimize risks. In addition, more technology is under development to gather and share data across the various supply chain tiers. This includes transactional data to enable the tracking and tracing of materials from start to finish. Combining the various functions of IT tools, provides the ability to detect risks, to find hot spots and to manage performance. Ultimately and in the course of time, it may provide consumers with the opportunity to make objective judgments about the quality and origin of products.

Figure 3: Biggest risks in supply chains

<table>
<thead>
<tr>
<th>Business partnering finance</th>
<th>Business partnering supply chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curency risk</td>
<td>20</td>
</tr>
<tr>
<td>Labour disputes</td>
<td>37</td>
</tr>
<tr>
<td>Overinvestment in capacity</td>
<td>33</td>
</tr>
<tr>
<td>Fraud and corruption</td>
<td>30</td>
</tr>
<tr>
<td>Potential for unexpected disruption from natural events</td>
<td>30</td>
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<tr>
<td>Unethical practices by supply chain partners</td>
<td>25</td>
</tr>
<tr>
<td>Lack of visibility into outsourcing relationships, particularly among secondary and tertiary suppliers</td>
<td>24</td>
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<tr>
<td>Concentration of manufacturing activity in specific geographical areas</td>
<td>22</td>
</tr>
<tr>
<td>Abrupt regulatory change</td>
<td>13</td>
</tr>
<tr>
<td>Underinvestment in capacity</td>
<td>15</td>
</tr>
</tbody>
</table>

Figure 4: Combining functionalities to leverage information gaps.

4 Partnering for performance - Part 1: the CFO and the supply chain” EY, 2013
Blockchain as emerging technology

Blockchain is one of the innovative technologies that can be used to reach a responsible and resilient supply chain. Nowadays, it is not a technology that is reserved for technical start-ups only. Even multinationals like Walmart, to follow the movement of pork in China, and BHP Billiton to track mineral analysis done by outside vendors, are using the new technology. Blockchain can be a way to gain trust in supply chains, because the network will work towards a “single source of truth” where suppliers and buyers use a single data format. Integrating blockchain into supply chains can increase the traceability and authentication of products. It also facilitates the collaboration between suppliers and buyers in the whole supply chain.

EY and start-up EzLab partnered to create the Wine Blockchain with the goal of certifying and communicating the quality and geographical origin of wines made in Italy. It is the first case of a digital relationship between a producer and a final customer. The customer can read, by means of a QR code, about the wine producer, the entire process of cultivation, production and processing of the wine. Thereby it maximizes the trust of the consumer and it is an answer to counterfeit products who use the label ‘made in Italy’.
3. A novel approach to supply chains

In order to control the uncertainties in the supply chains, it’s important to view supply chains in a holistic way. Building a responsible and resilient supply chain is a continuous journey that starts with assessing the current state of the supply chain, finding hot spots and continues with gathering specific data. After this critical stage it’s possible to develop a business case and to monitor the risks. When companies define their supply chain strategy it’s necessary that supply chain requirements, KPIs and general sustainability criteria are integrated in the general business processes. Full avoidance of a supply chain disruption is ideal, but accidents and disruptions are inevitable. Early warnings by means of data visibility allows an organization to soften supply disruptions before operations are negatively impacted. Therefore, we can say that a resilient supply chain doesn’t develop by accident, but by design.

To reach a transparent and resilient supply chain we suggest a 5 phased model:

**Phase 1: hot spot analysis**
The first phase is to have a good understanding of the risks and impacts in the supply chain, these are the so called hot spots. Although a hot spot analysis is a tailor made approach, some information is required to include like a complete list of all suppliers and a risk assessment per supplier. In the process of selecting the suppliers, it is important to include sub-tier suppliers as well and to prioritize areas of focus. Many companies struggle with whether and how to include sub-tier suppliers in the scope of their supply chain programme because of the lack of direct interaction and perceived lack of influence. To get a full picture of the different risks it is important to analyse the risks in all main and interrelated risk categories. The challenge is reducing the number of hot spots to be addressed through specific mitigation tools.

**Phase 2: quantifying risks and opportunities**
The following phase involves assessing the current supply chain operation model with indicators like governance, processes, people and technology. Since the life blood of the organization flows through the supply chain, disruptions can have huge implications. That’s why it’s of utmost importance that risks, but also opportunities, are quantified. Scenario-planning techniques can be helpful to examine the impact of changes to key supply chain performance drivers.

**Phase 3: develop an issue specific program**
The third phase is to develop an issue specific program to manage the risks and opportunities, including supplier assessments, controls and stakeholder management. Mature organizations invest in training and capability building for suppliers because they are aware that their suppliers play a significant role in achieving sustainability goals. In this phase it is also important not to forget the stakeholders who are often the first to identify emerging environmental, social and economic issues in the supply chain.

**Phase 4: implementation program design**
The fourth phase is the implementation of the program design with trainings and proper communications. It is important to integrate the program design into the existing business process, to avoid that it will be seen as a separate project. A proper KPI framework ensures that the organization has relevant information to follow the strategic objectives and that employees understand how they can contribute to these strategic objectives.

**Phase 5: reporting and the continuous improvement with partners**
The last phase is reporting and the continuous improvement by measuring and communicating the results to internal and external stakeholders. This is possible when there is a trusted network of suppliers, customers and governments. Setting up partnerships is maybe one of the most challenging activities because it requires in some cases a new way of thinking towards your suppliers. A new approach is to turn your suppliers from risks into assets by means of partnerships and through two-way information sharing.

Through continuous monitoring, companies can become more responsive to the scarcity of resources and market fluctuations. It is therefore important to identify disruptions in the supply chain as early as possible. Web based tooling to track, measure and report the risks and opportunities is of great importance. Not only in this phase, but during all the phases for continuous monitoring.

![Figure 5: 5 stage supply chain approach](image-url)
Global furniture retailer
As a global furniture retailer, this company has an extensive supply chain with a multitude of raw materials and production processes. In order to make more effective decisions to reduce the negative environmental impacts, EY conducted a hot spot analysis based on environmental input-output-analysis using the World Input-Output Database. Basically all the purchased products (from the suppliers) have been matched with economic sectors. The analysis is done for water consumption, water scarcity and carbon emissions. As a result, a heat map is composed which gives a good indication of the impacts in various countries and economic sectors. This in turn helps the retailer to develop a targeted approach to reduce the impact.

Raw Materials Scanner for the Dutch Ministry of Economic Affairs
At present, there is an increasing global interest in raw materials, especially rare-earth minerals, and their availability for the coming decades. A recent study of TNO provided insight regarding the extent to which the Dutch economy is dependent on the availability of 64 abiotic raw materials (minerals and metals). The Dutch Ministry of Economic Affairs wanted to raise the awareness of the supply chain risks that companies actually face regarding their purchases. They also wanted to know how the materials ‘score’ on selected key indicators such as availability and recycling rate. EY was invited to join a consortium of parties to develop a web-based prototype to support SMEs with the appropriate information. EY (together with other organizations including TNO, CML, NEVI and HCSS), developed a user friendly web-based prototype with searchable factsheets for 2,500 product groups and 64 raw materials. These factsheets contain information of raw materials and product groups regarding availability, price volatility and risks. The Raw Materials Scanner also provides perspectives on various approaches to mitigate these supply chain risks. The Raw Materials Scanner provides its users with relevant information to assess and improve supply chain risks related to material scarcity and supply chain risks. It therefore provides a decision platform for Dutch SME’s to build more resilient and sustainable supply chains and sustainable use of raw materials.
Case study

Book & claim methodology of bio-based raw materials

Over the past years, AkzoNobel, Solvay, ABT and EY invested in knowledge gathering and the development of a ‘book & claim’ methodology. Because the matching results of bio-based raw materials were always based on historical data, the challenge was to develop a centralized web-based registration- and transfer system to track bio-based raw materials like Epicerol®. AkzoNobel, ABT and Solvay believe that a next step is required to enable visibility in daily operations and to maximize the purchases of Epicerol® based epoxy. Having a robust certificate system in place provides ABT the opportunity to realize its commitment to sustainable development and it will help AkzoNobel to deliver on its sustainability targets on both Eco-premium solutions and carbon emissions in the value chain. The platform provides a robust and reliable answer to certification and assurance for bio-based content as it enables transparency and reliability across the value chain by means of a robust audit trail and chain of custody.

“This application will increase transparency and encourage companies to use more sustainable raw materials. Customers can demonstrate a positive impact by monitoring their consumption of Epicerol®, showing that they are using the most sustainable epichlorohydrine on the market.”

Thibaud Caulier, Business Manager at Advanced Biochemical (Thailand) Co. ltd.

Case study

Development of a Product Assessment Tool for consumer products

While companies are used to work on sustainability issues for niche markets and product categories, they now seek to implement sustainability in all product development processes, covering the full range of products. EY has developed and implemented a product specific sustainability assessment to design consumer products with improved social and environmental performance for a manufacturer of consumer products. The assessment is based on quantitative data and embedded in Product Lifecycle Management processes and supporting IT tools. The assessment covers the whole project portfolio and is applied in a worldwide transformation project for this client. A set of 14 environmental indicators and 3 social indicators were identified and transformed into one sustainability score, which is needed for decision making. The indicators cover all stages of the product life cycle, from materials extraction, product use and end of life.
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“Transparency in Supply Chains etc. A practical guide”
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Key questions to ask yourself

Companies need a clear answer when disruptions occur. The question remains always when the disruptions will occur and what the impact will be. Underneath you can find some questions to reflect on.

1. What are the hot spots of your supply chain(s)?
2. What are the material risks according to your internal and external stakeholders?
3. Do you have a built-in change management process that constantly monitors the elements of your supply chain?
4. Do you quantify risks when outsourcing production?
5. Is sustainability part of the supply chain design and/or purchasing decisions?
6. Do you know who your critical suppliers/subcontractors are and how much their failure would impact your company’s profits?
7. Have you fully mapped your critical supply chains to the level of raw materials?
8. Have you integrated risk management processes into your supply chain management?
9. Do you record the details of supply chain incidents and the actions you put in place to avoid future incidents?
Relevant documents

**The state of sustainable supply chains**  
Building responsible and resilient supply chains.

**Supply chain reinvention**  
A demand-response network approach that helps improve operational performance.

**Digital supply chain: it's all about that data**

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