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Advancing Green Purchasing in Mexican Municipalities



EGADE Business School
Tecnológico de Monterrey

Research Group in
Social Innovation and Sustainability



**Sustainable Purchasing
Research Initiative**

Arizona State University



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Advancing Green Purchasing in Mexican Municipalities

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Executive Summary

Overall government procurement in Mexico is about \$63.5 billion¹, making it a substantial source of the country's total expenditures. For comparison, the total gross domestic product in Mexico is \$1,220.7 billion². Increasing green purchasing in the public sector is a significant way to improve sustainable practices within Mexico.

Mexico has several initiatives that promote public policies encouraging green purchasing. Specifically, the German Cooperation Agency (GIZ), together with Mexico's federal and local governments, has promoted public policies for green purchasing since 2014. Despite making great progress, the policy aimed at increasing public purchasing of sustainable products has not realized its full potential.

Researchers at Tecnológico de Monterrey, EGADE Business School and Arizona State University's (ASU's) Sustainable Purchasing Research Initiative and the Center for Organization Research and Design (or CORD) seek to address these issues. Our three broad objectives are to:

- Determine the facilitators and barriers to adoption and implementation of green purchasing policies in Mexican municipalities
- Recommend actions for advancing green purchasing practices more effectively
- Encourage Mexican municipalities that lack green purchasing policies to adopt and implement them within their jurisdictions

To achieve these objectives, we conducted a national survey consisting of management, finance, acquisitions, public works, and environmental directors in Mexican municipalities. The survey generated 461 responses from municipal officials located in 347 municipalities.

¹ OECD. (2017). Government at a Glance Latin America and the Caribbean 2017 Mexico. Retrieved March 22, 2020

² World Bank. (2018). GDP. Retrieved March 22, 2020

From the municipalities surveyed, 52% (177) have a population between 25,000 and 50,999 habitants, 25% (85) have a population between 51,000 and 100,999 habitants, and the remaining 25% (85) municipalities have 101,000 or more residents. These municipalities were representative based on their population, income, and geographic dispersion by state.

Our results show that 51 percent of municipalities (173) have a green purchasing policy, 31 percent have no policy, and 18 percent of responding municipalities did not know if their municipality had such a policy. We assumed that municipalities that did not know if they had a policy, did not have one. We found contradictory responses in 46 municipalities.

How are municipalities that have adopted green purchasing policies different from nonadopters?

Department directors indicated that municipalities that adopt green purchasing policies differ in five ways from those municipalities without such policies:

1. Complementary policies and practices
2. Purchasing criteria
3. Information access
4. Leadership, employees, and resources
5. Vendor roles

What factors are more strongly related to implementation success?

Of the 60 percent (278) of department directors who reported that their municipalities had adopted green purchasing policies, less than half (47 percent, 216 total) indicated that their municipalities had implemented the policy successfully. By contrast, 13 percent (62 total) of the department directors considered the implementation of their green purchasing policies to be either “neutral” (neither successful nor unsuccessful) or “unsuccessful.”

Directors in municipalities who reported successful implementation of their green purchasing policies noted that their departments are more likely to have the following general features:

1. Complementary policies and practices
2. Purchasing criteria
3. Information access
4. Leadership and implementation responsibility
5. Vendor roles

In our results we found that Mexican municipalities often report purchasing sustainable products, however, we believe that there may be a bias where individuals answer questions towards what they believe regulations mandate them to do as opposed to what is actually done.

Recommendations:

Based on these findings, we have developed five recommendations aimed at increasing the success of green purchasing policy adoption and implementation by municipalities:

1. Adjust regulations in a way that eliminates barriers and facilitates local decision making.
2. Construct criteria for decision tools regarding environmental impact indicators that help guide the purchase decision based on a product’s or service’s ecological footprint or socio-environmental impact.
3. Construct local and national databases about environmentally preferred products and producers.
4. Track spending related to green purchases.
5. Train municipal employees on green purchase policies.

Acknowledgements

We thank the Global Consortium for Sustainability Outcomes (GCSO) for funding this research and recognizing the importance of green purchasing. We also are grateful to Berumen and Associates, a marketing research agency that helped gather information for this report. Additionally, we thank The German Cooperation Agency (GIZ) for facilitating access to previous publications. Finally, we extend thanks to the government officials that participated in our survey.

Research Collaboration

This report was developed in collaboration with researchers at EGADE Business School from Tecnológico de Monterrey, Mexico and the Arizona State University's (ASU's) Sustainable Purchasing Research Initiative and the Center for Organization Research and Design (CORD).

EGADE is the business school of the Tecnológico de Monterrey. It is focused on developing leaders capable of anticipating change and being at the forefront of business trends. It also evaluates public policies for sustainable development and social entrepreneurship.

The Sustainable Purchasing Research Initiative is a cross-university collaboration between researchers in ASU's School of Sustainability, the Global Institute of Sustainability, the School of Public Affairs, the Center for Organization Research and Design and faculty in other ASU units.

CORD is a research center launched at ASU to promote, support, and conduct fundamental research on public, private, nonprofit, and hybrid organizations and their design. To achieve its mission, CORD has identified five areas that have a high potential for improving societal conditions, one being environmental policy and sustainability.

Please Share this Report

This report is designed to help municipalities integrate green purchasing into their procurement processes. Please share it widely among your professional networks. A physical copy of this report can be obtained by emailing:

Bryan Husted at bhusted@tec.mx
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Additional Information

Please visit ASU's Sustainable Purchasing Research Initiative (spa.asu.edu/greenpurchasing) for additional information about green purchasing, best practices, project updates, and related research papers. To learn more about EGADE Business School visit egade.mx.



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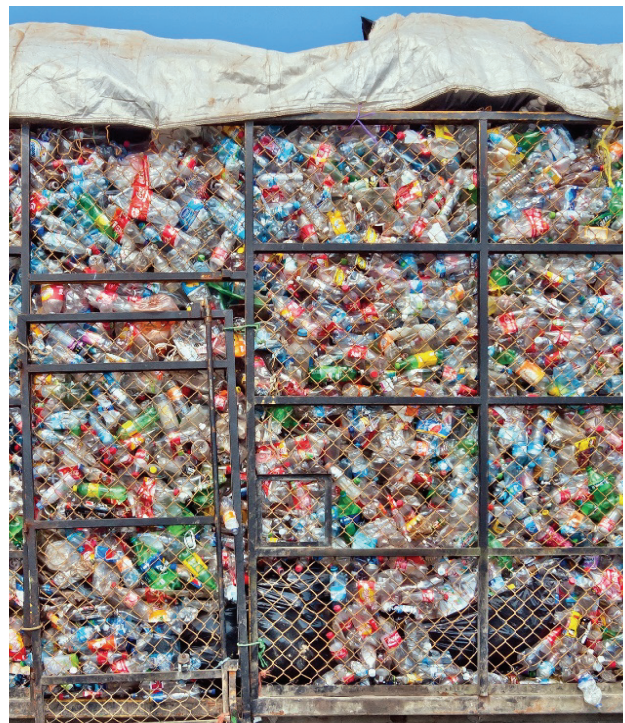
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Introduction

In Mexico, government procurement is 63.5 billion US dollars of goods annually, which is around 27.9 percent of Mexico's country-level gross domestic product (GDP). Purchased items include vehicle fleets, construction materials, chemicals, electronics, and office materials, all contributors to global climate change and other environmental concerns during these products' production and use.

To address the environmental impacts associated with government purchasing, some municipalities have implemented green purchasing policies. A green purchasing policy refers to *the set of activities undertaken by an organization to implement purchasing that reduces negative effects on the environment.*

Governments that practice green purchasing can reduce their climate impacts significantly. By purchasing green products, municipalities can reduce energy-related carbon emissions, water, solid waste, and a host of other activities, while increasing internal efficiencies (e.g., reduced energy use) that lead to cost savings.

Since green products often are designed with enhanced durability features, green purchasing policies have the potential to reduce consumption, while creating significant market incentives for companies to reconsider their production processes, incorporate environmental principles into their daily business routines and thereby reduce their environmental impacts. Further, green purchasing policies can expand the production of green products and services by increasing demand.

By virtue of municipalities encouraging their suppliers to produce and deliver greener products, research shows that 65 percent of directors consider that current suppliers offer environmentally friendly products. Green purchasing policies, therefore, have the potential to create spillover benefits that extend up the supply chain and across the globe, leading to significant environmental improvements.

While there is national and local legislation that contributes to green purchasing in Mexico, there is no legal instrument to support the complete adoption of green purchasing practices. Public procurement is subject to legislation in environmental policies, transparency, and other general policies. In 2016³, The German Cooperation Agency (GIZ) analyzed public policies and found that sustainability criteria were only in 12% (6 of 49) of legal instruments that determine public purchases.

Even while legal instruments for green purchasing have made some progress, in practice many municipalities have failed to implement them fully, suggesting that there are significant barriers to implementing these policies. There exists a lack of information on green alternatives, insufficient metrics to evaluate the sustainability of one product compared with another, and local regulations that forces local governments to buy the cheapest option rather than the best option for society or the environment.

As a consequence, green purchasing policies have not reached their potential to help local governments mitigate their environmental impacts. In Mexico, metrics on the quality of green purchasing in municipalities are non-existent, and should be a priority according to the United Nations Sustainable Development Goals (SDGs), particularly related to:

- Goal 9: Build a resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable
- Goal 12: Ensure sustainable consumption and production patterns
- Goal 13: Take urgent action to combat climate change and its impacts.

³ GIZ. 2016. Compras Públicas Sustentables en México.

Project Goals

To enhance the potential of green purchasing in Mexican municipalities, this report is guided by three project goals:

1. *Determine the facilitators and the barriers to the adoption and implementation of green purchasing policies in Mexican municipalities*

To achieve this goal, we surveyed 461 directors of the departments of finance, acquisitions, general administration, municipal public services, and solid waste/environmental management from the 2010 census of 668 municipalities with 25,000 residents or more. These governments consisted of municipalities that had green purchasing policies in place and those that did not. We identified the factors related to municipalities' green purchasing policy adoption.

2. *Recommend actions for advancing green purchasing practices more effectively*

We applied statistical tools to the survey data to identify which factors are related to the successful implementation of municipal green purchasing policies.

3. *Encourage Mexican municipalities that lack green purchasing policies to implement them within their jurisdictions*

We combined the results of project goals 1 and 2 to develop a list of best practices that facilitate the implementation success of green purchasing policies.

We are sharing our findings through the following outlets:

- Emails featuring our key findings to the sample of 343 Mexican municipalities of 25,000 residents or more.
- Emails to professional organizations and international governance bodies that have agreed to distribute the report's findings to their network members
- Workshops with key stakeholders in the Mexican Ministry of Environment and other professional organizations that promote sustainable public procurement
- Emails to relevant media outlets with direct links to the report

Additionally, we developed a project summary and professional articles that are posted to the EGADE Business School (egade.mx) and the Sustainable Purchasing Research Initiative (spa.asu.edu/greenpurchasing). These materials will be featured in social media posts via Twitter, Facebook, and LinkedIn.

Research Approach

To achieve our project goals, we reviewed existing research related to public green purchasing. We also developed our instrument based on the instrument applied in the United States (U.S.). The instrument was translated into Spanish and adapted so it could be applied in the Mexican context. This is why some of the presented alternatives vary from the original U.S. instrument.*

Based on the survey of U.S. cities, the instrument applied in Mexico addresses the following areas:

- Local government purchasing activities
- Local government environmental sustainability policies/practices
- Department-level policies/practices
- Department structure and culture
- Professional/personal information

Within these broader areas, questions covered topics including:

- The structure of purchasing decisions in a municipality
- Municipal-level purchasing policies and practices
- Department-level purchasing policies and practices
- Information on sustainable products
- Information on vendor relationships
- Influence of external groups (e.g. citizens, higher-levels of government)

Prior to implementing the Mexican survey, we had in-depth interviews with three seasoned municipal directors responsible for public purchases for an administrative period of six years or more. We also interviewed with the leader of the sustainable public purchasing program in the German Cooperation Agency (GIZ).

* Sources: Darnall, N., J.M. Stritch, S. Bretschneider, L. Hsueh, M. Duscha, J. Iles, W. No, J. Suarez, C. Burwell. 2017. *Advancing Green Purchasing in Local Governments*. Phoenix: Arizona State University, Center for Organization Research and Design, Sustainable Purchasing Research Initiative;

Darnall, N., J.M. Stritch, S. Bretschneider, L. Hsueh. 2017. *Local Government Green Purchasing Survey*. Phoenix: Arizona State University, Center for Organization Research and Design, Sustainable Purchasing Research Initiative.



Survey recipients

Because the project is focused on the implementation of organizational level purchasing and green purchasing policies, we surveyed municipal managers whose operations were a) related to purchasing; b) related to environmental management; or c) significantly affected by purchasing. We surveyed directors within the following departments to obtain a representative view of green purchasing implementation:

1. Procurement departments
2. Finance departments
3. Management departments
4. Environment departments
5. Public works

In Mexico, the control of the purchase decision is not homogeneous. Although almost all municipalities have a procurement or acquisitions department, they also have a management department or comptroller department that supervises financial movements. Regularly, these departments have a strong position in the purchasing decisions. The departments of public works also have an important role in purchasing decisions. These departments tend to purchase a large number of items across the range of purchasing categories. Directors of these departments also have detailed knowledge of the municipality's organization-wide purchasing policies and how they are implemented.

The following protocol was used in order to obtain department contacts within each of the 347 municipalities:

1. We obtained the 2010 Mexican census list of all municipalities, and limited them to those with 25,000 or more residents.
2. In Google, we used search words (e.g., Guadalajara Municipality) to find each municipality's official webpage or we obtained it from the state government websites.
3. Once a municipality webpage was found, we identified the relevant municipal department's webpage.
4. If the department director's contact information was available, we recorded the director's name, email address, phone number and mailing address.
5. If the department director's information was not available, we made calls to the municipality to identify the person most appropriate to answer our survey

Through this process we obtained a sample of 769 municipalities meeting the criteria for inclusion, however we did not receive an answer from every municipality. In 14% of the municipalities the director was not available, for 30% the telephone was never answered, and 11% refused to provide an answer. Ultimately, we obtained responses from 461 directors in 347 municipalities.



Survey administration

We finalized the survey in August 2019. The final survey contained 38 questions including personal information that required approximately 15 minutes to complete. The questionnaire was applied online with telephone assistance from Berumen y Asociados - an external survey vendor. Our response rate at the municipality level was 45 percent (n=347). At an individual level, there was a response rate of 30% (n=461). Of the 461 directors who responded to our survey, 21% were in purchasing departments, 29% in administration or comptroller departments, 3% were municipality managers (equivalent to city managers), 45% were in the environmental department, 1% were in public works, and 1% in maintenance.

The following documents provide further information about our research approach. All documents are available at spa.asu.edu/greenpurchasing.

- The final Mexican survey
- Introductory script used to contact directors
- Frequencies associated with each of the Mexican survey questions
- Print materials

Measurement and statistical assessment

Consistent with the previous U.S.⁴ and Japan⁵ studies (Darnall et al. 2017, 2018), two survey questions formed the basis of our evaluation of the factors that impede or facilitate green purchasing within Mexican municipalities. The first question examined green purchasing policy adoption and asked, “*To the best of your knowledge, has your municipality implemented a formal policy pertaining to the following purchasing issues?*” Department directors were provided a list of policies, one of which was “*Environmentally friendly purchasing.*” The following definition was provided:

Environmentally friendly purchasing is the set of activities undertaken by an organization to implement purchasing that reduces negative effects on the environment.

Department directors who answered “Yes” to this question were identified as individuals working in municipalities that had a green purchasing policy in place. Those who answered “No” were identified as working in municipalities with no green purchasing policy.

⁴ Darnall N., Stritch J.M., Bretschneider S., Hsueh L., Duscha M., Iles J., No W., Suarez J., Burwell C. 2017. Advancing Green Purchasing in Local Governments. Phoenix: Arizona State University, Center for Organization Research and Design, Sustainable Purchasing Research Initiative.

⁵ Darnall, N., T. Arimura, T. Miyamoto, J.M. Stritch, S. Bretschneider, and L. Hsueh. 2018. Advancing Green Purchasing in Japanese Municipalities. Arizona State University, Center for Organization Research and Design, Sustainable Purchasing Research Initiative and Waseda University, Research Institute for Environmental Economics and Management

The second survey question that formed the basis of our evaluation assessed department directors' perceptions of the success of their green purchasing policies' implementation. For directors that responded "Yes" to the first question, we evaluated the success of implementation with the following question: "We are interested in your overall assessment of the implementation of your municipality's environmentally friendly purchasing policy. How would you assess your municipality's overall implementation of this policy?"

Department directors responded on an 11-point scale with 5 being "Very successful," 0 being "Neither successful nor unsuccessful" and -5 being "Very unsuccessful." For the purposes of this report, we identified municipalities as having a "Successful" green purchasing policy by combining responses of 1 through 5. We identified policies that were "Less than successful" by combining responses 0 through -5.

This measure of success is perceptual and was used for several reasons. First, municipalities' green purchasing policies are extremely diverse. They vary based on their degree of formalization, scope, maturity and other factors.

Determining actual implementation success would require using a benchmarking tool that must be applicable to all settings. Additionally, many directors reported that their municipalities' green purchasing policies were unsuccessful. We anticipated that asking directors within these municipalities a series of questions that would not be applicable to them would lead to survey fatigue and nonresponse. Measuring perceptual success attempts to balance these survey design concerns.

Responses to both questions were compared with all other survey responses using chi-square statistical tests. In order to facilitate comparison between the Mexican setting and the U.S., we list all factors found to be statistically significant in U.S. local governments, but mark those factors which were not statistically significant for Mexican municipalities with asterisks (*). Our findings offer a preliminary assessment of the factors that facilitate the adoption of green purchasing policies and their implementation success.

The next section describes our sample of municipalities with respect to those that have and have not adopted green purchasing policies.

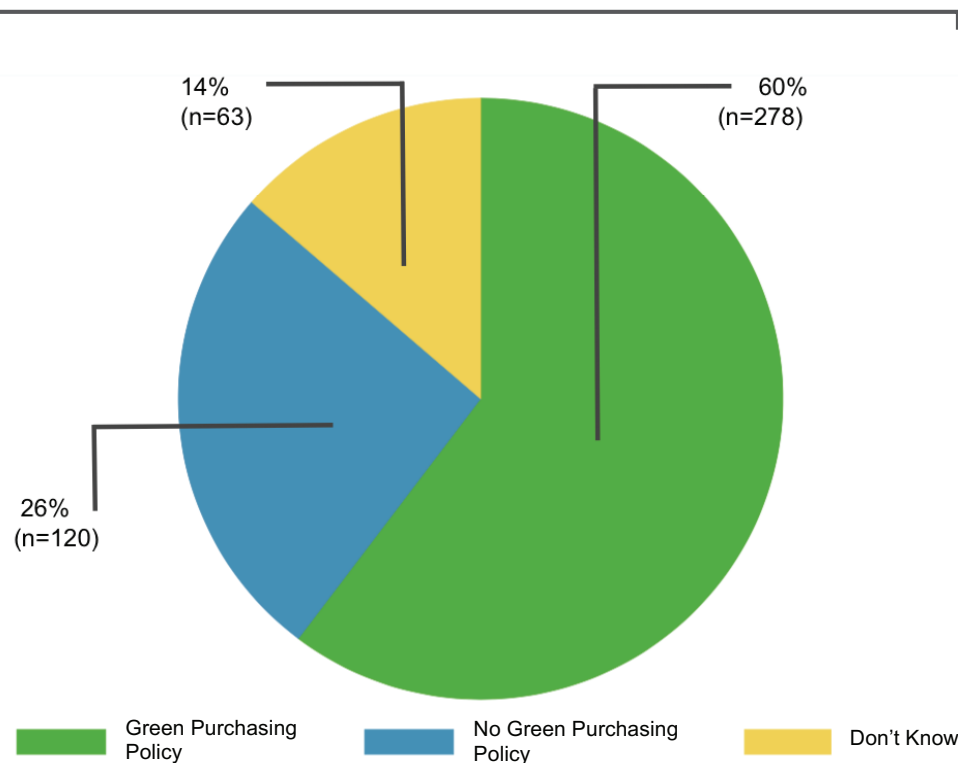


Green Purchasing in Mexican Municipalities

Green purchasing policies consist of formal policies such as legal frameworks, ordinances, executive orders, resolutions, and administrative directives. They also include fewer formal approaches that involve adding green purchasing criteria to existing or complementary policies (e.g., a sustainability plan or an energy conservation policy).

For the department directors in our sample, the majority (60 percent) reported that their municipality have a green purchasing policy (see Figure 1). This compares with 26 percent of department directors who reported that their municipality do not have a green purchasing policy. In 14 percent of municipalities, directors did not know whether a green purchasing policy existed in their municipality. This lack of knowledge was assumed to be indicative of the municipality not having a green purchasing policy.

Figure 1. Green Purchasing Policy Adoption in Mexican Municipalities



Which Factors Impede or Facilitate Green Purchasing Policy Adoption?

Overall, the survey responses indicate that Mexican municipalities which adopt green purchasing policies differ in six ways from municipalities without such policies:

1. Complementary policies and practices
2. Purchasing criteria
3. Information access
4. Leadership, employees and resources
5. Vendor roles



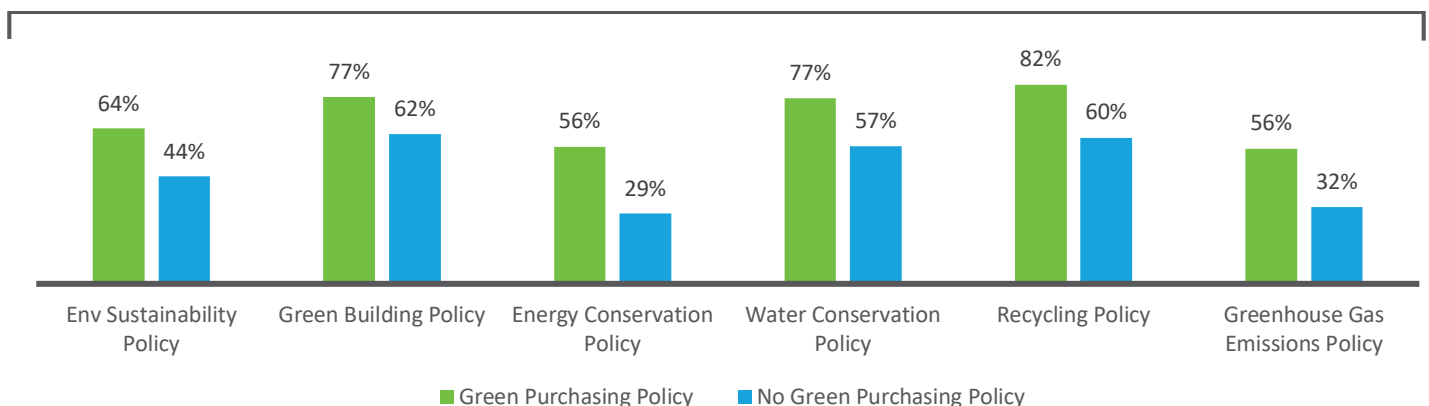
1. *Complementary policies and practices*

Complementary policies and practices are existing organizational activities that can be used to support green purchasing. They can help reduce the costs of adopting green purchasing policies because organizations that have complementary policies and practices already have a foundation in place to build their green purchasing programs. Complementary policies and practices also help create management commitment and shared vision around similar issues.

We asked department directors several questions about their municipalities complementary policies and practices, the first of which was, “*To the best of your knowledge, does your municipality have any of the following?*”

Department directors were presented a list of complementary policies and practices. Figure 2 describes those found to be statistically significant in the survey.

Figure 2. Municipal-wide Implementation of Complementary Environmental Policies



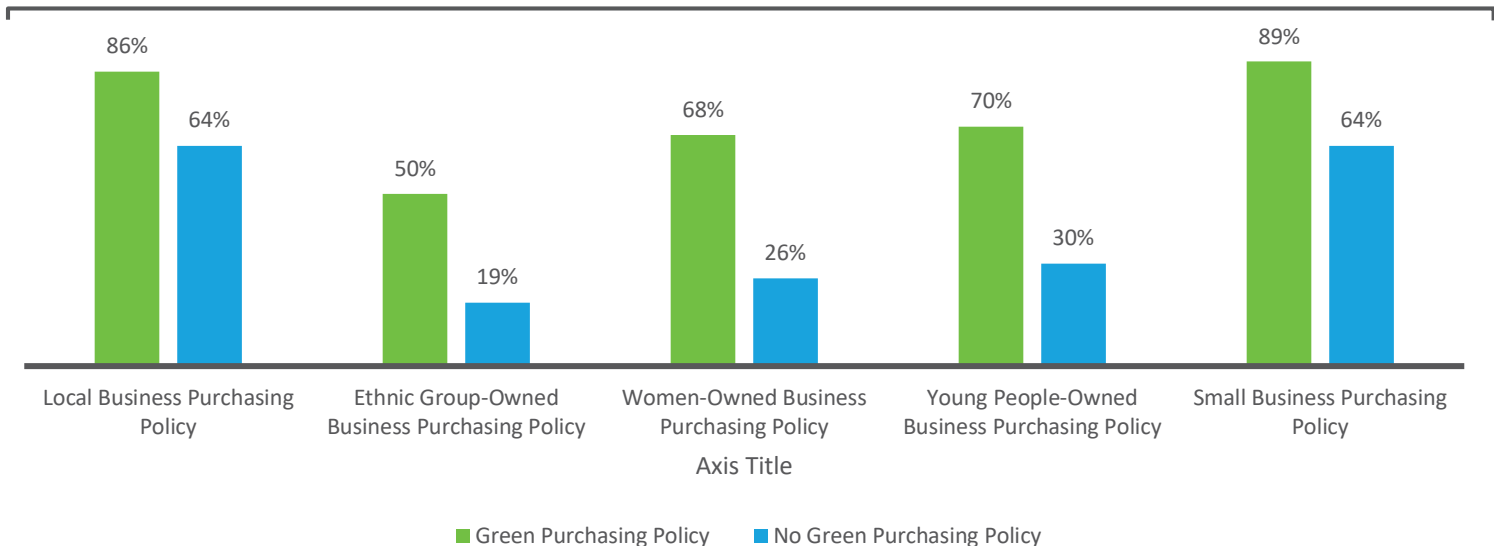
Our findings show that 64 percent of directors in municipalities with green purchasing policies also have a municipal-wide environmental sustainability policy, 77 percent of directors reported also having a green building policy while 56 percent of directors reported having a greenhouse gases emissions policy and climate change adaptation policy. This compares with directors in municipalities that lack a green purchasing policy, where only 44 percent have an environmental sustainability policy, 62 percent have a green building policy, and 32 percent have a greenhouse gas emissions policy.

Similarly, 56 percent of directors in municipalities with a green purchasing policy also have an energy conservation policy, 77 percent have a water conservation policy, and 82 percent have a recycling policy. By contrast, 29 percent of directors in municipalities without a green purchasing policy have an energy conservation policy, 57 percent have a water conservation policy, and 60 percent have a recycling policy.

To explore issues related to more socially oriented complementary policies, department directors were also asked, *“To the best of your knowledge, has your municipality implemented a formal policy pertaining to any of the following purchasing issues?”*

Department directors were presented a list of options. Figure 3 describes the items found to be statistically significant that pertained to the broader social aspects of sustainability. Our results show that directors in municipalities with green purchasing policies are more likely than others to have implemented these broader purchasing policies. For instance, 86 percent of department directors in municipalities with green purchasing policies have a local business purchasing policy in place, compared with 64 percent of directors in municipalities without a local purchasing policy. Other similar options were presented considering ethnic-owned group business, women-owned business, young people-owned business, and small business purchasing policies. Among those, the largest percentage of policies in place was local business purchasing policies. One way in which these questions differed from the US report is that veteran-owned businesses was swapped with young people-owned businesses to better represent policies in a Mexican context.

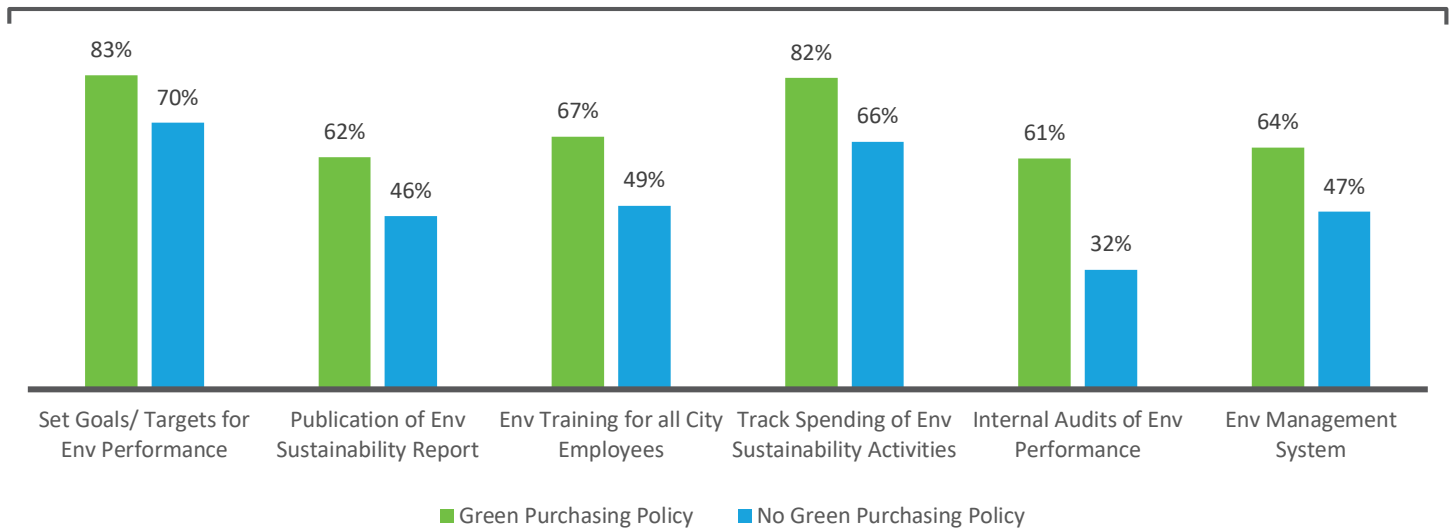
Figure 3. Municipal-wide Implementation of Complementary Social Policies



In addition to asking about complementary policies, we also examined municipalities complementary environmental practices. Department directors were asked, *“Please indicate whether the following environmental practices have been implemented or adopted throughout your municipality.”*

Department directors were presented a list of options. Figure 4 describes those found to be statistically significant. According to our results, the two most implemented practices in municipalities with a green purchasing policy are: setting goals for environmental performance (83 percent) and tracking spending of sustainability activities (82 percent). The percent adoption was similar among the other listed practices: publication of a sustainability report (62 percent), training about environmental issues to former and new employees (67 percent), internal audits of environmental performance (61 percent), and the use of an environmental management system (64 percent). Internal audits of environmental performance in municipalities was much lower in municipalities with no green purchasing policy (32 percent).

Figure 4. Municipal-wide Implementation of Environmental Practices

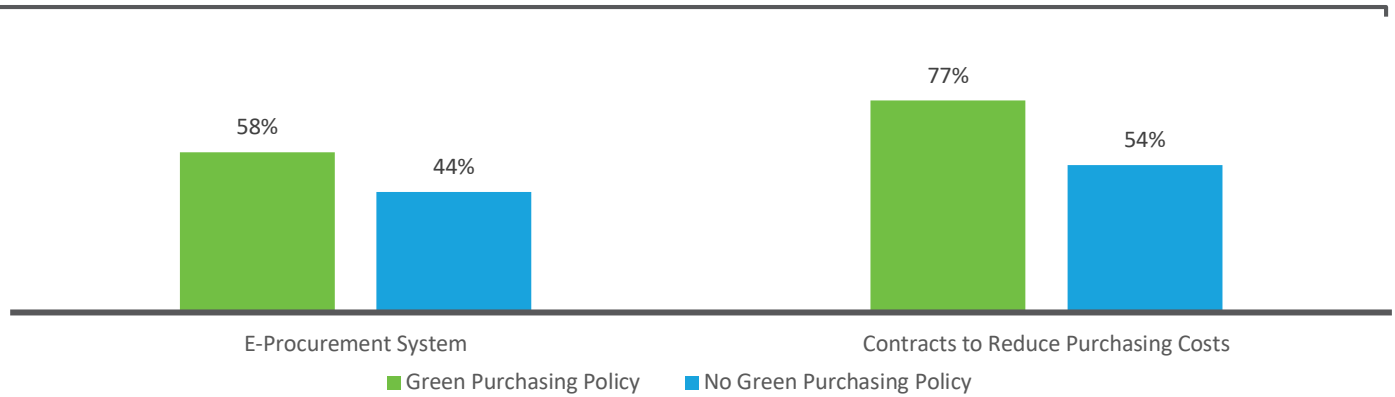


While department directors of municipalities with green purchasing policies tend to have more complementary environmental practices, many do not have them. Setting goals/targets for environmental performance, environmental training for all municipal employees, and internal audits of environmental performance are necessary to improve the performance outcomes of a municipality's green purchasing policies. The lack of adoption means that there are potential opportunities for municipalities with green purchasing policies to strengthen their internal capabilities in a way that improves their implementation success.

The final area we assessed focused on complementary policies and practices was related to the more technical aspects of purchasing. Department directors were asked, *"To the best of your knowledge, has your municipality implemented the following purchasing activities?"*

Our results (Figure 5) show that directors in municipalities with green purchasing policies are more likely to report using an E-procurement system and utilize contracts to reduce purchasing costs. E-procurement systems are recognized as being important facilitators for successful implementations of green purchasing policies. They are important facilitators because sustainability concerns can be routinized in the purchasing process when they coupled with information about green products and services. We found that 58 percent of directors in municipalities with green purchasing policies have implemented an e-procurement system, while 44 percent of directors in municipalities lacking these policies have an e-procurement policy in place. More than three quarters (77 percent) of directors in municipalities with green purchasing policies reported that they use cost-reduction contracts as compared with 54 percent of directors in municipalities without green purchasing policies.

Figure 5. Municipal-wide Implementation of Complementary Purchasing Activities



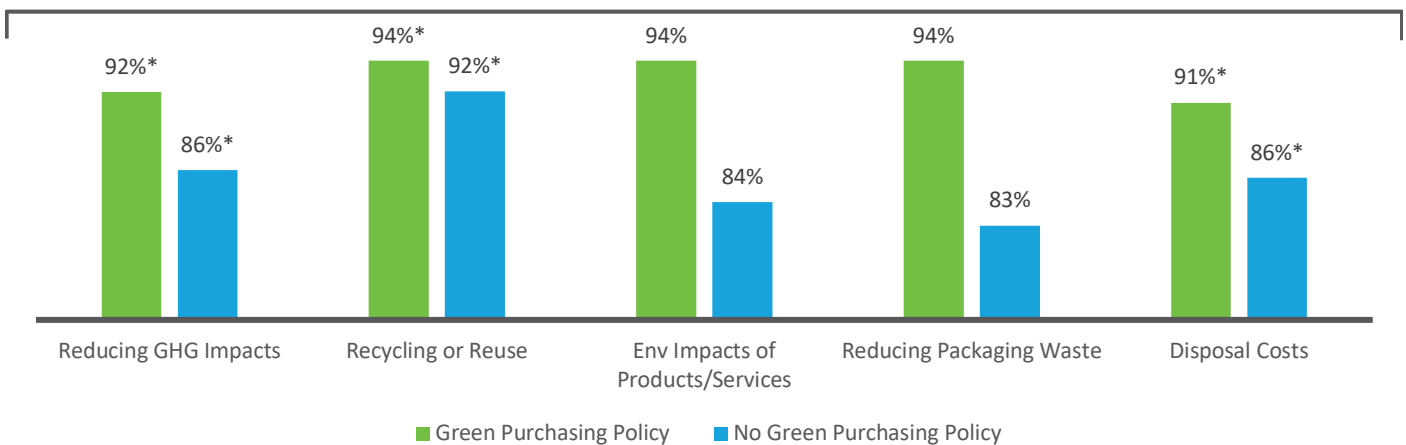
Considering the results in this section, we conclude that directors in municipalities with green purchasing policies have more complementary policies and practices than directors in municipalities without green purchasing policies. These supporting policies and practices can reduce the cost of adopting a green purchasing policy and facilitate its overall implementation success. Some of these practices are also more related to an efficient management of the municipality, which is also evidenced by the greater number of environmental practices adopted.

2. Purchasing criteria

Purchasing criteria are the factors that individuals consider when deciding to purchase a good or service. Department directors were asked, “In thinking about your department’s purchasing criteria, how important is each of the following characteristics of a product or service?”

Department directors were presented a list of options including reducing greenhouse gas (GHG) impacts, recycling or reuse, environmental impacts of products and services, reducing packaging waste, and disposal costs. Figure 6 shows that directors assigned similar importance across all options, ranging above 90 percent in those municipalities that have a green purchasing policy and above 83 percent in those that do not have a green purchasing policy. Reducing GHG impacts, recycling or reusing, and disposal costs were all found to be statistically insignificant. We found these results to be much higher than in the Japan and US reports, and we acknowledge that there is potentially bias in the results regarding how important these criteria really are in purchasing decisions.

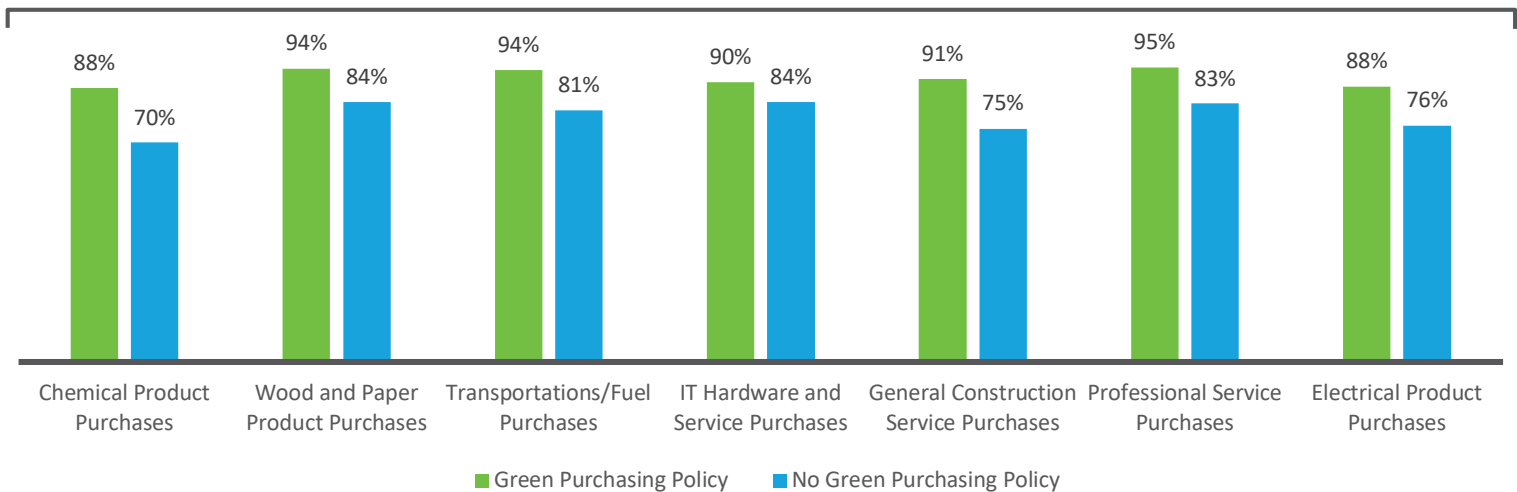
Figure 6. Importance of Departments’ Purchasing Criteria



To explore the importance of environmental concerns as they relate to specific purchasing categories, we asked department directors, “*Within your department, how important are environmental sustainability concerns to the purchasing of the following types of products and services?*”

Department directors were presented a list of product/service categories. Figure 7 displays all categories that were statistically significant. Across all product categories, directors in municipalities with green purchasing policies reported that environmental concerns have greater importance than did directors in municipalities that lack these policies. For example, about 88 percent of directors in municipalities with a green purchasing policy recognized that the environmental concerns of chemical products are important, compared with 70 percent in municipalities without a green purchasing policy. A similar rate can be seen in the purchasing of wood and paper products, transportation or fuel, IT hardware and service purchases, general construction services, professional services, and electrical products.

Figure 7. Importance of Environmental Concerns to Specific Types of Products



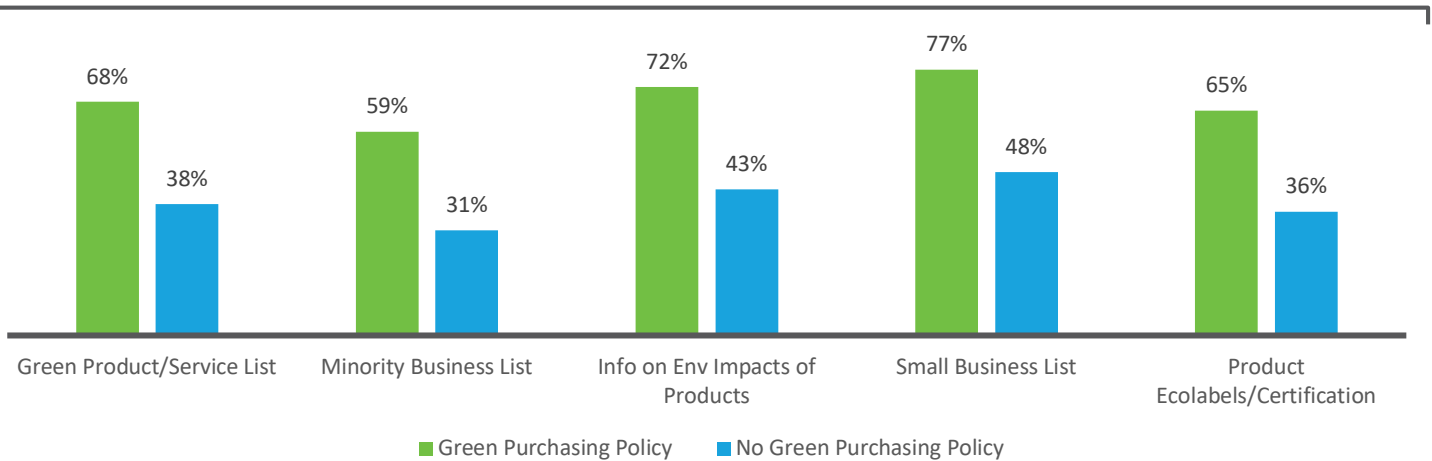
One interesting observation about how municipalities' use environmental criteria (see Figures 6 and 7) in decision-making, is how the overall importance of environmental concerns in municipalities without a green purchasing policy is higher than 70 percent. Even though the importance of environmental concerns in municipalities that have a green purchasing policy is higher compared with municipalities that do not have such policies, we did not find large differences that were found in reports from other countries.

3. Information access

Information can influence purchasing decisions and outcomes. For this reason, we asked department directors about their departments' access to specific information sources in the following question, “*Departments may use a number of different information sources when making purchases. Please indicate whether each of the following information sources is available to your department when making purchasing decisions.*”

Our findings (Figure 8) show that more than half of directors in municipalities with green purchasing policies have green product/service list (68 percent), minority business lists (59 percent), information on environmental impacts of products (72 percent), small business list (77 percent), and product ecolabels /certification (65 percent). By contrast, less than 50 percent of directors from municipalities with no green purchasing policy report having available information sources when making purchasing decisions.

Figure 8. Information Sources Available to Departments When Making Purchasing Decisions

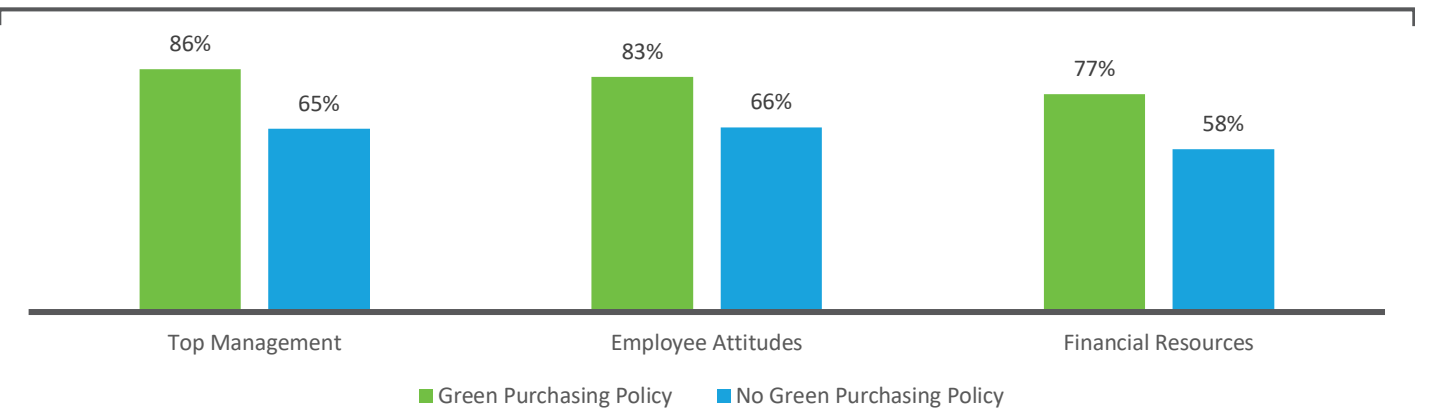


These findings suggest that directors in municipalities with green purchasing policies have greater access to environmental information sources when making purchasing decisions than directors in municipalities without such policies.

4. Leadership, employees and resources

Leadership, employees, and resources are often cited as critical elements in the adoption of organizational policies. Department directors were asked, “In your view, to what extent does each of the following either constrain or facilitate your department’s ability to implement environmentally sustainable purchasing?”

Figure 9. Facilitators of Departments’ Ability to Implement Green Purchasing

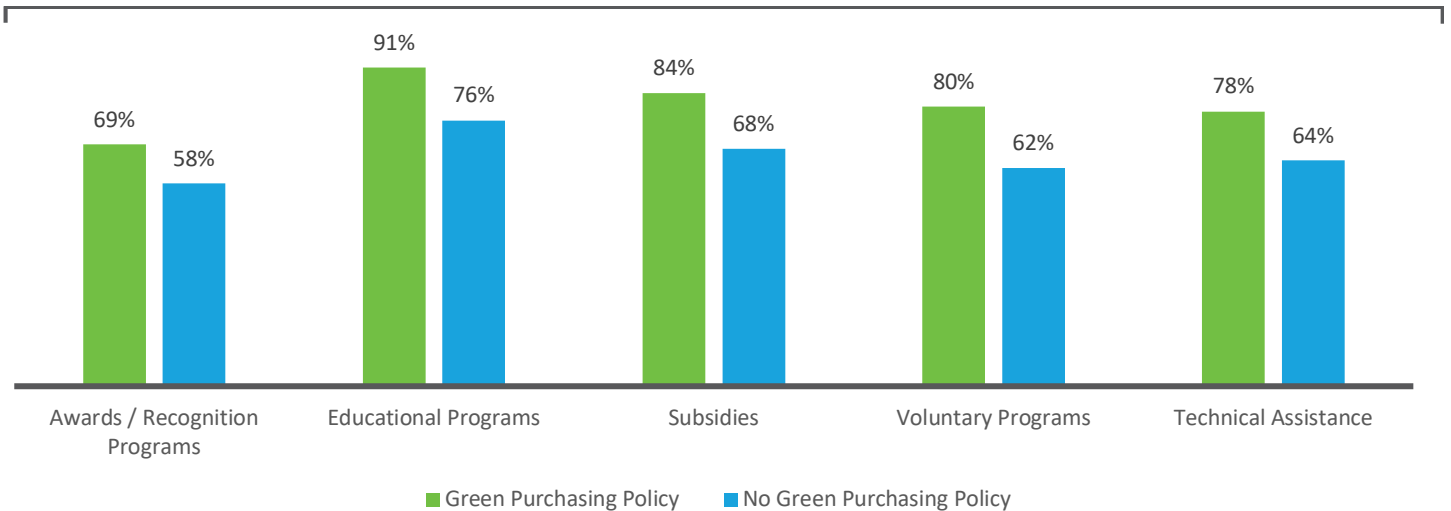


Directors in municipalities with a green purchasing policy report that top management (86 percent), employee attitudes (83 percent), and financial resources (77 percent) facilitate their ability to implement such policy (Figure 9). While about two-thirds of directors in municipalities without a green purchase policy also think that such options enable a departments' ability to implement green purchasing.

To further consider the role of financial resources, we asked department directors about the importance of external support in promoting their municipality’s environmental programs in the following question, “Over the last five years, how important has each of the following national government programs been in promoting environmental sustainability in your municipality?” Department directors were presented a list of options.

Programs found to be statistically significant included state or federal awards/recognition programs, educational programs, subsidies, voluntary programs, and technical assistance (see Figure 10).

Figure 10. Importance of Federal Resources to Promoting Municipal-Level Environmental Sustainability



In municipalities with green purchasing policies, 69 percent of directors reported that awards/recognition programs are important in promoting environmental sustainability, compared with 58 percent of municipalities without green purchasing policies. Among the options, having educational programs had the highest rate (91 percent) for municipalities with a green purchasing policy. This compares with 76 percent in municipalities without a green purchasing policy who indicated educational programs are important. The second most important option was the presence of subsidies to purchase environmentally friendly products (84 percent) in municipalities with a green purchasing policy, which was 68 percent of directors in municipalities without green purchasing policies. Having voluntary programs was the option with the largest difference between the importance in municipalities with a green purchasing policy (80 percent) and municipalities without green purchasing policies (62 percent). Similar patterns are seen in respect to the importance of technical assistance. Directors in municipalities with green purchasing policies reported they place greater importance on these factors (78 percent), compared with the responses from directors in municipalities without these policies (64 percent).

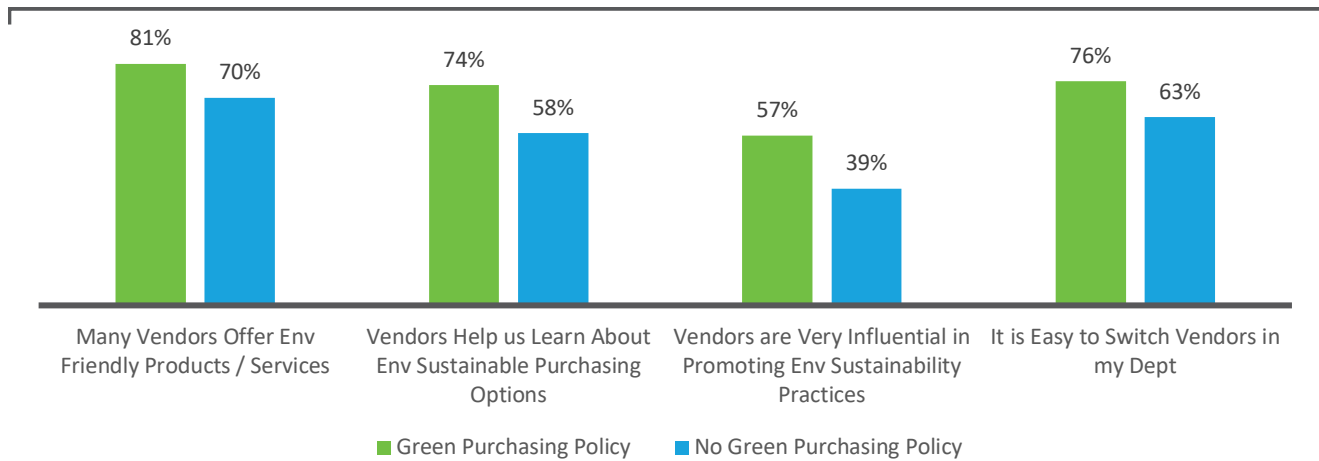
Overall, these findings are noteworthy because information (educational programs and green purchase options) appears more important than economical options like financial resources and subsidies. This suggests that the promotion of sustainability may involve cultural issues. Additional research is needed to understand the complexity that links culture to a municipalities' green purchasing.

5. Vendor roles

“Vendor roles” refers to the ways in which municipalities engage their vendors over time. We asked directors about their department’s vendor roles with this survey question: *“In thinking about your relationships with vendors, to what extent do you disagree or agree with the following statements about procurement/purchasing in your department?”*

Our findings (Figure 11) show that 81 percent of directors in municipalities with green purchasing policies “Agree” or “Strongly Agree” that many vendors offer environmentally friendly products/services, compared to 70 percent of directors from municipalities that lack a green purchasing policy. About 74 percent of directors of municipalities with green purchasing policies suggest that vendors help them learn about environmentally sustainable purchasing options compared with 58 percent in municipalities without green purchasing policies. Directors reported that vendors are influential in promoting environmental sustainability practices 57 percent of the time in municipalities with green purchasing policies, and 39 percent in ones without a green purchasing policy. Roughly three quarters of municipalities with green purchasing policies find it easy to switch vendors, as opposed to 63 percent in those without a policy.

Figure 11. Vendor Roles



Similarities among municipalities with and without green purchasing policies

Related to their use of general purchasing criteria, directors reported many similarities across their municipalities, regardless of whether the municipality had a green purchasing policy. These similarities parallel the U.S. findings. They included their municipality's use of purchasing criteria related to:

- Price
- Performance requirements
- Pre-existing contract agreements
- Technical specifications in managing purchase complexity
- Product lifecycle costs

Outside of purchasing criteria, other similarities with the directors in municipalities with and without a green purchasing policy included:

- Purchasing rules and procedures
- Levels of bureaucracy
- Commitments to innovation
- Employee rewards systems for innovative solutions
- Entrepreneurial nature and risk-tolerance

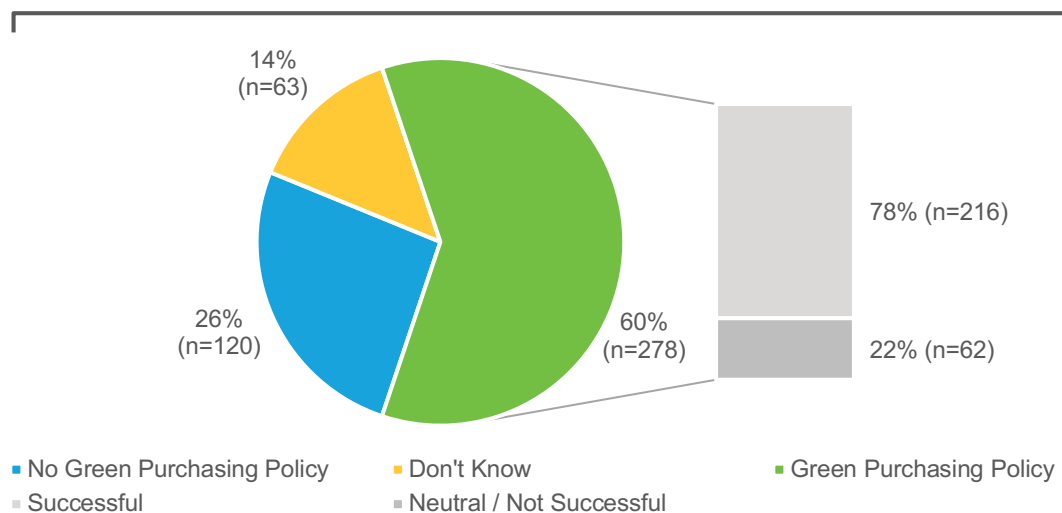
These results suggest that, as in the U.S. and Japan reports, department directors perceive that their municipality's general administrative environment (e.g. rule formalization, bureaucratization, and degree of entrepreneurship) and traditional procurement criteria are the same, regardless of their municipality's capacity to adopt a green purchasing policy.



What Factors are Associated with Green Purchasing Implementation Success?

Simply adopting a green purchasing policy does not necessarily mean that its implementation is successful. Of the 60 percent (278) of department directors who reported that their municipalities have adopted a green purchasing policy, 78 percent (216 total) indicated that their policy was “successful.” Twenty-two percent (62 total) reported their policy success was either “neutral” (neither successful nor unsuccessful) or “unsuccessful” (Figure 12). Of all directors, 26 percent answered that they did not have a green purchasing policy and 14 percent could not answer the question about its successful implementation.

Figure 12. Green Purchasing Policy Adoption and Implementation Success



To determine what factors were associated with green purchasing policy implementation success, we examined their presence in different activities or policies. From this analysis, we identified five key practices and activities associated with the likelihood of implementation success. Due to a small sample size, most of these activities were found to be statistically insignificant (*).

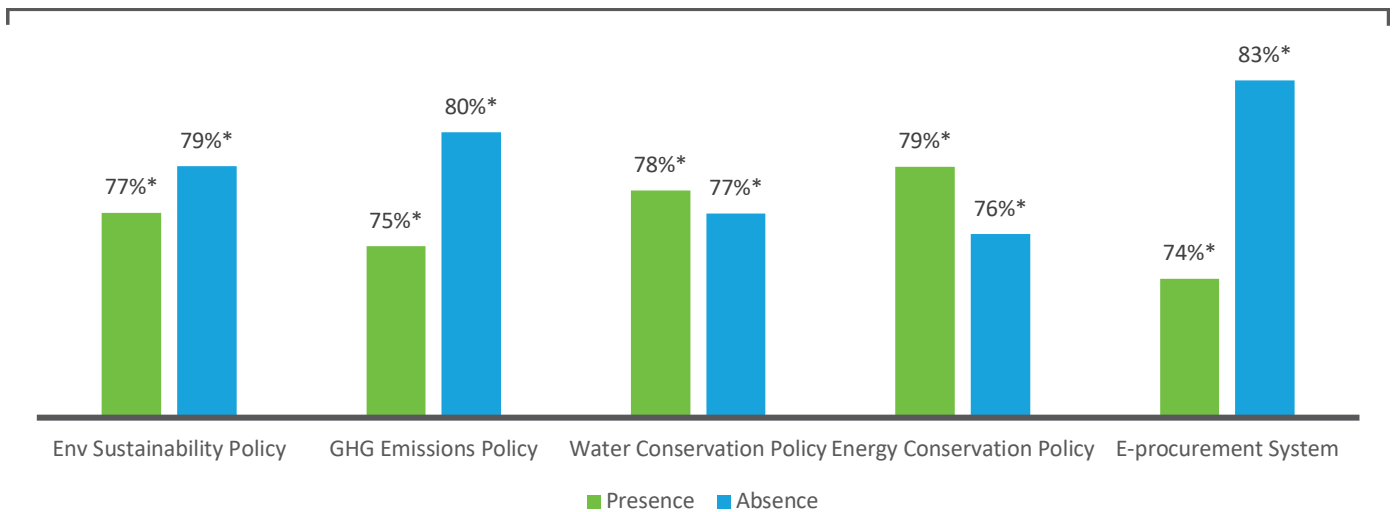
1. Complementary policies and practices
2. Information access
3. Leadership and implementation responsibility
4. Vendor roles
5. Innovation culture

1. Complementary policies and practices

As discussed earlier, complementary policies and practices are formalized procedures that can facilitate green purchasing, and thus increase their likely success because similar internal capabilities are needed to manage both types of activities. They also create management commitment and shared vision around similar issues, thus embedding green purchasing deeper into a municipality's routine operations.

For directors who indicated that the green purchasing policies in their municipalities were successful, we compared them based on whether the municipality had or had not implemented complementary policies. None of the activities were found to be statistically significant. Interestingly, for three of the five activities, unsuccessful green purchasing policies had a larger percent. We have displayed this in Figure 13. The most significant differences were the presence of a GHG emissions policy and the presence of an e-procurement system, where unsuccessful municipalities had a larger presence by 5 percent and 9 percent respectively.

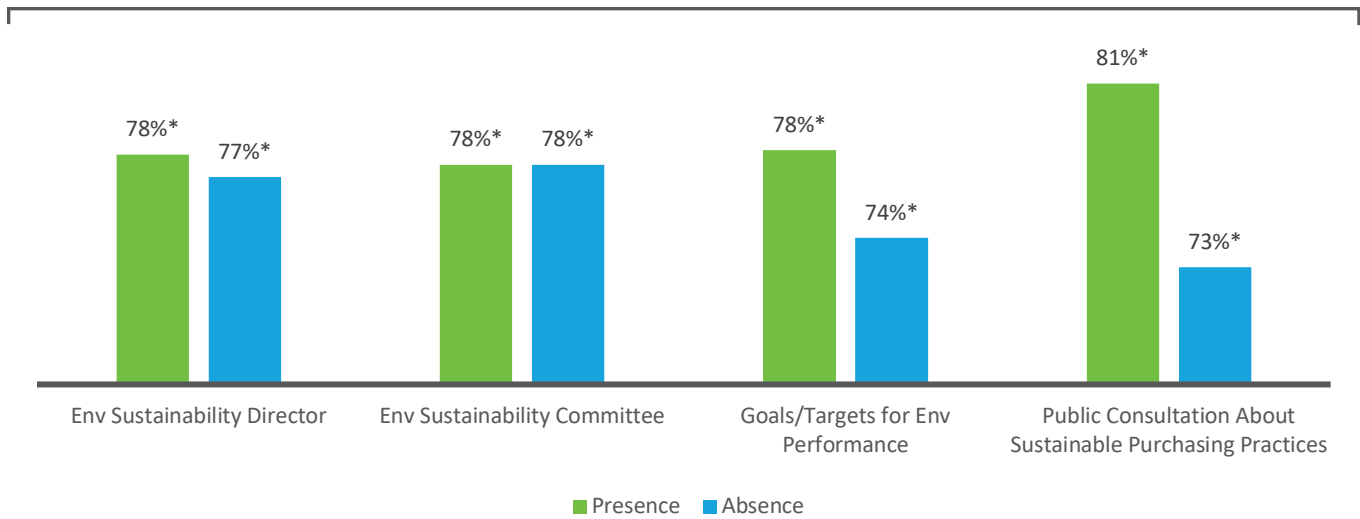
Figure 13. Probability of Successful Implementation of Green Purchasing Policy, Given Municipal-wide Policies



Directors in municipalities with successful green purchasing policies reported their perceptions on what complementary practices led to that success (see Figure 14). Our survey results show that the presence of an environmental director increased the probability of a successful green purchasing policy implementation by a small amount (78 percent to 77 percent). The presence of goals or targets for environmental performance reported a 4 percent difference, from 74 percent to 78 percent. While still not statistically significance, the largest difference obtained was regarding the practice of a public consultation about sustainable purchasing practices. Having a committee on environmental sustainability was the same between municipalities with or without a green purchase policy.



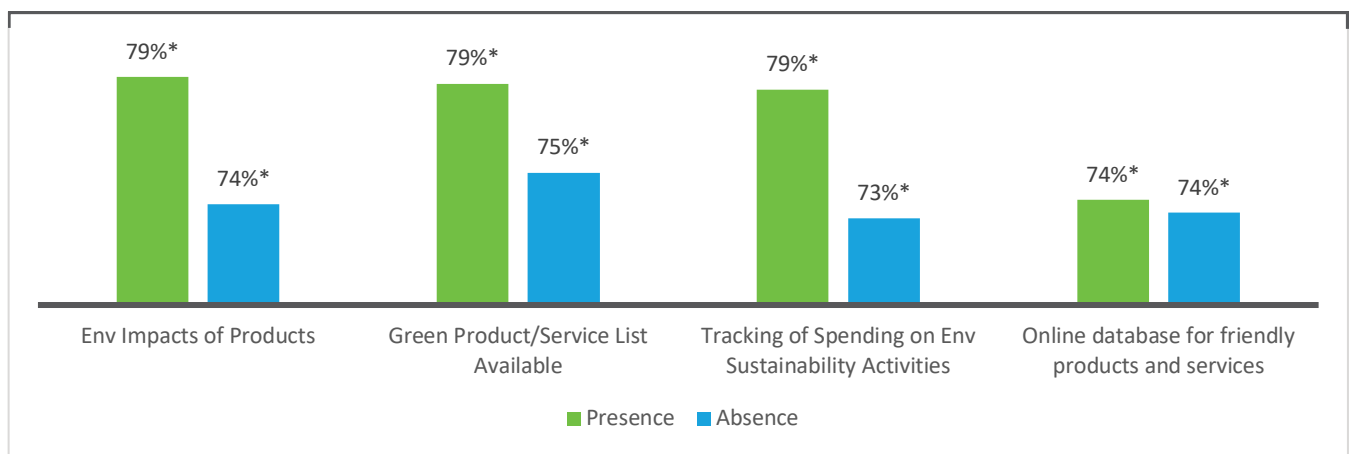
Figure 14. Probability of Successful Implementation of Green Purchasing Policy, Given Municipality Practices



2. Information Access

Since information shapes purchasing decisions, we expected that having access to relevant environmental information would be correlated with implementation success (see Figure 15). While the results are not statistically significant, there is some evidence that access to information about the environmental impacts of products leads to successful implementations. About 79 percent of municipalities with successful implementations had access to information about the environmental impacts of products, compared with 74 percent when that access was not present. Policy implementation success occurs slightly more often when access to the following types of information is present: green product or service lists, tracking of spending on environmental products and services, and access to an online database of green products and services.

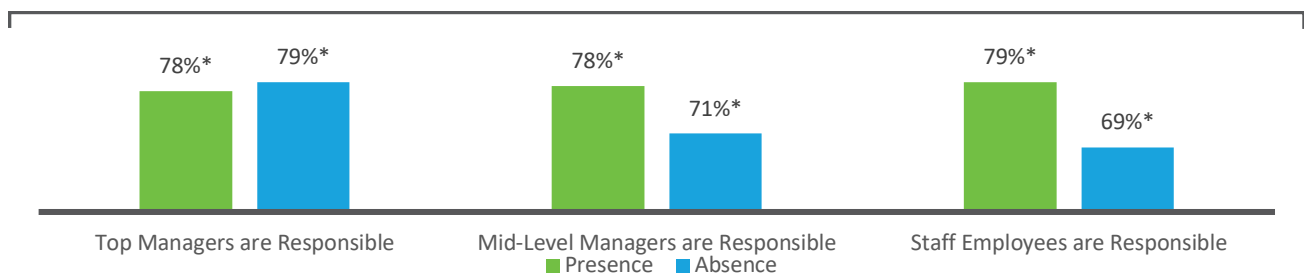
Figure 15. Probability of Successful Implementation of Green Purchasing Policy, Given Access to Types of Information



3. Leadership and implementation responsibility

Previous studies found that accountability at various levels of the municipality is related to the successful adoption of green purchasing policies. In Mexico there was no statistical difference for successful and unsuccessful implementations. Figure 16 shows that successful implementations happened more often when mid-level managers and staff employees are responsible for a successful implementation. These findings underscore the importance of accountability at mid and low levels in the implementation of green practices and policies.

Figure 16. Probability of Successful Implementation of Green Purchasing Policy, Given Directors' Perceptions of Locus of Responsibility

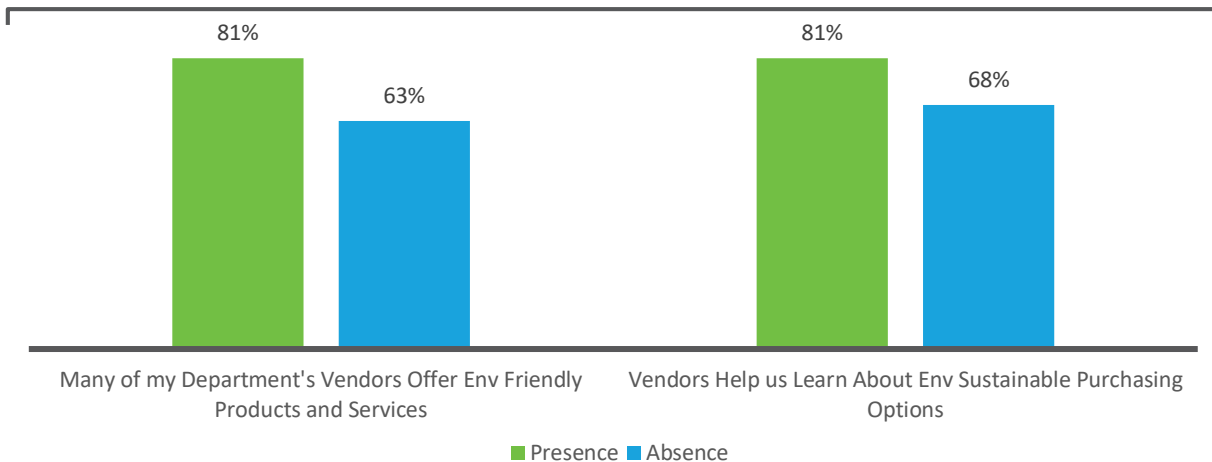




4. Vendor roles

The roles of vendors are not only important to a municipality's adoption of a green purchasing policy, but also to the municipality's successful implementation of that policy (see Figure 17). When department directors report that their vendors offer environmentally friendly products and services, the probability of reporting a successful implementation increases to 81 percent. This is compared with 63 percent when directors disagree with the notion that vendors offer environmentally friendly products and services.

Figure 17. Probability of Successful Implementation of Green Purchasing Policy, Given Directors' Perceptions of Vendor Roles



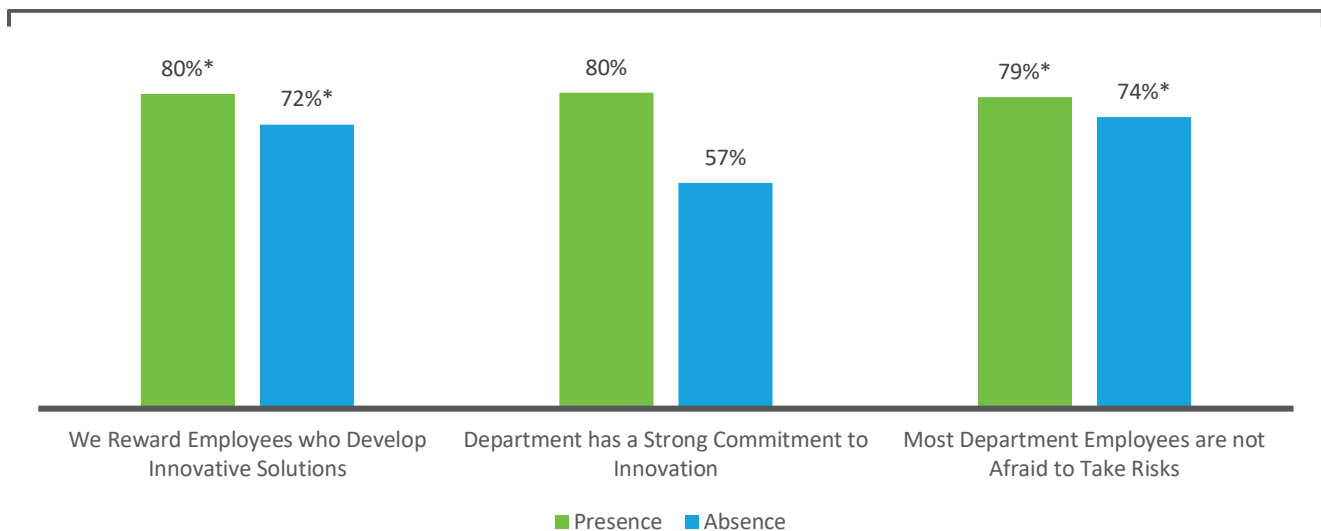
A similar result was obtained when directors reported that vendors help a municipality learn about environmentally sustainable purchasing options. The probability of green purchasing policy implementation success was 81 percent when directors agreed that vendors help a municipality learn, compared with 68 percent when directors disagreed.

These findings point to the potential importance of collaborative relationships with vendors. Municipalities with green purchasing policies tend to regard their vendors more as collaborators when it comes to implementing their green purchasing programs. This may represent an important shift in how municipalities engage with vendors around issues of sustainability. There are many challenges municipalities face when purchasing sustainable products, which can include complexity associated with producing greener products, the fact that there are a limited number of these products on the market, and municipalities' limited access to information about green product and service options. Vendors may serve as useful allies that facilitate the success of green purchasing policies amid these challenges

5. Innovative culture

We found that the presence of a culture oriented to innovation is associated with an 80 percent probability of a successful implementation, compared to 57 percent when the department does not have a strong commitment to innovation. Contrary to the U.S. and Japan studies, rewarding employees for developing innovative solutions and having employees that are not afraid to take risks were not statistically different. These results are shown in Figure 18.

Figure 18. Probability of Successful Implementation of Green Purchasing Policy, Given Directors' Perceptions of Departments' Innovation Culture



Similarities among municipalities with and without successful green purchasing policies

Finally, as in previous studies, we identified several areas in which directors within municipalities with a green purchasing policy responded similarly with respect to the successful implementation of their green purchasing policies. Similarities across municipalities that related to general purchasing criteria, which were unrelated to implementation success include:

- Price
- Performance requirements
- Pre-existing contract agreements
- Technical specifications in managing purchase complexity

Other similarities among municipalities with and without successful green purchasing policies relate to their:

- Department rules and procedures
- Levels of bureaucracy
- Environmental pressures exerted by internal or external stakeholders



Five Actions to Advance Green Purchasing in Mexican Municipalities

Our preliminary analysis of the survey data underscores several key facilitating factors for green purchasing adoption and implementation success. We offer five recommended actions for municipalities to advance their green purchasing. These recommendations are applicable to both municipalities that lack a green purchasing policy and municipalities that wish to strengthen their existing green purchasing activities.

1. *Autonomy and change of the purchasing norms*

Current Mexican legislation prioritizes the acquisition of products and services in economic terms. Directors of municipal departments are often obliged to choose the cheapest alternative regardless of socio-environmental benefits. This is one of the main constraints preventing the increase in sustainable purchases because it is common for sustainable options to include the costs of externalities in its price. This means that even if municipal officers have the necessary environmental awareness and the intention to buy ecological alternatives, they are constrained by legislative priorities.

Structural shifts will need to occur across different levels of authority included local, state and federal government. Further research should explore the proper exchange mechanisms to facilitate the purchasing of sustainable products and the implementation of green purchasing policies, while still maintaining financial or operational goals. This could mean modifying the autonomy that local and state governments have regarding purchasing decisions.

2. *Develop criteria decision tools regarding environmental impacts*

It is difficult to make the right decision without the proper information. There is currently no centralized decision tool that allows purchasing departments to prioritize a product or service based on the impacts it has to society or the environment. Without this information, purchasing officers will tend to make purchasing decisions based on easily accessible information such as price and availability. For example, a frequent question is whether, in terms of environmental impact, it is better to buy disposable products for food consumption than to use durable crockery, washing, storing and replacing it? Purchasing officers question whether it is not more polluting to be washing the materials than buying biodegradable disposables and placing them in the compost. Since this information often is not available, purchasing officers tend to pursue the most practical option, in this case, the purchase of plastic disposables, even over the biodegradable option.

Developing quantitative tools and criteria decisions paths could help facilitate comparisons between the most commonly purchased items by municipalities. They would also offer security to those who make the purchasing decision because data would support the final decision. These tools should contain criteria not only about the type of product, but also information about the different environmental impacts that occur by using the product.

3. Use information about environmentally preferred products

Even for simple decisions, information is critical to the decision-making process. While directors in municipalities with green purchasing policies experience some success with their green purchasing activities, only two-thirds of the municipalities that have a green purchasing policy reported that they have access to environmental information for the implementation of these policies. Such information includes access to product ecolabels/certifications, green product lists, and online databases of environmentally friendly products and services. In the absence of this information, the successful implementation of municipal green purchasing activities will be constrained.

One rationale for why information about environmentally preferred products is not used may be that Mexican municipalities do not have the relevant resources to identify green products on their own. For example, Mexico has many local and organic food markets; however, there is no information on the localization or availability of these products. The same example can be applied to biodegradable products, green construction, and others. B-Corps are a new group of companies that are designed to generate benefits for the environment and society. There are more than 60 B-Corps in Mexico, but information about them is not widely known. Furthermore, their products may not be required by government regulations. Mechanisms should be developed to enhance public information on sustainable products and companies, structured in a way that facilitates green purchasing by local governments.



4. Track spending related to green purchases

Organizations manage what they measure. Municipalities that track their green purchases are more likely to elevate the importance of green purchasing in organizational routines and practices. Additionally, by tracking spending related to green purchases, municipalities are better positioned to reduce costs related to energy, water, fuel and other expenditures.

Other tracking approaches might involve monitoring the quantity of environmentally friendly products purchased. Whatever the approach, monitoring green purchases creates opportunities for municipalities to develop goals and targets around green purchasing and more appropriately recognize departments and employees who are meeting or exceeding (or failing to meet) green purchasing expectations. Ideally, the tracking of green purchases should be integrated into an e-procurement system to assess green product attributes throughout the procurement process and as part of the contract management process.

5. Training municipal departments on green purchasing

Ideally green purchasing should be supported through a public policy that provides four things: information, motivation, ability to act, and the correct legal framework. Our results show that there is a low level of knowledge regarding sustainable purchasing options and national or international initiatives aimed at promoting sustainable purchasing. This leads us to conclude that the federal government has offered no solid and articulated effort that promotes green purchasing. Additionally, state governments need to modify regulations that limit municipalities' ability to make sustainable purchases.

There is a clear need to train purchasing departments, or those departments involved in prioritizing sustainable purchases. This training should include information such as: different purchasing options, existing incentives, administrative procedures, and encouragement for participation in programs and institutions that promote green purchasing.



Additional Resources

Please visit our website spa.asu.edu/greenpurchasing for additional resources, including:

- Project updates
- Survey materials
- Related research papers and reports
- Video clips
- Podcasts
- Slide decks
- Links to news articles about this research
- Links to other green purchasing resources

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