

# Sustainability and Competiveness in Mexico

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## **ABSTRACT**

This report summarizes the findings of a research project aimed at benchmarking the environmental sustainability practices of the top 500 Mexican companies. This was done by surveying firms with regard to various aspects of their adoption of environmental sustainability practices, including who or what prompted adoption, future adoption plans, decision-making responsibility, and internal/external challenges. The survey also explores how the adoption of environmental sustainability practices relates to the competitiveness of these firms.

In addition, the survey explores two other important topics: how Mexican firms perceive and are responding to the issue of climate change, and how water resources in Mexico (infrastructure, availability) impact firms.

The sample consists of 103 self-selected firms representing the six primary business sectors in the Mexican economy. Self-selection presents a problem because one of the reasons for refusal to participate in the survey is that the firm “does not pollute”. Thus, for some of the questions, the answers will be biased. Secondly, the distribution of firms in the sample across sectors does not replicate the population. This problem is addressed by weighting the data. Because the Manufacturing sector is significantly overrepresented in the sample and because of its importance in addressing issues of environmental sustainability, when appropriate, specific results for this sector are reported.

With regard to benchmarking environmental sustainability practices in Mexican firms, the highlights are these:

- Mexican companies are very active in the various areas where environmental sustainability is relevant (e.g., energy resources conservation), more so than a comparison to an MIT survey of companies worldwide would suggest, thus indicating the potential biasing effect of self-selection.
- A majority of firms use various metrics to measure environmental performance, such as the Global Reporting Initiative (GRI), ISO 14001 or 14031.
- More than 50% of firms have a written business plan or project on environmental sustainability. Another 23% are currently developing a plan/project.

When it comes to identifying who or what prompted the adoption of environmental sustainability practices:

- The main reasons for adoption are environmental protection (compliance with regulations), opening new markets, cost savings, and revenue growth. Compared to the MIT survey, the Mexican responses are much stronger for opening new markets and somewhat stronger for cost savings and revenue growth, suggesting that the Mexican firms are in an early stage of the environmental sustainability “learning curve.”
- In 93% of Mexican firms, employees are engaged in developing environmental sustainability strategies to at least some extent.
- Shareholders, government, and the local community are most influential in establishing the environmental sustainability strategies of companies. Least influential are socially responsible investment funds (there are none in Mexico) and educational institutions (which have only recently become involved in sustainability studies and research).

As regards expansion plans or the adoption of new sustainability practices:

- 92% of firms say that the adoption of environmental sustainability practices improves the bottom line, quite similar to the results in The Economist survey for U.S. firms.
- In five years, 92% of Mexican firms think environmental sustainability practices will be even more important, considerably higher than in The Economist survey, and consistent with the notion that they are in an earlier stage of development.
- The particular areas where additional profitability is likely to come are in energy conservation, waste reduction, other natural resources conservation, and water resources management.
- 64.4% of firms say they will allocate more monetary resources for the implementation of environmental sustainability practices over the next five years.

As regards decision-making responsibility:

- In order of influence, the top four intra-company departments that influence environmental sustainability strategy are Environmental Management, Corporate Strategy, Health & Safety and Public Relations.

Companies face various internal and external challenges in addressing environmental sustainability issues:

- Within the organization, significant challenges come because the most effective way to take action is not known and there are outdated perspectives on issues of environmental sustainability. In the Manufacturing sector, the leading internal challenge is that insufficient resources are devoted to the implementation of environmental sustainability practices.
- The most important external challenges are a lack of clear industry standards, lack of consumer demand, and insufficient economic incentives for adopting environmental sustainability practices. For the Manufacturing sector, lack of a clear policy to regulate externalities is the leading external challenge.
- Within companies, the most important elements when addressing environmental sustainability are an ability to understand and determine regulatory policies for environmental sustainability, vision and commitment, dynamic adaptation of a changing business environment, identification and use of developmental measuring tools, and learning processes and internal adaption.

As to the competitiveness of Mexican firms vis-à-vis their closest rivals, the leading areas are operational efficiency, revenue growth, the ability to find and exploit new opportunities, and profitability. For the Manufacturing sector, waste management and awareness about environmental sustainability issues are the leading areas of competitive advantage.

- 60% of firms say that the adoption of environmental sustainability practices has had a positive impact on profitability.
- 63.5% of firms also said that implementation of environmental sustainability practices has enhanced their ability to respond to new market conditions.

All-in-all, this suggests that Mexican firms are in a strong competitive position and that the adoption of environmental sustainability practices has either strengthened or solidified that position.

Climate change is an important international issue, one that many countries are addressing with government policies and/or industry approaches.

- For Mexican companies, 86.9% say that climate change is an issue worth considering.
- Management conviction, corporate reputation, and government regulations are the most significant factors involved in company decisions to take climate change into account.
- A slight majority of firms were *not* familiar with the Mexican government's climate change strategy. Of those that were, a large majority (68.7%) found it to be either insufficient or misguided.
- 77.6% of firms say they have specific plans for addressing climate change. Cleaner technology investment is by far the leading action taken.
- 61% of Mexican firms presently do not measure their carbon footprint, however, and less than half of these say they have plans to do so.
- Over the next five years, almost 50% of firms said that climate change will have a high impact on profits even if the company takes action to address the issue (62.7% if not).

The management of water resources in Mexico is a top priority for the Mexican government and industry. In the survey, several aspects of this issue are explored.

- Among the sample firms, 42.1% have been subjected to cuts in water supply or have been at risk from water scarcity over the past five years. An even larger percentage (63.2%) say they are presently at risk of water scarcity due to poor infrastructure conditions. These are alarming numbers for a country whose primary goal is economic growth and development.

- By far the dominant use of water in Mexican firms is for waste disposal and drainage. But significant numbers of firms use water as a component of production or in the production process.
- The risks identified in water usage include regulatory risks (conservation policies and prices), physical hazards and reputational risks from misuse of water resources.
- 79.8% of firms say they aim to conserve water. 68.4% have explicit water conservation goals.
- If companies take no further action to conserve water over the next five years, 57% say that their profitability will be highly impacted (73.9% in the Manufacturing sector alone). Even if action is taken, the state of water resources (infrastructure, availability) is anticipated to have a high impact on the profitability of 45.7% of firms.

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### **Advisory Committee**

<b>Organization</b>	<b>Officer's name</b>	<b>Position</b>
INE (Instituto Nacional de Ecología)	Carlos Muñoz	Director of Environmental Economics and Policy
INE (Instituto Nacional de Ecología)	Marisol Rivera	Subdirector for Econometrics and Sectoral Studies
SEMARNAT (Secretaria de Medio Ambiente y Recursos Naturales)	Sandra Herrera	Undersecretary of the Environment for Regulatory Affairs
SEMARNAT (Secretaria de Medio Ambiente y Recursos Naturales)	Edgar del Villar	Consultant for SEMARNAT
CESPEDES (Comisión de Estudios del Sector Privado para el Desarrollo Sustentable)	Alejandro Lorea	Director CESPEDES
IMCO (Instituto Mexicano para la Competitividad)	Gabriela Alarcón	Researcher
COPARMEX (Confederación Patronal Mexicana)	Lourdes Aduna	Director of Sustainability Committee
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## **INTRODUCTION**

While Mexico is not known as being on the cutting edge of environmentalism nor are many of its business firms among the world leaders in implementing environmental practices, as a rapidly developing country in both economic and social terms, Mexico is beginning to grasp the need for environmental and economic development as parallel paths. In a recent survey, for example, 50% of Mexican adults expressed the belief that the business sector has a bigger responsibility toward the environment and 70% of consumers said they would be willing to pay more for a green product if it helps the environment.<sup>1</sup>

In an effort to determine for the first time ever the orientation of Mexico's business sector towards the environment, researchers from the University of California (UC) and a leading Mexican university, Instituto Tecnológico Autónomo de México (ITAM), conducted extensive survey research during 2010-11 on the 500 largest firms in Mexico located in and around the two most significant regional centers of business activity, Mexico City and Monterrey.

The primary goals of the survey effort were 1) to generate a baseline for the implementation of sustainability practices in Mexican companies, 2) to understand the drivers of improved environmental performance, and 3) to understand the links between environmental performance and competitiveness. Along the way, attention was paid to one particularly important natural resource for Mexico: water. And, to reflect the world community's commitment to reducing greenhouse gas emissions, the survey also probed the Mexican business sector's awareness of the climate change issue and what it may (or may not) be doing to address it.

## **SURVEY METHODOLOGY**

The Mexican business magazine, Expansión, maintains and regularly reports on a list of the 500 leading Mexican firms. We use a list consisting of those firms that have appeared on the Expansión list at least one year in 2008, 2009, or 2010. This list was then reduced by recognizing conglomerates, excluding subsidiaries, and limiting it geographically to focus on

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<sup>1</sup> Cited in the magazine, Expansión, February 14 -28, 2011, page 14.

firms located in and around Mexico City and Monterrey, where 84% of the top 500 firms reside. All-in-all, 446 firms were eventually contacted by phone or e-mail and appointments were set up to explain the goals of the survey and to obtain a commitment to respond to it. Confidentiality letters were sent to those companies that requested them. Ultimately, 103 companies completed the survey, for a response rate of approximately 23%. The main non-response issues were a lack of interest, professed restrictions on the release of company information, and that environmental sustainability is not a company priority. Obviously, this last reason for non-participation presents a problem for the use of the sample results as indicative of the population of firms, so-called non-response bias, something we shall comment on in the course of presenting our results. The survey instrument and a more detailed discussion of the survey methodology and issues surrounding its implementation are contained in Appendices A and B.

### **CHARACTERISTICS OF THE SAMPLE**

The sample of 103 firms is highly skewed toward large firms. 78.9% of the sample firms have more than 500 employees. The size distribution of all firms in Mexico is quite different, with approximately 90% of firms being small or medium-sized. They are also concentrated in the Commerce and Transportation, Communication and Services sectors. But at this stage in the development of environmental “orientation” or implementation of environmental practices among Mexican firms, it is the larger firms which have both the awareness of environmental sustainability as an important issue of competitiveness and the means by which it can be addressed. Indeed, some of Mexico’s largest firms are among the world leaders in their respective industries as regards environmental sustainability.<sup>2</sup>

The sample distribution of firms by industry sector is shown in Appendix C, along with the same sectoral distribution for the entire Expansión 500 as of 2010, and the firms listed on the Mexican stock exchange, the Bolsa (BMV). In some respects, our sample distribution of firms resembles more closely that of the BMV. However, the large percentage of sample firms in the Manufacturing sector is unique to the sample, and vastly overrepresents this particular sector. To compensate, the analytical results are weighted to represent the Expansión 500.<sup>3</sup> Because the

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<sup>2</sup> At present however, only one Mexican company is a member of the leading business organization devoted to environmental sustainability, the World Business Council for Sustainable Development (WBCSD). That company is CEMEX.

<sup>3</sup> The weighting factors used are presented in Appendix D.

Manufacturing sector is of particular interest as regards environmental sustainability, some results are presented for it alone and are contrasted to the overall (weighted) sample results.

Another interesting characteristic of the sample relates to firm ownership. 18% of sample firms are traded on the Bolsa.<sup>4</sup> Another 38% are traded on other stock exchanges, in the sense that the parent company (e.g., Walmart) is a foreign multinational while the survey is being answered by its Mexican subsidiary. Thirty-nine percent of the sample firms are privately held (the predominant ownership structure in Mexico) and 5% are state-owned.

Additional sample demographics are contained in Appendix E.

## **MAIN TOPICS**

The majority of survey questions are devoted to the topic of environmental sustainability practices among Mexican firms and their impact on competitiveness. These concepts are defined at the beginning of the survey questionnaire so as to eliminate confusion and to establish a common usage of terms.

*Environmental sustainability* is defined by the integration of environmental aspects into business operations, strategic planning, and interactions with stakeholders.

*Environmental sustainability practices* are those technologies, strategies and plans to improve company and supply chain performance relating to resource conservation, waste reduction, environmental risk control, and collaboration with local communities to minimize these impacts, as well as the design and manufacture of environmentally friendly products.

*Competitiveness* means that the company continues to achieve economic prosperity while attracting and maintaining investment.

Additional questions were developed to address the emerging importance of climate change as a global policy issue and the specific importance of the availability and use of water resources in Mexico.

Some of the questions relating to environmental sustainability practices and climate change were specifically designed to facilitate comparison to the results of other surveys. These are briefly summarized in Appendix F. When appropriate, the comparative results are presented and discussed in light of the Mexican experience as revealed in the present survey effort.

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<sup>4</sup> The Mexican Bolsa lists approximately 135 publically-traded firms, half of which are closely held and rarely traded.

## **ENVIRONMENTAL SUSTAINABILITY, SECTION A:** Benchmarking environmental sustainability practices in Mexican Firms

### **A.1** How active is your company in terms of the following areas of environmental sustainability?

Table 1 (slide #14) displays the results. Summing the responses for “very active” and “regularly active”, at a minimum 56.4% of firms are actively engaged in environmental sustainability, with the leading areas being energy resources conservation (78.6%) and waste reduction (75.1%), followed closely by environmental risk control (74.8%) and waste recovery (74.1%). With respect to resource conservation in general, 48.9% of firms are either “very active” or “regularly active” in all three categories. Sixty percent of firms simultaneously pursue waste reduction and waste recovery with the same degree of intensity.

The MIT survey (Q3, p. 49) asks a similar question, but only two categories match: energy resources conservation (64%) and waste reduction (62%). By that comparison, Mexican firms are more actively engaged. Referring back to question #16 in our demographics section (Appendix E), since 75% of our sample firms indicate that environmental sustainability is relevant to company strategy, this result is not surprising. However, it must be noted that since an unknown number of firms that did not respond to our survey indicated they did so because they were not involved in environmental sustainability practices, no doubt our results are biased (upwards). A comparison to the MIT survey in the two categories above suggests that this bias is on the order of 13-15 percentage points.

Focusing on the Manufacturing sector alone<sup>5</sup>, the ordering is slightly different, with environmental risk control, waste reduction, and product manufacturing at the top of the list, but the top six areas are the same as in the overall results. For the top four categories, the percentages of firms “very active” or “regularly active” are considerably higher than in the overall results.

### **A.2** Does your company use metrics to measure environmental performance?

Fifty-nine percent of our sample firms said that they do use metrics to measure environmental performance, the main ones being the Global Reporting Initiative (31%), ISO

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<sup>5</sup> Detailed results are not shown.

14001 or 14031 (24%), and Triple Bottom Line (21%). A similar question from The Economist survey results in only 31% of firms saying they use metrics<sup>6</sup>. But here again, self-selection is a factor to consider in interpreting our results.

Our sample is weighted to reflect the Expansión distribution of firms, so the Manufacturing sector does not have undue influence. Nevertheless, taken alone, in this sector 87.5% of firms use some sort of metric, with ISO and GRI being equally prevalent at 37.5% of firms each.

A.3 Approximately what percentage of your company's annual operating budget is invested in the implementation of environmental sustainability practices?

More than half of the sample firms were not able to answer this question. Of those that indicated they did set aside funds in the annual operating budget (31%), only two-thirds specified percentages. The vast majority of these were in the 1-5% range.

A.4 Does your company have a written business plan or project to address environmental sustainability?

The results are shown in Table 2 (slide #18). In our sample, 52.9% of firms have a sustainability plan or project in place. Only 18.0% said that they do not have a plan or project in place. This question is problematic because it allowed the firms to select more than one response. Thus, while 18.0% said they had no plan in place, 35.8% said that either they were currently developing a plan/project (22.8%), will soon do so (11.2%), or have no plans to do so (1.8%).

While the percentage of firms in the Manufacturing sector that already have a plan/project in place is about the same (54.2%), relatively more firms (41.7%) are currently developing an environmental sustainability plan/project.

A.5 If your company currently has a written business plan or project that addresses environmental sustainability issues, what does the project consist of?

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<sup>6</sup> It is to be noted that The Economist survey is not limited to environmental sustainability, but involves the broader (and more vague) concept of "corporate citizenship."

Among the most frequently cited plans or projects were waste reduction, recovery and management, and energy and water conservation.

**ENVIRONMENTAL SUSTAINABILITY, B:** Identify who or what prompted the adoption of environmental sustainability practices.

**B.1** What are the main reasons for your company to adopt environmental sustainability practices?

This question directed the firms to rank the options from most important to least important. To facilitate comparison to other surveys, we report only the results for “most important”. The results and comparisons to other surveys are contained in Table 3 (slide #19).

By far, the leading reason is “environmental protection” (63.6%), meaning compliance with environmental regulations. This is followed by “opening new markets” (34.6%), “cost savings” (25.2%), and “revenue growth” (21.3%). Combining the top two ranks, “environmental protection” (74.1%) and “cost savings” (57.7%) are the leading reasons for Mexican firms to adopt environmental sustainability practices.

Compared to the MIT survey, the Mexican responses are stronger as regards “opening new markets” (much stronger), “cost savings” (somewhat stronger), and “revenue growth” (somewhat stronger). But “brand/image improvement” is not as important for the Mexican firms. All told, these results are consistent with the notion that Mexican firms are still in an early stage of the learning curve<sup>7</sup>. In the case of “brand/image improvement”, it may be that their customers are less sensitive to environmental issues and hence a firm’s reputation in this regard is less important. Compared to the Manufacturing sector alone<sup>8</sup>, while “environmental protection” is still the leading cause (55.6%), “cost savings” is much more important (50.0%), followed by “opening new markets” (40.0%). “Internal pressure (employees)” is also much more important (22.2% v. 4.2%).

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<sup>7</sup> Upward bias due to self-selection is a factor too. It could account for the stronger results as regards “revenue growth” and “cost savings”.

<sup>8</sup> It is to be noted that the Manufacturing sector is part of the overall sample and, though its influence is diminished by weighting, it is not gone altogether.

**B.2** How does your company perceive environmental organizations (e.g., NGOs or local organizations), as an opportunity or a challenge?

This is, unfortunately, a problematic question for three reasons: First, the response categories are not mutually exclusive. Second, the category “problem” for the company cannot easily be distinguished from the category “challenge”. And, finally, inclusion of the category “others” makes little or no sense, in retrospect<sup>9</sup>.

Focusing on the main response categories, 81.5% of firms indicated that working with environmental organizations presents a business opportunity, while a slightly higher percentage (86.2%) said this presents a challenge. Only 23.0% said working with these organizations is a “problem”, so obviously this category is perceived as meaning something significantly different from “challenge”.

In The Economist survey (p. 25) a similar question is posed, but the respondents are forced to choose among four mutually exclusive categories: “opportunity” (19%), “both equally” (36%), and “don’t know” (18%). That our firms responded the way they did, with roughly equal numbers indicating “opportunity” as “challenge” is probably best understood in terms of the emergence of environmental organizations in Mexico and their attempts to influence the business sector to improve its environmental performance.

**B.3** To what extent are your company’s employees involved in environmental sustainability strategies?

In this question, a distinction is being drawn between voluntary employee involvement in developing environmental sustainability strategies and involvement that is pushed (motivated, “forced”) by the company. Ninety-three percent of our firms indicated that employees are involved at least to some extent on a voluntary basis, while fewer (69.0%) are involved when pushed by the company. See Table 4 (slide #21).

The Economist survey (p. 27) asks the same question about “corporate citizenship” strategies but without the distinction. For comparative purposes, we have calculated a weighted average response, as shown in the table. This comparison is particularly interesting because, upon combining the results for “great extent” and “some extent”, our results are very similar to

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<sup>9</sup> Only nine firms selected the category “others”, and it is ignored in what follows.



those reported in The Economist survey, even though this question is subject to self-selection bias. While the results are similar for “no extent”, for the Manufacturing sector, the results show even more employee involvement, with only 14.9% “no extent.”

**B.4** How do the following groups and/or organizations influence the environmental sustainability strategy of your company?

The results are shown in Tables 5a and 5b (slides #22 and #23).

If we look solely at the column headed “greatly affects”, the leading option is “national regulations” but that option (and its companion, “international regulations”) are really inappropriate in a list of options that is intended to capture stakeholders influence. Setting them aside, “shareholders” (40.2%), “government” (35.2%), and “local community” (31.4%) lead the list. Combining the responses with “affects to some extent”, it is “shareholders” (85.3%), “government” (82.9%), and “employees” (80.4%) that head the list, followed closely by “local community” (78.8%) and “consumers” (78.5%).

Least influential are “socially responsible investment funds” (56.7% “does not affect”) and “educational institutions” (46.4% “does not affect”) and followed by “competitors” (40.3%), “NGOs” (39.6%), and “environmental support groups” (37.1%). This is understandable since Mexican educational institutions have only recently become involved in sustainability studies and there are no SRI funds in Mexico at present.

Compared to the results of other surveys (Table 5b), “government”, “employees”, and “shareholders” exert the most influence, which is the same top three as in our survey, followed by “consumers” and “educational institutions”. The greater influence attributed to educational institutions in The Economist survey reflects their larger (and longer) commitments to sustainability issues in the U.S. (e.g., training, degree programs, green buildings).

**ENVIRONMENTAL SUSTAINABILITY, SECTION C:** Expansion plans or adoption of new practices.

**C.1** Does the adoption of environmental sustainability practices improve your company’s financial results?

As shown in Table 6 (slide #24), 92.5% of our firms say that the adoption of environmental sustainability practices improves the bottom line, quite similar to the results reported in The Economist for U.S. firms, albeit for the broader concept of “corporate citizenship”<sup>10</sup>. For the Manufacturing sector alone, 96% of firms say that adopting environmental sustainability practices improves the bottom line (72.0% “greatly improves”).

C.2 Five years from now, do you think that environmental sustainability practices will be more or less important to your company’s business strategy?

Compared to the results of The Economist survey (see Table 7, slide #25), in five years environmental sustainability practices are expected to be considerably more important for Mexican firms (91.9% vs. 44% “more” or “much more” important). This is consistent with the idea that Mexican firms are at an earlier stage of development along the environmental sustainability learning curve than are their U.S. counterparts or, for that matter, the Manufacturing sector alone, where 83.3% of firms (vs. 91.9% overall) say that environmental sustainability practices will be more important five years from now.

C.3 How likely is it that your company could increase profits by adopting environmental sustainability strategies in the following areas?

All but one option (“eco-manufacturing products”) elicited a majority of firms indicating that it was “likely” or “very likely” profits could be increased by adopting environmental sustainability practices in each of the ten areas cited (see Table 8, slide #26). “Energy resources conservation” (57.3%) and “waste reduction” (56.8%) are the most likely to deliver results. When “likely” and “very likely” are combined, these same two areas top the list, followed closely by “other natural resources conservation” (83.0%) and “water resources management” (81.6%). With regard to resource conservation strategies as a package, 69.6% of firms think that it’s either “likely” or “very likely” that profits can be increased by pursuing them.

C.4 Will your company allocate more or less in monetary resources for the implementation of environmental sustainability practices within the next five years?

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<sup>10</sup> Again for this question, self-selection could influence our results but does not seem to have been a factor.

As seen in Table 9 (slide #27), 64.4% of our firms say they will allocate more money for the implementation of environmental sustainability practices over the next five years, compared to 39% in The Economist survey, which is consistent with the finding that environmental sustainability practices will be considerably more important for Mexican firms (question C. 2). In the Manufacturing sector alone, the results are moderated, with 50.0% saying they'll allocate "more than the current (level of) resources" and 41.7% saying they'll allocate "about the same resources", consistent with a more mature sector as regards current implementation.

**ENVIRONMENTAL SUSTAINABILITY, SECTION D:** Decision-making responsibility.

**D.1** In your company, who is primarily responsible for addressing issue of environmental sustainability?

As shown in Table 10 (slide #28), the most striking difference between our results and those of The Economist is the lack of responsibility taken by corporate boards in addressing environmental sustainability issues compared to U.S. firms, and the greater responsibility taken by lower levels of management in Mexican firms.

**D.2** To what extent do the following intra-company departments influence the environmental sustainability performance of your company?

Most of the modal responses are in the "strong" or "very strong" categories. Table 11 (slide #29) shows the results by combining these response options over the list of departments. In order of influence, the top four departments are "Environmental Management" (83.0% "strong" or "very strong" influence), "Corporate Strategy" (71.9%), "Health & Safety" (62.1%), and "Public Relations" (53.9%).

For comparison purposes, we show results from a similar question in the Delmas survey of eight U.S. industrial sectors. Therein, the Legal and Regulatory Affairs Department has relatively more influence, while Public Relations has relatively less. For the Mexican Manufacturing sector alone, Public Relations has somewhat more influence than in the overall results, though the top four departments are the same.

**ENVIRONMENTAL SUSTAINABILITY, SECTION E:** Internal and external challenges

E.1 Within your company, what are the internal challenges that represent the most significant obstacles for addressing issues of environmental sustainability?

Of the seven response options, the top three that ranked #1 in the minds of our respondents were “do not know the most effective way to take action” (53.0%), “outdated perspectives on issues of environmental sustainability” (51.7%), and “too many business propositions that have not been prioritized” (29.8%). See Table 12 (slide #30). On a weighted rank basis (not shown), the same options are at or near the top of the list.

Compared to results from the MIT survey (Q6), “do not know the most effective way to take action” is much more important, reflecting the immaturity of Mexican firms in addressing issues of environmental sustainability.

Interestingly, the results for the Manufacturing sector are also quite different, with “insufficient resources” topping the list, followed by “outdated perspectives...” and “inability to assess short and long-term consequences”.

E.2 Within your company, what are the external challenges that represent the most significant obstacles for addressing issues of environmental sustainability?

As shown in Table 13 (slide #31), the highest ranked external challenges, based solely on the percentage of firms specifying them as most significant, are “lack of clear industry standards” (44.1%), “lack of customer demand” (40.4%), and “insufficient economic incentives” (37.2%). The same three appear, though in a different order, when a weighted rank calculation is used (not shown).

Compared to the MIT results (Q7), these are also the three most significant external challenges but “lack of customer demand” is the leading challenge.

E.3 How important are the following elements when addressing environmental sustainability in your company?

Table 14 (slide #32) displays the detailed results. The modal responses are all in the “high importance” column, with the three leading options being “vision and commitment towards environmental sustainability” (64.2%), “communication between the interested parties” (52.9%), and “ability to understand and determine regulatory policies for environmental

sustainability” (52.5%). Summing over the columns “high importance”, “moderate importance”, and “important”, we see that the top five options are “ability to understand...” (89.7%), vision and commitment...” (89.2%), “dynamic adaptation to the changing business environment” (87.8%), “identification and use of developmental measuring tools for addressing environmental sustainability issues” (87.2%), and “learning processes and internal adaptation” (86.9%).

Very few of the Manufacturing firms regarded any of the options as of “low” or “no” importance (not shown). Using “high importance” only, the top three options (all = 50%) are: “vision and commitment...” (66.7%), “product, services or marketing innovations” (54.2%), and “ability to understand...” (50.0%). On the basis of the sum, “vision and commitment...” and “ability to understand...” were at the top of the list, with 100% of firms regarding them as at least “important”. Five other options were close behind.

The MIT survey (Q 18) has a similar question that contains all of these answer options except “learning processes...”. Their eight top-ranked options include five of ours.

## **COMPETITIVENESS**

**CO.1** How would you rate your company’s position compared to its closest competitors in the following areas?

None of the Mexican companies said they were in “much worse” position than their competitors for any of the response options. Very few even said they were in “worse” positions, as seen in Table 15 (slide #45). The exception is “environmental sustainability investment”, where 9.9% said they were behind their competitors. In all categories, a majority of our firms said they were either in “much better” or “better” position than their competitors. This is a major finding. This is also true of the Manufacturing sector alone.

Adding these two responses, as shown in the “sum” column, the leading specific areas of competitiveness for Mexican companies are “operational performance (efficiency)” (82.1%),

“revenue growth” (77.5%), “ability to find and exploit new opportunities” (76.4%), and “profitability” (74.8%)<sup>11</sup>.

The results for the Manufacturing sector alone are considerably moderated and show “waste management” (72.7%) and “awareness about environmental sustainability issues” (72.8%) as the leading areas of competitive advantage, followed closely by “environmental sustainability investment” (69.6% “much better” or “better”).<sup>12</sup>

The Economist survey (p. 25) has an almost identical question. For them, the modal responses are all in the “same” category. No area received a majority of “much better” or “better” responses and, concomitantly, there were relatively more responses in the “worse” and “much worse” columns. But since these responses relate to the vague notion of “corporate citizenship” for U.S. firms, it’s not clear how to interpret the comparative results.

CO.2 The impact environmental sustainability practices have had on your company’s profits are:

As shown in Table 16 (slide #47), 59.9% of our firms say that implementation of environmental sustainability practices has had a positive impact on profitability.<sup>13</sup> Only 15.5% said the impact was “low” or “very low” and 7.3% said there had been no impact at all. Adjusted for the “not applicable” responses, these percentages are 63.7%, 16.5%, and 7.8%, respectively.

This question is essentially the same as C.1, where 56.7% of firms said that the adoption of environmental sustainability practices had “greatly improved” company financial results.

CO.3 Has the implementation of environmental sustainability practices enabled your company to have a greater capacity to respond to new market conditions (i.e., opportunities or threats)?

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<sup>11</sup> We note that the top response option for the sum of the “much better” and “better” positions was overall “competitiveness”, at 84.4%.

<sup>12</sup> Again, overall “competitiveness” leads, at 80.9% “much better” or “better.”

<sup>13</sup> For the Manufacturing sector alone, the percentage is lower, at 50.0%.

Before launching into the analysis, it is to be pointed out that the actual question used the word “systems” rather than “practices” and the response options were the same as for the previous question relating to “impacts”, which don’t fit this question well. Nevertheless (see Table 17 (slide #48)), 63.5% of our respondents said that the effect on capacity to respond to new markets was positive.<sup>14</sup> Only 6.5% said there was “no impact” on capacity.

This question can be compared to the previous question on competitive position, where 76.4% of firms said their position was either “much better” or “better” with regard to the “ability to find and exploit new opportunities.” If we adjust the 63.5% for “not applicable,” we get 67.8%, which is quite close.

## **CLIMATE CHANGE**

### **CC. 1** In your company, is climate change an issue worth considering?

In our survey, 86.9% of Mexican firms said that climate change is an issue worth considering; 92% in the Manufacturing sector alone. In the McKinsey worldwide survey, 60% of executives viewed climate change as important to consider in their overall strategy, relatively fewer than in the Mexico case.

### **CC. 2** For those that responded in the affirmative, which of the following factors influenced your company to take climate change into account?

As shown in Table 18 (slide #36), by far the most significant factors are “management conviction” (70.4%) and “corporate reputation” (69.2%), followed by “regulations” (48.7%).

McKinsey (Ex. 2) has an identical question, where the top three response options are “corporate reputation” (54%), “consumer demands or preferences” (35%), and “media attention” (34%). Next in order are “management conviction” (30%) and “regulations” (25%), so there’s a reasonably close correlation. That “consumer demands or preferences” and “media attention” are relatively less important in Mexico may simply reflect a lack of awareness compared to the U.S. or European Union.

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<sup>14</sup> For the Manufacturing sector only, the percentage was higher, at 70.9%.

With regard to the Manufacturing sector alone, “management conviction” is most important (78.3%), followed by “corporate reputation” (60.9%) and “regulations” (52.2%).

CC.3 Is your company familiar with Mexico’s climate change strategy?

A majority of firms (52.6%) were not familiar with the Mexican government’s climate change strategy.

CC.3a For those who are familiar, what is your company’s perspective on this strategy?

A total of 68.7% of those firms who said they were familiar with Mexico’s climate change strategy found it to be either “insufficient” (45.4%)<sup>15</sup> or “misguided” (23.3%). Several reasons were offered by those firms who thought the strategy is misguided, among them that there is no vision of joint government-industry-community participation, that there is no clear set of rules or incentives, and that substantive changes to regulations in the energy sector are missing.

CC.4 Does your company have any specific plan for addressing climate change?

Whereas 86.9% of the firms said that climate change is an issue worth considering, 77.6% said they have specific plans for addressing it, which seems significantly high.

CC.5 If your company does have a specific plan for addressing climate change, what specific actions has your company taken?

By far the leading action is “cleaner technology investment” (85.9%), as seen in Table 19 (slide #38), followed by “reducing greenhouse gas emissions” (53.2%) and “employee climate change training programs” (51.2%). All other options received less than a majority of responses. Forty-six percent of firms produce greenhouse gas reports and are actively engaged in reducing emissions.

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<sup>15</sup> 72.7% in the Manufacturing sector alone.



CC.6 Do you currently measure your company's carbon contribution?

Sixty-one percent of firms said they presently do not measure their carbon footprint.

CC.7 For those who do not, does your company have carbon measurement goals?

Less than half (42.3%) of those firms that presently do not measure their carbon footprint said they have any plans (or goals) to do so. Reflecting on the responses to these two questions, it is apparent that the Mexican government needs to exert more leadership on this issue. Only 47.4% of firms were even familiar with Mexico's climate change strategy, and of those, 68.7% thought it was either "insufficient" or "misguided."

CC. 8 What effect, if any, do you think climate change will have on company profits in the next 5 years?

This question is couched in terms of whether the company will take action within the next five years to address climate change or not. In this regard 48.6% of Mexican firms said that there would be a "high impact" on profits even if the company takes action and 62.7% if not (presumably, a *negative* impact). Only 7.9% and 4.0%, respectively, said there would be "no impact".

The McKinsey survey (Ex. 4) asks a similar question, but for them the issue is whether the company manages climate change issues well or not, which is clearly not the same as whether the company takes action or not. If the company manages climate change well, 63.0% of firms think it will have a "high impact" on profits and 38.0% think profits will be highly impacted if the company manages the issue poorly. See Table 20 (slide #39). What makes the comparison difficult is not only that the question is somewhat different, but the direction of profits is ambiguous.

**WATER RESOURCES**

WR.1 In the last 5 years, has your company been subjected to cuts in water supply or has it been at risk from water scarcity?

Among our sample firms, 42.1% have been subjected to cuts or have been at risk from water scarcity during the past five years. If economic growth and development is a primary goal of the Mexican government, this is an alarmingly high proportion of firms whose business success has been put in jeopardy due to water scarcity.

WR.2 Given the infrastructure conditions that provide water to your company, do you consider it to be at risk (water scarcity)?

A larger percentage of firms, 63.2%, say that they are presently at risk of water scarcity due to poor infrastructure conditions, again an alarmingly high percentage.

WR.3 How do you perceive the infrastructure that provides water to your company?

This question is closely related to WR. 2 but the answers are strangely juxtaposed with only 28.5% of firms saying that the infrastructure is either “inadequate” or “insufficient”.

It is likely that in responding to WR.2 firms perceived risks of water scarcity more broadly, whereas WR.3 focuses specifically on infrastructure conditions.

WR.4 What use does your company make of water?

As shown in Table 21 (slide #41), by far the dominant use of water is for waste and drainage (81.8%). But significant numbers of firms use water as a component of production (47.0%) or in the production process (41.5%). In the Manufacturing sector alone, the percentage of firms using water in the production process is higher, at 66.7%.

WR.5 What are the risks involved in your water usage?

Regulatory risks (conservation policies and prices) are identified by 61.4% of firms, followed by physical hazards (53.0%), and reputational risks (45.8%), the latter involving misuse of water resources including pollution. Thirty-eight percent of firms encountered all three.

WR.6 Does your company have water recycling plants?

Fifty-six percent of firms said they have water recycling plants. As such, this mitigates the risk of water scarcity for them. In the Manufacturing sector the percentage is higher, at 75%.

WR.7 Does your company have water conservation goals?

Among the sample firms, 68.4% have water consumption goals.

WR.8 Does your company aim to conserve water usage?

This question is closely related to WR.7. Here, 79.8% of firms said that they do aim to conserve water<sup>16</sup>. From the previous question, a somewhat smaller percentage have explicit water consumption goals.

WR.9 What effect, if any, do you think the current state of water resources will have on your company's profits over the next five years?

As seen in Table 22 (slide #43), if the companies take further action to conserve water resources during the next five years, the state of water resources (infrastructure, availability) will have a "high impact" on the profitability of 45.7% of firms. If the companies take no further action, 57.0% said their profitability will be highly impacted, which suggests that there is a range of water resources issues that are out of the individual control of firms.

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<sup>16</sup> 91.7% in the Manufacturing sector alone.

For the Manufacturing sector, 58.3% of firms said that the state of water resources will have a “high impact” on their profitability even if action is taken to mitigate the risk; 73.9% if not further action is taken.

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## **APPENDICES**

- A. Survey Instrument
- B. Survey Methodology
- C. Distribution of Firms by Sector (slides #10, 11)
- D. Weighting Factors
- E. Sample Demographics
- F. Comparative Surveys (slide #12)

## **Appendix B: Survey Methodology**

Expansión is the leading business magazine in Mexico. Each year it lists the most important companies in Mexico as ranked by net profits and provides information about firm size and various financial indicators. Since the list of companies is published every year and some companies enter or leave the list, we used the last three years (2010, 2009 and 2008) and came up with 658 firms which were on these lists at least once. This number was later reduced to account for companies that were duplicated, merged, acquired by other companies or that were part of a conglomerate. We were left with 603 companies.

Out of this number, we divided the list into 15 portfolios according to subsectors, for example Agribusiness, Food and Beverages, Construction, and so on. The 15 portfolios were assigned to 10 students. Students were trained to gather information and to follow a protocol for contacting the companies. To manage the students we hired a graduate student and research assistants that over the surveying period coached surveyors on how best to get the information from the companies.

Surveyors were required to follow a protocol that started by researching the company before contacting it, getting contact information, filling in some specific details about the company in advance such as sales, number of employees, etc. Then, once the students had all this information, they made contact with an officer from the Environment, Health and Safety or Sustainability division or department. Very few companies in Mexico have an environmental unit, and many a times the surveyors were sent to Human Resources, Operations, General Services or even Marketing. If the surveyor was not able to make contact by telephone, he/she sent emails to relevant people. When contact was successful, the surveyor sent the company a letter on ITAM letterhead by email or messenger, a confidentiality agreement and a hard copy of the survey. Surveyors then asked for an appointment to visit the firm or to call back at an agreed upon time. Surveyors reported to the graduate student, a research assistant or Antonio Lloret about their weekly progress and whether they had any problems administering the survey. If there was a problem, either the research assistants or Antonio Lloret called the firm's contact to address their questions or concerns.

Out of the 603 companies on our list, we were able to make direct contact with 446 companies. For the remaining 157 companies, we were unable to find a person within the company that could answer the survey.

Some companies decided right away not to answer the survey. When that happened we asked the company officer to give us a written explanation when feasible. Some of the main reasons for deciding not to answer the survey were: “the information is confidential”, “we don’t have time”, “we are not interested in participating at this time”, “we do not have a department that could answer the survey”, “our business does not pollute”, and “we need to get authorization from the legal department”.

To our surprise, most companies agreed to answer the survey but did not tell us when it would be answered. We believe that culturally there is a reason why Mexican firms have a willingness to help but do not say when they will do so.

We set a deadline for answering the survey but had to move it back three times, as companies were not answering at the rate we had expected. We expressly asked the surveyors not to harass companies and to tell us when the officers were not taking their calls anymore or further delaying the time when they said they would respond.

During the time of the administration of the survey, Walmart had a green business fair at the World Trade Center. We approached Walmart officers and asked them to allow us to administer the survey at the fair where many of the companies listed in the Expansión 500 participate. During the fair, Antonio Lloret and three other surveyors approached company representatives and explained the project, the confidentiality agreements and the survey. Fortunately, that accelerated the rate of response.



**Appendix D:** Weighting Factors

As seen in Appendix C, the distribution of firms by sector in our sample is not representative of the overall distribution as shown by the Expansi3n 500. In order to compensate for this, we weight the responses. The weighting factors are shown below.

<b><u>Sector</u></b>	<b><u>Our Sample (%)</u></b>	<b><u>Expansi3n 500 (%)</u></b>	<b><u>Weighting Factor</u></b>
A	15	7	0.47
B	3	12	4.00
C	3	7	2.33
D	30	3	0.10
E	8	14	1.75
F	<u>41</u>	<u>57</u>	1.39
	100	100	

First each respondent firm is identified by sector. Then its response is either inflated or deflated by multiplying by the corresponding weighting factor.

Example      A.1, line 1 (Energy resources conservation)

Suppose a firm from Sector A has answered “very active.” Instead of counting its answer as a “one” for that response option, it would count as “0.47.” Similarly, a firm from Sector B that answered “rarely active” would be counted as “4” instead of “1 for that response option.

## **Appendix E:** Sample Demographics

- 78.9% of firms are “large”, defined as having more than 500 employees. 12.3% have fewer than 100 employees, and 8.9% have between 100 and 500 employees.
- 50% of firms develop their sustainability strategy in Mexico. For the other 50% the strategy is formed by a foreign parent company and passed down.
- 18% of firms are publically traded on the Mexican stock exchange, while another 38% are traded on other exchanges. 39% are privately held, and 5% are state-owned.
- 57.9% of firms do business internationally. 36.8% do business on a national level, while 3.2% do business regionally, and 2.1% locally.
- 25.0% of firms do business with other firms. 38.9% are oriented toward final consumers. 36.1% do both.
- 12.9% of firms indicated that their primary competitive strategy is low cost. 43.5% said that product differentiation is their primary competitive strategy, and 43.5% indicated other strategies.
- As to main competitive advantage, 23.1% of firms indicated products, 12.1% services, 9.9% human capital, 5.5% “trust”, 3.3% environmental sustainability, and 46.2% “other”.
- 85.6% of companies have a written code of ethics.
- 68.4% include elements of environmental sustainability in their mission or vision statements.
- 77.1% of firms take environmental sustainability into account in forming their business strategies.