

Selecting and Evaluating Environmentally Responsible Suppliers of Hazardous, Nonhazardous Special Waste and Product-End-Of-Life Management Services¹

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SELECTING AND EVALUATING ENVIRONMENTALLY RESPONSIBLE SUPPLIERS OF HAZARDOUS, NONHAZARDOUS SPECIAL WASTE AND PRODUCT-END-OF-LIFE MANAGEMENT SERVICES²

Introduction. IBM has a longstanding commitment to protect the environment and to pursue environmental leadership across all of its business activities. As a part of this commitment, IBM does business with suppliers that are environmentally and socially responsible and encourages environmental and social responsibility awareness among these suppliers. IBM's commitment to the highest standards of corporate responsibility is evident in its selection and environmental evaluation of suppliers, and most acutely so when selecting and evaluating suppliers that provide IBM with services for the management of its hazardous and nonhazardous special waste and its product end-of-life materials³ (HW & NHSW and PELM). For suppliers managing HW & NHSW and PELM material, IBM conducts a supplier environmental evaluation, which may include an on-site review of the supplier facility. IBM evaluates these suppliers prior to entering into a contract with them, and then approximately every three years thereafter, to ensure their operations are committed to workplace safety and sound environmental practices that continue to meet IBM's requirements. The evaluations are conducted by IBM's Corporate Environmental Affairs (CEA) staff or internal or third-party environmental professionals under the direction of this staff.

As with all of IBM's environmental programs, IBM manages its HW & NHSW and PELM management programs to the same high standards worldwide. Doing so can be particularly challenging in some countries where waste management infrastructure (e.g., collection,

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³ **Hazardous Waste** is any Waste that has been designated, characterized or otherwise regulated as hazardous by applicable laws or regulations in a country, state, region, or locality. Examples can include a corrosive liquid or a flammable solvent.

Nonhazardous Special Waste is any Waste that is not a Hazardous Waste, but has been determined by IBM or local jurisdiction legislation that, because of its properties or volume, requires special management practices. An example can be medical waste or electronic waste (which in many countries are not legislated as Hazardous).

Product End of Life Management (PELM) refers to the demanufacturing, dismantling, reuse, reclamation, recycling, shredding, treatment and / or disposal of end-of-life (*EOL*) *IT equipment and parts*. PELM also includes the dismantling, refurbishing, recovery and reuse of Used IT equipment, parts, subassemblies, and components, including scrap electronic and electrical components such as disk drives, printed wiring boards, power supplies, cables and cords, etc. The equipment includes IBM-logoed and non-IBM logoed products owned or recovered by IBM's Asset Recovery Services. *Used and EOL IT equipment & parts* includes, but is not limited to personal computers, printers, scanners, servers and storage products, points of sale systems, cathode ray tubes (CRTs) and flat panel display (FPDs) monitors, electronic parts and assemblies (e.g., printed wiring boards, batteries, mercury lamps, disk drives, hard disk drives) that have been used or are at the end of their useful life.

recycling, treatment, and/or disposal) that meets IBM's requirements is lacking or nonexistent.

IBM's own business transformation over the years, which steadily and significantly reduced its manufacturing operations and associated waste generation, has also had an impact on IBM's ability to execute its supplier evaluation program in certain countries. The significant reduction in waste generation by IBM is reducing the leverage IBM has with some of these suppliers and therefore is affecting IBM's ability to ensure the cooperation from these suppliers that is necessary for the company to carry out the evaluations with its desired rigor and frequency.

Another factor is IBM's business expansion to growth markets. IBM's business is increasing in developing countries where waste management infrastructure and legislation are often weak. Paradoxically, these are conditions that prompt IBM to require the most intense and frequent evaluations. Suppliers in these countries often resist such evaluation requirements, claiming limited resources (human and financial) and lack of enforcement from the country's environmental authorities as well as other reasons. IBM is searching for solutions to these challenges, whether alone or in partnership with other companies that are also facing them.

IBM Corporate Responsibility. IBM has a long-standing and well-articulated approach to corporate responsibility. It engages its employees and uses its resources, especially technology and services, to improve society, with substantial emphasis on doing this by enhancing education and empowering citizens and communities. IBM also has a steadfast commitment to environmental leadership that is evident in its research, operations, products and services. Its comprehensive environmental programs cover areas that range from energy and climate protection to pollution prevention, chemical and waste management, resource conservation, product design for the environment and end-of-life (EOL) management, and more.

IBM's environmental leadership is implemented through a global environmental management system (EMS) that integrates corporate directives that govern IBM's conduct and operations worldwide. All environmental programs and performance are routinely monitored and results are reviewed annually by all levels of management up to the Directors and Corporate Governance Committee of IBM's Board of Directors. This global EMS perspective ensures that operations are executed with the same high standards all across the world. IBM embeds its approach to social and environmental responsibility in all of its business relationships, most notably with its 18,000 suppliers in over 100 countries. This includes requiring all first-tier suppliers to implement and sustain

a Social and Environmental Management System⁴, to embrace the elements of the Electronic Industry Citizenship Coalition (EICC) Code of Conduct⁵, to set voluntary environmental performance goals, measure performance, and to report publicly to increase transparency across the entire supply chain. IBM also requires its first tier suppliers to cascade these requirements to their suppliers. IBM's Global Procurement organization reviews new and existing suppliers on their compliance with the IBM Social and Environmental Management System Requirements. For more information on IBM's environmental programs and performance, please read "IBM and the Environment Report" for 2014 which can be accessed using the following link:

http://www.ibm.com/ibm/environment/annual/IBMEnvReport_2014.pdf

Corporate Environmental Affairs. IBM formalized its environmental programs and commitment with the issuance of its Corporate Environmental Policy in 1971. In 1990, the company established its Corporate Environmental Affairs (CEA) staff, integrating IBM's environmental, energy, safety and industrial hygiene staff into a dedicated corporate organization. The present day CEA is a globally integrated organization with responsibilities that include environment, energy, toxicology and chemical management. The staff consists of 26 people strategically located worldwide. CEA's mission includes setting IBM's environmental strategy and developing IBM's global EMS. The staff advises on and oversees internal execution, and drives desired operational results, in addition to retaining certain specific missions that it executes on behalf of IBM. As it pertains to this case study, and one of the missions CEA has retained, is the environmental evaluation and approval of suppliers providing HW & NHSW and PELM management services to IBM.

Hazardous, Nonhazardous Special Waste and Product End-of-Life Management Services. IBM has contracted with two types of environment-related services for many years. First is the management (collection, transportation, recycling treatment or disposal) of hazardous and nonhazardous special waste that comes from IBM's internal operations (e.g., facility operations, on-site waste water treatment, research, manufacturing processes, and environmental remediation programs). Such byproducts are reduced and recycled

⁴ In 2010, IBM Global Procurement introduced its Social and Environmental Management System (S&EMS) to its current and new suppliers. The S&EMS requirements can be summarized as follows: (1) Define, deploy, and sustain a management system that addresses corporate responsibility, including social and environmental stewardship; (2) measure performance and establish voluntary, quantifiable environmental goals, (3) publicly disclose results associated with these voluntary environmental goals and other environmental aspects of their management systems; (4) encourage first-tier suppliers to cascade these requirements to their own suppliers.

⁵ The EICC Code of Conduct is a set of standards on social, environmental and ethical issues in the electronics industry supply chain. The standards set out in the Code of Conduct reference international norms and standards including the Universal Declaration of Human Rights, ILO International Labor Standards, OECD Guidelines for Multinational Enterprises, ISO and SA standards, etc.

when possible, followed by treatment and disposal (incinerated and/or sent to landfills). Second are IT products or their parts and components that have reached their intended end of life (a.k.a PELM). These materials may be generated from IBM's own operations or by IBM's clients. These PELM materials may still have value and can be refurbished and resold or, may be disassembled and their parts harvested for reuse or scrapped. The output of the scrapping process may involve recoverable materials (e.g., ferrous and non-ferrous metals, precious metals, glass, plastics, etc.) that have intrinsic value and are sold in secondary commodity markets, or waste materials (e.g., non-recyclable packaging material, non-recyclable plastics, shredder fluff, etc.) that have no value and require proper treatment or disposal. These waste materials may be considered hazardous or nonhazardous depending on government designation.

IBM began offering product take-back services in Europe in 1989. This line of business continues to this day and is currently the responsibility of IBM's Global Asset Recovery Services (GARS). GARS takes back EOL IT equipment -- from IBM's own operations as well as clients, refurbish and remanufacture them and sells refurbished and remanufactured equipment, parts and components in secondary markets. GARS also is responsible for the PELM program at large within IBM.

The intersections of IBM's PELM program with government requirements expanded considerably with the passage of "product take-back (PTB)" or Extended Producer Responsibility (EPR) laws that began in Europe in the early 1990s and that has since spread rapidly worldwide. Compliance with these PTB and EPR laws and regulations is a huge reverse logistics undertaking that begins in most cases with pickup and transport of used products and components from user locations to a centralized processing site where equipment, parts and components will be segregated to be repaired, reused, refurbished or remanufactured, disassembled or scrapped, depending on their condition, obsolescence and inherent market value. Since 2008, IBM has contracted all its reverse logistics activities (pick up, transport, repair, refurbishment, remanufacture, disassembly and recycling) of end-of-life products, parts and components in most of the countries in which IBM does business through a 4th party logistics provider⁶ (4PL). What can't be repaired, reused and resold is usually shipped through this 4PL provider to another set of suppliers to be recycled and to recover the value of basic commodities that are embedded in these equipment, parts or components through shredding or manual disassembly operations.

As mentioned before, all suppliers providing HW & NSW and PELM services must be evaluated and approved by CEA prior to doing business with IBM. Further, with the aim to

⁶ A fourth party logistics provider or 4PL is an arrangement where a firm contracts out (outsources) its logistical operations to two or more specialist firms (the third party logistics) and hires another specialist firm (the fourth party) to coordinate the activities of the third parties.

minimize IBM's exposure to potential environmental liability associated with waste management operations by third parties, IBM limits the number of supplier facilities that it evaluates and approves for use by its business units for the management of HW & NHSW and PELM materials. IBM's practice is not to add new approved facilities unless there is a clear and justified business need.

Supplier Environmental Evaluation. In 1972, IBM established a corporate directive requiring the environmental evaluation of suppliers' facilities that provide hazardous waste management services to IBM. In 1980, requirements of the corporate directive were expanded to include environmental evaluations of certain production-related supplier facilities. In 1991, IBM once again expanded its environmental evaluations of suppliers' facilities that provide product recycling and product disposal services for IBM. It is important to underscore that these evaluations and approvals are specific to a supplier's facility and treatment process(es) with respect to IBM's materials as opposed to the entire company of the supplier. IBM does not grant company-wide approvals -- a practice that is not widespread among other manufacturers.

The aim of IBM's supplier environmental evaluation program is to assess suppliers' conformance to applicable legal and IBM requirements and assess if the suppliers have a strong focus on environmental management and sound management practices.

IBM currently has nearly 300 suppliers that perform hazardous and non-hazardous special waste management (160) and product take-back and recycling services (130) worldwide and are clustered into four regions: North America; Latin America; Europe, Middle East and Africa; and Asia Pacific. IBM generally contracts with different suppliers within each region. This is mainly because IBM desires, where practical, to process (recycle, treat or dispose) its waste streams within the country where they are generated. If this is not practical (e.g., lack of infrastructure in-country), other alternatives are used such as storage in-country until acceptable infrastructure is in place meeting IBM's requirements, or exporting to a country that has the appropriate infrastructure to manage the waste stream meeting IBM's requirements. IBM ensures that the cross country border transport of wastes or PELM materials comply with the relevant global treaties, national environmental laws of the country of export and import as well as transit countries through which the materials travel.

CEA is directly or indirectly involved in the evaluation of all of IBM's suppliers, specifically their social and environmental management system and compliance with the EICC Code of Conduct, but is most directly involved in performing environmental evaluations of suppliers that provide HW & NHSW and PELM services to IBM. IBM's supplier environmental evaluation program enables the company to minimize its environmental risk, its potential long-term liability or potential adverse publicity to IBM created by

supplier operations. It supports IBM's commitment to conduct business with responsible suppliers. All new supplier facilities providing HW & NHSW and PELM services to IBM receive a remotely performed documentation review, i.e., "desktop review", and an on-site environmental evaluation by CEA. Subsequent to the initial evaluation, approved suppliers receive a re-evaluation on or about once every three years. The re-evaluations may involve desktop review or a combined desktop review & on-site evaluations, depending on established internal criteria. This frequency can vary depending on factors such as whether the supplier moves its operations to a new facility or address or changes its treatment processes, or changes its status of pending issues such as government notices of violations or ongoing environmental corrective actions. Supplier facilities located in a country with poor industrial infrastructure, poor recycling infrastructure or with incipient regulatory programs (e.g., waste or pollution legislation, government permitting programs or audits) are considered to be less reliable and may be evaluated more frequently.

IBM's supplier environmental evaluation program requires its HW & NHSW and PELM suppliers to track the shipment and processing of any hazardous materials they handle for IBM — down to the final treatment, recycling or disposal location. IBM's program requires that these final recycling and disposal facilities be subject to environmental evaluation and approval, no matter how many tiers exist between IBM's contracted supplier and the final treatment, recycling or disposal facilities. In addition, if a product end-of-life supplier exports any of IBM's hazardous materials to a subcontractor located in non-OECD countries, then an environmental evaluation of the subcontractor facility must be conducted.

Environmental Evaluation Challenges.

Reduced Company Leverage: Over the past decade plus, IBM has transformed its business by pursuing a model of high-value innovation, rather than commodity technology, products and services. IBM's current strategic imperatives center on cloud computing, analytics, mobile, social and security. As part of this transformation IBM has divested much of its manufacturing operations and a significant portion of its hardware business. However, IBM remains committed to technology research and development and continues to be a leading provider of advanced hardware systems. Supporting these research, development and manufacturing activities involves the use of a great variety of chemicals and generates waste that must continue to be properly managed.

Although IBM now performs significantly less manufacturing operations than it did several years ago, and thus generates less waste from manufacturing and assembly processes and has a reduced direct obligation for take-back of end-of-life products, these changes did not alter the company's objectives and requirements for its supplier environmental evaluation

program. At the same time, IBM's shrinking quantity of business (i.e., amount of wastes and PELM materials that IBM seeks management services for) with individual suppliers relative to the suppliers' other customers, is causing resistance from these suppliers to cooperate with IBM and allowing IBM to visit their facilities to conduct the environmental evaluations or invest the time and resources needed to provide the data requested by IBM.

Also, due to its use of a 4PL, IBM has a greater arm-length relationship with certain waste management suppliers and as such, suppliers no longer can see the direct financial benefit to them from participating in the supplier environmental evaluation process with IBM as they may be two, three or more tiers down in IBM's supplier chain. In fact, because these are suppliers with specialized services in a niche waste management market, they regularly receive very similar requests from other companies also wishing to manage their environmental risk exposures in the supply chain. For these suppliers, it is hard to cover the increasing demand for environmental evaluations with the same staff. Thus, these suppliers prioritize their response with companies that have a direct relationship with them and a higher quantity of waste.

Because IBM is less well-known in some developing countries or its presence is obscured through its use of sub-contractors, suppliers may not respond promptly to requests for on-site visits.

Language: Language differences often exacerbate the problem. Suppliers in both developed and developing countries often do not have skilled staff or resources to respond promptly to requests from IBM and other manufacturers if requests are not made in their national language. This is more so in developing countries where the situation is paradoxical for IBM in that suppliers in countries with these conditions usually require the most intense and frequent evaluations.

Infrastructure: IBM's business is rapidly expanding in developing countries and emerging IT markets globally where qualified suppliers are often scarce, and waste recycling and disposal infrastructure and/or waste management and take-back legislation are weak or nonexistent. Suppliers in such countries will always require an onsite environmental evaluation under IBM's program. The costs associated with conducting these evaluations are high and trained personnel IBM may rely upon to conduct the evaluations are not readily available in these countries. In addition, many new suppliers are unlikely to invest significantly in new or improved treatment processes unless viable waste volumes and financial benefits are secured. It is therefore important for IBM to be able to work collaboratively with other companies to share the costs of these environmental evaluations and, when suppliers are not found in a country, to develop alternative solutions, including the development of local suppliers.

Legal Environment and Supplier Compliance: This situation that exists with infrastructure is exacerbated in many developing countries where the national environmental regulations are not in place or not developed enough to yet effectively promote recovery and recycling or environmentally sound management of HW & NHSW and PELM waste streams generated within the country. What this can mean is that suitable quantities of these wastes are not yet collected, recycled or disposed in the country and thus, with low quantities, there is no incentive for financial investment on treatment infrastructure for niche waste suppliers. A cooperative effort by companies may help to overcome this ongoing challenge. Guaranteed waste source and demand for the waste management disposal services are crucial incentives for greater financial investment in treatment capability and capacity by niche suppliers.

Evaluation Costs: CEA supplements its small available staff resources by enlisting and training staff from other IBM business functions who have staff in-country where the need for a supplier exists. But not all countries have competent personnel who would be able to support this evaluation activity on behalf of CEA. CEA Staff is therefore required to travel to conduct these supplier environmental evaluations. This situation exists more frequently in small developing economies where IBM's business is increasing (e.g., countries in Africa, Central and South America, ASEAN and Middle East regions).

IBM also relies on third-party evaluators, such as Globally Promoting Responsible Waste Stewardship (CHWMEG) and Waste Facilities Audit Association (WFAA) in the UK. CHWMEG is a non-profit trade association that conducts supplier environmental evaluations on behalf of its members. In addition to a nominal membership fee, companies share the costs of evaluation reports involving those supplier facilities that they have an interest in. Although its scope is worldwide, CHWMEG focuses mostly on evaluating supplier facilities in developed countries, and mainly in the US and Canada. Its scope includes suppliers that provide HW & NHSW and PELM. In CHWMEG's process, member companies nominate supplier facilities to be evaluated; two or three companies sharing the evaluation of the same supplier is the minimum threshold for cost-effectiveness [member companies that commit to paying for a facility evaluation get a discounted price of \$875 USD for facilities located in the North America (NA) and \$1,600 USD for facilities outside NA]. However, of 11,000 nominations since the start of CHWMEG, only 1,350 facilities have been evaluated in this way. If the minimum member nomination threshold is not met, the evaluations may be conducted on behalf of the member as a sole sponsor at a higher cost (\$2,800 USD for NA facilities and \$3,900 USD for non-NA facilities during the commitment phase and \$3,300 USD for NA facilities and \$4,500 USD for non-NA facilities outside the commitment phase period). IBM's use of this consortium is limited by two main factors, one is cost. IBM's average costs for conducting its supplier evaluations is much lower than the cost of sole sponsoring a supplier environmental evaluation through CHWMEG (Given

the wide variety of companies' business models and global operations, it is rare to see more than three companies interested in the same facility). The other important factor is that CHWMEG does not provide company support for identifying and or developing new facilities.

Third-party WEEE (waste electronic and electrical equipment) recycler certifications exist in Europe (e.g., WEEELABEX) and the United States (e.g., R2 Solutions, e-Stewards) and could be leveraged by IBM for possible use in support of IBM's PELM suppliers environmental evaluation and reduce costs, but not in their entirety. Putting aside the fact that these certification schemes are relatively new and in most cases not existent in developing economies, once a facility is certified, the audit report, non-conformances and any action plans that result from the audit remain confidential between the facility and the certification scheme. Hence, information that is key for IBM's supplier evaluation and approval is unavailable. Further detailed assessment is required to determine whether the respective audit protocols for the PELM programs meet the objectives of IBM's supplier evaluation program, whether these programs present opportunities to improving IBM's program execution and cost efficiency, and the likelihood of supplier acceptance.⁷

Existing third-party evaluators currently specialize in either hazardous and nonhazardous special waste or product end-of-life management, but not both. Although they evaluate facilities in developing countries on a limited basis, their focus is primarily on developed countries where their services are currently in demand. Until there is demand in developing countries, their presence there will be limited.

Security: Last, but not least is the challenge of security. Many countries around the world lack the basic protections to ensure the safety of evaluators traveling to those countries with increased levels of crime and violence and / or located in regions subject to military or civil conflict or undergoing social disruption. The lack of security prevents the execution of the supplier evaluation and is considered a challenge mostly in developing countries (e.g., parts of the Middle East, Africa, South America and Asia).

The table below summarizes the type of evaluation challenges identified in the previous section and offers examples of them. Despite the suggested differences in challenges between types of countries or regions, instances of most of these challenges can be found anywhere in the world. For example, access is sometimes easy in a developing country where local suppliers desperately want the business and high profile clients, whereas

⁷ Even when a supplier is certified, IBM could not use these certifications as a substitute for its supplier evaluation program as CEA staff are not allowed to see the audited information. CEA staff only know that the supplier has been certified to the relevant standard or code of practice. While certifications are a good starting point, they are not equivalent to IBM's supplier environmental evaluation program.

access can be problematic in a developed country with mature regulations and advanced infrastructure, especially where low volumes of waste are involved.

SUMMARY OF EVALUATION CHALLENGES AND EXAMPLES

TYPE OF CHALLENGE	CAUSE	DEVELOPED COUNTRIES	DEVELOPING COUNTRIES
REDUCED COMPANY LEVERAGE	Shrinking volume of business per supplier due to IBM's shift from manufacturing to services and its success in reducing waste generation	Suppliers not willing to spend the amount of time / resources to respond to IBM's documentation review or on-site evaluation.	Given the importance of the IBM brand, suppliers may be willing to go through the evaluation process (documentation review or on-site evaluation) but don't have the human and financial resources to do so. There is a limited number of suppliers in these countries and not many options for IBM to choose from.
	Greater arm-length relationship with suppliers due to subcontracting removes IBM from direct financial relationship with the waste management supplier	Given this type of relationship, there is no contractual incentive to dedicate the amount of time and resources required for this type of evaluation. This challenge may be overcome by working through IBM's first-tier supplier. Quite often the niche supplier is 2 or 3 tiers removed from the IBM first-tier supplier.	Given the importance of IBM's brand, suppliers maybe willing to work directly with IBM or with IBM's first-tier supplier to complete the evaluation process, although the supplier's capability to allocate resources is constrained
	Multiple requests for environmental evaluation from other companies	These suppliers are swamped with similar requests from many companies and thus are not willing to spend the amount of time / resources to respond to IBM's documentation review or on-site evaluation. Instead, suppliers have developed audit packages which cover most of the evaluation information required by most companies, IBM included. But on-site visits are still difficult to arrange.	Given the importance of the IBM brand, suppliers are willing to go through the environmental evaluation process (documentation review or on-site evaluation) but don't have the human and financial resources to do so. There is limited number of suppliers in these countries and not many options for IBM to choose from.
	Weak country legal framework.	Not a challenge in developed countries	No or limited country environmental regulation applying licensed environmental controls for facilities involved in collection, transportation, storage, processing and disposal of HW, NHSW and PELM. This is particularly a challenge in African and Middle Eastern countries where a special environmental license is only required for handling toxic and hazardous waste. A facility permit is enough to manage industrial and special wastes. Further there is no regulatory requirement for waste management companies to hold /

TYPE OF CHALLENGE	CAUSE	DEVELOPED COUNTRIES	DEVELOPING COUNTRIES
			<p>have in place a contract with waste ownership transfer agreements. IBM will only do business with suppliers that can meet its requirements, including environmental compliance, contractual documentation, and suitable insurances. Waste management suppliers therefore find it difficult to conform, and while they may demonstrate sound environmental management practice, IBM will not engage them without a contract that meets these conditions.</p>
<p>LANGUAGE</p>	<p>Greater variety of countries where IBM does business.</p>	<p>This is a challenge in both, developed and developing countries. There is a greater variety of countries where IBM is expanding its business, and language may be a problem for some where English is not spoken. Most but not all developed countries are comfortable communicating in English for business. Local IBM resources may also help alleviate this challenge.</p>	<p>Definitely more of a challenge in developing than in developed countries. IBM's expansion into Eastern European, Asian, African and countries in Latin and South America makes for an even greater challenge, not only with regard to understanding legal requirements in those countries but also communication with local personnel and suppliers.</p>
<p>INFRASTRUCTURE</p>	<p>The lack of appropriate waste management infrastructure in the country where hazardous and nonhazardous special wastes and product end of life materials are being generated.</p>	<p>Not a challenge in developed countries.</p>	<p>A challenge in developing countries. Qualified suppliers are often scarce, and waste recycling and disposal infrastructure and/or waste management and take-back legislation are weak or nonexistent. Without appropriate legal requirements, there is no incentive / demand for the needed infrastructure to manage HW, NHSW and PELM waste. If there are no suppliers in a country that meet IBM's environmental and safety requirements, and is allowed by country laws, the waste generated by IBM's operations is shipped to facilities in other countries where those requirements can be met. Though rare, there are sometimes situations in which local processing of waste is not possible and shipping to IBM-approved suppliers in other countries is not allowed due to legal requirements. In these situations, IBM will store wastes and product end-of-life materials in properly contained and managed storage facilities as allowed by law, and until suitable processing facilities are available.</p>

TYPE OF CHALLENGE	CAUSE	DEVELOPED COUNTRIES	DEVELOPING COUNTRIES
<p>LEGAL ENVIRONMENT AND SUPPLIER COMPLIANCE</p>	<p>A very poorly defined, if not inexistent, legal context, supplier's availability, and waste and recycling infrastructure.</p>	<p>Not a challenge in developed countries. Even if supplier evaluations are not required by law, suppliers are well set up to receive environmental evaluations and on-site visits as these are a very common business practice in developed countries. Waste management suppliers are aware of companies' due diligence processes for higher business risk areas.</p>	<p>Environmental evaluation of suppliers is often not required as part of laws and regulations in developing countries. Given that many of the requirements that are reviewed during a supplier evaluation have their genesis in a law or regulation, a poorly defined legal context makes it more difficult for suppliers in developing countries to comply with IBM's requirements because these are not something that are legally required for them (e.g., discharge monitoring and reporting, waste volume reporting, incident prevention, emergency preparedness, closure costs estimate and financial assurance, environmental liability insurance, etc.). Companies face high levels of uncertainty due to weak and unclear requirements in existent legislation.</p>
<p>EVALUATION COST</p>	<p>Cost of evaluation is high due to third party evaluator fees, or travel distance for CEA staff to the designated country. There is also a lack of trained personnel in country to conduct environmental evaluations.</p>	<p>Evaluation fees in these countries are lower as time spent in the evaluations is less (requested information is readily available, travel distance is shorter). But number of suppliers is larger in developed countries and there is a need to reduce cost for each evaluation that is performed. Time spent by CEA Staff is limited and valuable and thus also a factor that needs to be considered.</p>	<p>Definitely a challenge in developing countries due to the need of long distance travel (unavailability of trained personnel locally), and due to the lack of requested documents. Furthermore, language barrier often requires translation and interpretation increasing costs and delay in IBM supplier approvals, which impact business operations in the subject country.</p>
<p>SECURITY</p>	<p>Lack of security prevents the execution of the supplier evaluation due to concerns for safety of evaluators travelling to those countries.</p>	<p>Not a challenge in developed countries.</p>	<p>A challenge in developing countries located in regions subject to civil conflict or undergoing social disruption (e.g., parts of the Middle East, Africa and Asia).</p>

Meeting the Challenges. IBM is exploring how to best meet the challenges identified above while keeping the objectives of the supplier evaluation program unchanged. One option is for IBM to continue to meet these challenges alone, with supplementary assistance from third-party evaluators. Another option is to persuade or otherwise encourage third-party evaluators to expand their scope of practice regionally and by type of supplier services evaluated, and to modify their practices to better suit IBM's needs and evaluation budget. This could be done alone or in conjunction with other companies that share IBM's challenges. A third option is to create consortia of companies that can meet IBM's challenges better than it can alone. Its purpose could include influencing third-party evaluators, as suggested previously, but its scope could be much broader.

No single option may be best for meeting all of IBM's evaluation challenges. The choice depends on the nature of the challenge addressed and in what region or countries it is most prominent. These challenges exist in varying degree in developed and developing countries.

The third option stimulates many questions. What is a consortium and what is its purpose? The Merriam-Webster dictionary defines a consortium as "an agreement, combination, or group (as of companies) formed to undertake an enterprise beyond the resources of any one member". This is broad-based and could encompass anything discussed above that IBM does not believe that it can do better alone. This could include leveraging influence wherever it would benefit IBM the most or appropriating or supplementing activities that others are not performing to IBM's satisfaction.

Can one consortium (or multiple consortia around the world) be comprehensive enough to address all of these differing sets of challenges discussed, e.g., hazardous and nonhazardous special waste management, product end-of-life management, in developed and developing countries? If not, then which challenges should the consortium or consortia address or at least choose to address first? What are the essential elements that would motivate companies to join a consortium? How similar to IBM must these companies be in order for them to be motivated to join the consortium? How similar must their challenges be to IBM's challenges?

What compromises, if any, should companies be expected to make in order to accommodate other consortium members? Is it necessary to develop a common questionnaire for use by all consortium companies? If so, are they willing to alter the frequency of evaluations or agree to add or exclude questions or supplier attributes of interest? Are other companies currently as rigorous evaluators as IBM in developing or developed countries? If not, are they willing to be? What if any collected data are companies willing to share, and how is this to be decided and by whom? Would the benefits of a consortium be enough to lead a company to add or drop a supplier in the interest of having a common set of suppliers? This last option is limited in many developed and developing countries in which there is a single supplier of either hazardous and nonhazardous special waste or product end-of-life management. A single supplier of the latter type is more common, especially in developing countries, where infrastructure and take-back laws tend to be weak.

What organizational structure or mechanism is needed in order for any of the above choices to be discussed and made? The formality of the structure and mechanism will depend on the nature and scope of the consortium.

Questions:

1. Given the context provided above for developed and developing countries, is a consortium, or multiple consortia around the world, the best of the three options considered above for these two types of economies? You are welcome to add other options for consideration and explain why you chose them.
2. If you think that separate consortia can meet most or all of IBM's evaluation challenges in developed and developing countries, then,
 - a. for developing economies, with a focus on countries in Africa, Central and South America, ASEAN and Middle East, develop a business model for creating and sustaining an industry consortium where companies can work jointly to identify or develop competent suppliers for managing (collect, recycle, treat, and dispose) their HW, NHSW, and PELM materials. The design needs to be such that, if needed, it can be replicated in different developing countries. The questions about consortia that were raised in the last section should be considered in your design. In addition, the solution needs to recommend ways for companies to share the costs associated with evaluating supplier environmental performance on an ongoing basis.
 - b. for developed economies, develop a business model for the creation of an industry consortium where companies can collaborate on supplier evaluation activities and as a consequence, reduce the cost of supplier evaluations to individual participating companies. Benchmark your proposal with similar current market offerings globally.

For both a) and b), describe how a mature consortium will create, deliver, capture and sustain value for its members, i.e., a business model, in these economies.

3. If one single consortium is required to resolve the challenges in developed and developing countries, then develop the consortium and describe the business model that would be required and that would meet the requirements of a) and b) in question 2.
4. If not pursuing a consortium for either type of economy, describe the other mechanism that would be proposed and the reason why this option is better. Describe how this other option will create, deliver, capture and sustain value for its members, i.e., a business model, in these economies.