

# Advancing Green Purchasing in Japanese Municipalities

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Research and Design  
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Research Initiative**



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## Executive Summary

The Japanese Ministry of Environment is promoting green purchasing policies across all levels of Japanese government. A primary reason is that green purchasing policies have the potential to significantly reduce carbon impacts across the globe and can help Japan achieve its carbon emissions goals.

However, at the local level, many municipal governments have struggled to implement green purchasing policies. Consequently, green purchasing has not reached its potential to help municipalities mitigate their environmental impacts. These are significant concerns that the United Nations Environmental Programme, the Organisation for Economic Co-operation and Development, the Sustainable Purchasing Leadership Council (SPLC), and others suggest must be resolved if we are to move toward an environmentally sustainable economy.

Researchers at the Arizona State University's (ASU's) Sustainable Purchasing Research Initiative (in the ASU Center for Organization Research and Design, or CORD) and Waseda University's Research Institute for Environmental Economics (RIEEM) have sought to address these issues with the assistance of a grant from the Social Science Research Council. Our three broad objectives are to:

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

To accomplish these objectives, we conducted a national survey of finance, municipal engineering and environmental directors in Japanese municipalities. The survey generated 1,504 individual responses from 860 municipalities with 25,000 residents or more. These municipalities were representative based on their population, income and geographic dispersion by prefecture.

Our results show that 53 percent of directors report that their municipalities have a green purchasing policy, 29 percent reported they have no policy, and 18 percent did not know if their municipality had such a policy.

### 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 related to implementation success?

Of the 53 percent (771 total) of department directors who reported that their municipalities had adopted green purchasing policies, more than half (65 percent, 495 total) indicated that their municipalities have implemented the policy successfully.

By contrast, 34 percent (254 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 five general features:

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

### Recommendations:

Based on these findings, we have developed eight recommendations aimed at increasing municipalities' green purchasing policy adoption and implementation success:

1. Build on complementary policies and practices
2. Use information about environmentally preferred products such as those that receive Japan Environment Association's Eco Mark certification or certifications created by other environmental nonprofits that promote green purchasing
3. Utilize e-procurement systems that integrate environmental product information
4. Track spending related to green purchases
5. Enhance collaborative vendor relationships
6. Assign accountability to top-level management
7. Foster a culture for innovation
8. Participate in professional networks to share best practices



## Acknowledgements

We thank the Social Science Research Council, the Abe Foundation and the Organization for University Research Initiatives at Waseda University for funding this research and recognizing the importance of green purchasing. We also are grateful to the 42 stakeholders who provided feedback on the development of our research approach. A full list of these individuals is available at the Sustainable Purchasing Research Initiative website: [spa.asu.edu/greenpurchasing](http://spa.asu.edu/greenpurchasing).

## Research Collaboration

This report was developed in collaboration with researchers at the Arizona State University (ASU) Center for Organization Research and Design (CORD) and Waseda University's Research Institute for Environmental Economics and Management (RIEEM).

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 high potential for improving societal conditions, one being environmental policy and sustainability.

RIEEM is a research institute under Waseda University's Organization for University Research Initiatives. It assesses organizations' voluntary actions to improve the environment. It also evaluates public policies for energy conservation, renewable energy and emission trading. RIEEM serves as a research hub in the Asia-Pacific Region for environmental economics and management, and policy studies.

## 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:

Nicole Darnall at [ndarnall@asu.edu](mailto:ndarnall@asu.edu)  
Toshi Arimura at [arimura@waseda.jp](mailto:arimura@waseda.jp)

## Additional Information

Please visit ASU's Sustainable Purchasing Research Initiative ([spa.asu.edu/greenpurchasing](http://spa.asu.edu/greenpurchasing)) for additional information about green purchasing, best practices, project updates and related research papers. To learn more about Waseda University's Research Institute for Environmental Economics and Management, visit [www.waseda.jp/prj-rieem/en/](http://www.waseda.jp/prj-rieem/en/).

## Authors



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**Dr. Lily Hsueh** is an Assistant Professor of Public Policy, a CORD affiliate and Senior Sustainability Scientist at ASU. Her research focuses on the emergence, evolution and impacts of alternative governance approaches (e.g., cap-and-trade policies and industry self-regulation) in environmental protection, sustainability and natural resource management.





## Introduction

In Japan alone, government purchasing accounts for 19.8 percent of country-level gross domestic product. 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 40 percent of these companies will, in turn, assess the environmental activities of the organizations that supply them. 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.

Within Japan, the national government has offered guidelines for sustainable purchasing. According to the Japanese Ministry of Environment (MOE), all 47 prefectural governments are required to use these guidelines and two-thirds of Japan's 700 municipalities have implemented sustainable purchasing. Prefectures are required to define sustainable purchasing targets every year and make the results publicly available. Additionally, in 2001, Japan MOE, in partnership with the Japanese Green Purchasing Network, created a "green product database" to help sub-national governments pursue sustainable purchasing.

By 2005, MOE reports that all sub-national governments had developed green purchasing policies, however, anecdotal evidence suggests that municipal-level implementation is inconsistent. Green purchasing policies, therefore, may not have reached their potential to help municipalities mitigate their environmental impacts, which has caused markets to be slow in increasing their delivery of green products and services.

These are significant concerns that the United Nations Environmental Programme, the Organisation for Economic Co-operation and Development and others have suggested must be resolved if we are to move toward an environmentally sustainable economy.



## Project Goals

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

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

To achieve this goal, we surveyed 2,578 directors of departments of finance, municipal engineering, and solid waste/environmental compliance from the 2015 census of 860 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 implementation success of municipalities' green purchasing policies.

3. *Encourage Japanese 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:

- Postcard mailings featuring our key findings to the sample of 860 Japan 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 Japanese Ministry of Environment, the Japan Environment Association, Green Purchasing Network, 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 Sustainable Purchasing Research Initiative ([spa.asu.edu/greenpurchasing](http://spa.asu.edu/greenpurchasing)) and the Waseda University's Research Institute for Environmental Economics and Management ([www.waseda.jp/prj-rieem/en/](http://www.waseda.jp/prj-rieem/en/)) websites. These materials will be featured in social media posts via Twitter, Facebook, and LinkedIn.



## Research Approach

To achieve our project goals, we first reviewed prior research, including several surveys that had assessed the sustainability activities in Japan's municipalities. Administered by Japan Ministry of Environment, these surveys were not specific to sustainable public purchasing. For this reason, we adapted an original survey constructed by researchers at ASU.\*

The ASU survey was implemented in U.S. cities in 2017. It addressed 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)

To determine which entities should be surveyed, we first determined the level of governance in which a mayor or elected council exists in local governments. In Japan, it is the municipality, which is categorized as being either a city, town or village, depending on the population. According to the 2015 Japan Census, Japan had 1,800 local municipalities, of which, 860 had 25,000 residents or more. The target population for our survey was these 860 municipalities.

\* 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.



The first step in adapting the U.S. sustainable purchasing survey to Japan was to translate it to Japanese. In June 2017, two native Japanese speakers completed the translation. To ensure valid translation, in August 2017, a native English speaker who was fluent in Japanese back-translated the survey. The back-translation identified several concerns related to terminology and whether our target group would understand certain phrases. The research team convened two focus group meetings with municipal officials to resolve these concerns. Municipal directors in Sakura City, Chiba Prefecture participated in the first focus group meeting. Sakura City is a medium-sized municipality, with a resident population of about 180,000 people. Based on feedback from Sakura City officials, we modified the survey to enhance its clarity.

The second focus group meeting was held in the municipality of Tomioka City, Gunma Prefecture. Tomioka City has a resident population of about 50,000 people. We selected this municipality for our second focus group meeting to solicit feedback regarding the survey's relevance to smaller municipal operations. Based on this feedback, we further honed the survey prior to developing a final draft in September 2017.

Finally, we solicited feedback from 42 stakeholders (representing 21 organizations) about our research approach. Stakeholders worked in municipal government, Japan Ministry of Environment, The Japan Environment Association, other nonprofits, and universities. See our project website at [spa.asu.edu/greenpurchasing](http://spa.asu.edu/greenpurchasing) for a full listing of the project stakeholders.

### Survey recipients

Because the project is focused on the implementation of organization-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. Finance departments
2. Municipal engineering departments
3. Solid waste management or environmental compliance departments

**Finance Departments.** In nearly all Japanese municipalities, the finance department has either a primary or strong supportive role in municipal purchasing activities. 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.



**Municipal Engineering Departments.** Across Japanese municipalities, municipal engineering departments tend to be larger departments as they are generally responsible for a wide range of activities including water services, stormwater management, and sewage services. Like the finance department, municipal engineering departments also tend to purchase a large number of items across a range of purchasing categories. Moreover, directors of municipal engineering departments generally have a good knowledge of municipal purchasing policies and practices, as well as a reasonable understanding of environmental concerns.

**Solid Waste Management or Environmental Compliance Departments.** Directors of solid waste management departments and directors of environmental compliance departments are tasked with the integration of environmental concerns into the municipality's routines and processes. These departments are not likely to have as many purchases as other departments. However, they have a strong understanding of how environmental concerns are being integrated into the municipality's operational practices. In larger municipalities, solid waste management is typically part of a broader environmental compliance department.

Consistent with the U.S. study, we used the following protocol to obtain department contacts within each of the 860 municipalities:

1. Using the 2015 Japan Census, we identified all Japanese municipalities with  $\geq 25,000$  residents
2. In Google, we used search words (e.g., Tomioka City) to find each municipality's official webpage
3. Once a webpage was found, we identified the relevant municipal department's webpage
4. The title of each director, email address, phone number and mailing address was recorded
5. If the department director's information was not available, we conducted a Google search for the position title and the municipality. For example, if searching for the finance director of Tomioka Municipality, we would enter the search term "Director of Finance, Tomioka Municipality" to identify the appropriate individual

The final population size was 2,578 directors in 860 municipalities.



### *Survey administration*

We finalized the survey in October 2017. The final survey was nine pages in length and contained 33 questions.

The survey was distributed to department directors with the assistance of a consulting firm via first class mail. Mailings contained a cover letter, a hard-copy survey and a postage paid return envelope.

One and a half weeks after our initial mailing, we mailed a postcard reminder to nonresponding municipal directors. Another one and a half weeks later, we mailed a second cover letter, hard-copy survey, and postage paid return envelope to nonresponding department directors. Data collection concluded after 6 weeks.

Our response rate at the individual level was 58.2 percent ( $n=1,504$ ). Of the 1,504 directors who responded to our survey, 32.5 percent were finance directors, 32.9 percent were municipal engineering directors and 34.7 percent solid waste management or environmental compliance directors. We received responses from at least one director in 90.5 percent (1,357) of the municipalities in our sample.

A comparison of our sample to the population of Japanese municipalities of 25,000 residents or more (using 2015 Japan Census data) indicates that our sample is representative of all Japanese municipalities, based on their total population, location, and mean income.

The following documents provide further explanation about our research approach. All documents are available at [spa.asu.edu/greenpurchasing](http://spa.asu.edu/greenpurchasing).

- A list of expert stakeholders who provided feedback on the Japan survey and research protocols
- The final Japanese survey
- Print materials used to contact Japanese department directors (e.g., initial letter, postcards)
- Frequencies associated with each of the Japanese survey questions
- The original U.S. survey and print materials





### Measurement and statistical assessment

Consistent with the U.S. study, two survey questions formed the basis of our evaluation of the factors that impede or facilitate Japanese municipalities' green purchasing. 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.

The second survey question that formed the basis of our evaluation assessed department directors' perceptions of the success of their green purchasing policies' implementation. Directors who responded "Yes" to the question above were asked to answer a follow-up question that was positioned at the end of the survey: "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.

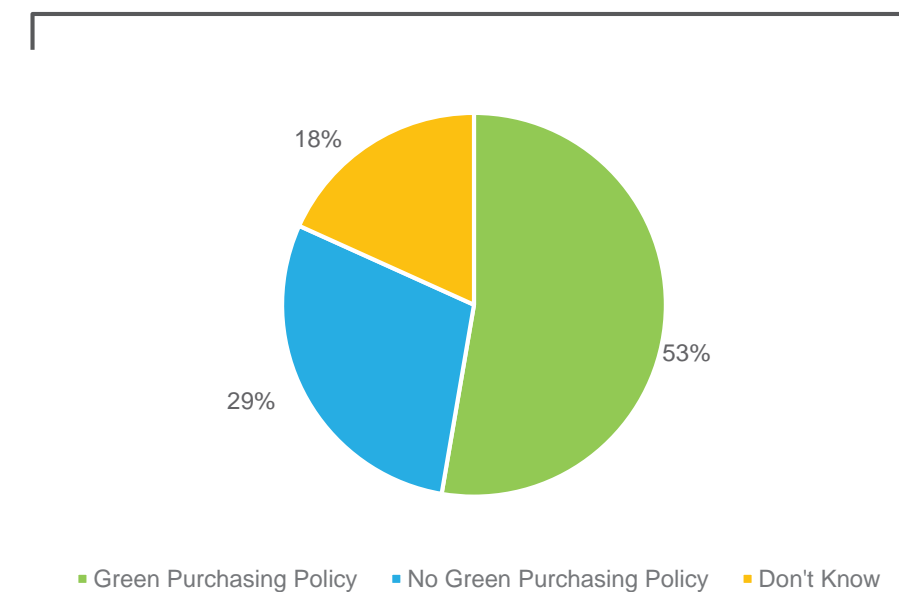
Responses to both questions were compared to all other survey responses using chi-square statistical tests. In order to facilitate comparison between the Japanese setting and the U.S., we list all factors found to be statistically significant in U.S. local governments, but mark those factors which were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

## Green Purchasing in Japanese Municipalities

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

More than half (53 percent, n=771) of the department directors in our sample reported that their municipalities have a green purchasing policy (see Figure 1). This compares with one quarter (29 percent, n=425) of department directors who reported that their municipalities do not have a green purchasing policy. About 18 percent (n=267) of directors did not know whether a green purchasing policy existed in their municipalities, which suggests that the municipality likely did not have a green purchasing policy. A total of 41 directors did not respond to this question (3 percent).

Figure 1. Green Purchasing Policy Adoption in Japanese Municipalities





# Which Factors Impede or Facilitate Green Purchasing Policy Adoption?

Overall, the survey responses indicate that Japanese municipalities which adopt green purchasing policies differ in five 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



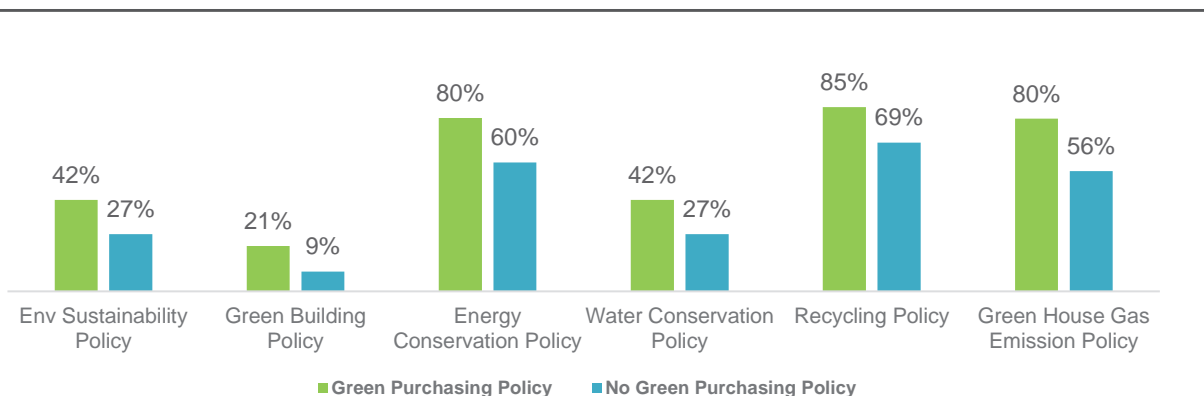
## 1. Complementary policies and practices

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 U.S. survey, all of which here were also statistically significant for Japanese municipalities.

Figure 2. Municipal-wide Implementation of Complementary Environmental Policies



Our findings show that 42 percent of directors in municipalities with green purchasing policies also have a municipal-wide environmental sustainability policy and 21 percent of directors reported also having a green building policy. This compares to directors in municipalities that lack a green purchasing policy, where only 27 percent have an environmental sustainability policy and 9 percent have a green building policy.

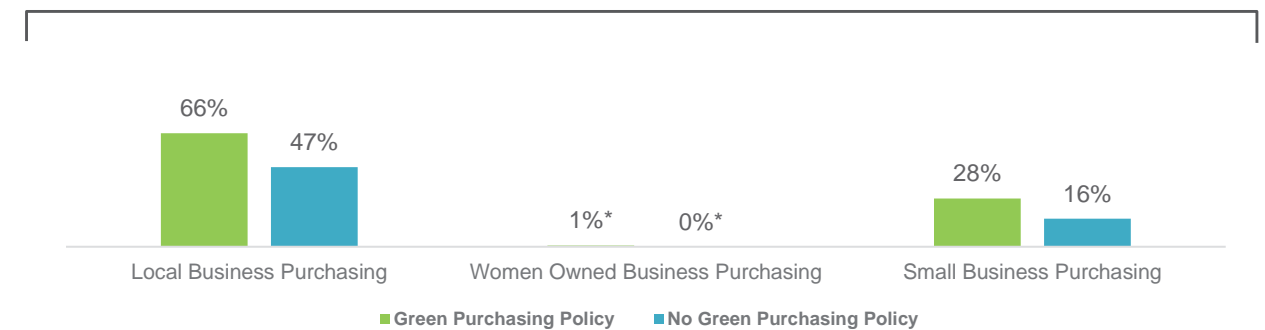
Similarly, 80 percent of directors in municipalities with a green purchasing policy also have an energy conservation policy and 42 percent have a water conservation policy. By contrast, 60 percent of directors in municipalities without a green purchasing policy have an energy conservation policy and about one-fifth (27 percent) have a water conservation policy.

When considering municipalities' implementation of a recycling policy, 85 percent of department directors in municipalities with green purchasing policies reported that their municipalities have a recycling policy, compared with 69 percent of directors in municipalities that lack a green purchasing policy. A similar finding is seen with respect to municipalities' greenhouse gas emissions policies in that 80 percent of department directors in municipalities with green purchasing policies reported that their municipalities have one, compared with 56 percent of directors in municipalities that lack a green purchasing 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 in U.S. local government 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, 66 percent of department directors in municipalities with green purchasing policies have a local business purchasing policy in place, compared with 47 percent of directors in municipalities without a green purchasing policy.

Figure 3. Municipal-wide Implementation of Complementary Social Policies

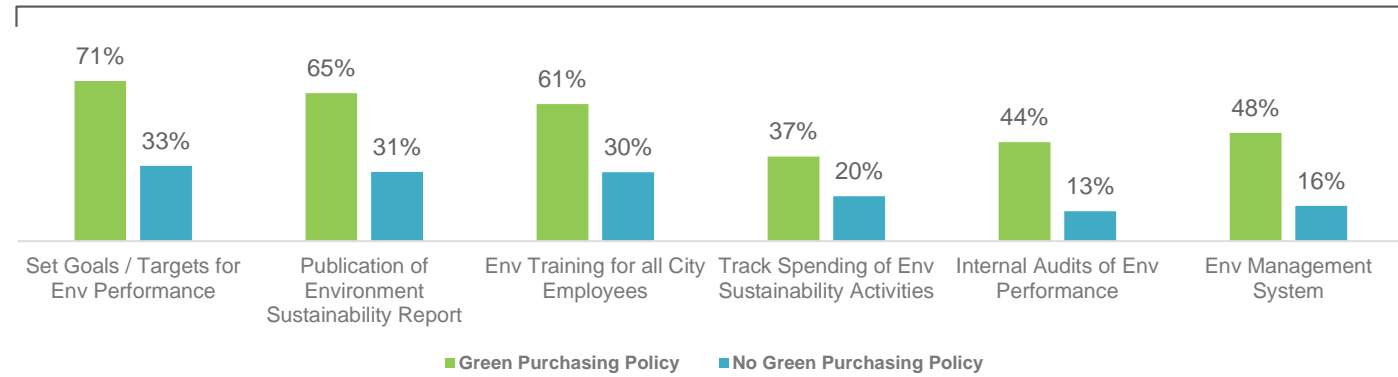


The influence of women owned business purchasing, while important in the U.S. context was insignificant in Japan, hence it is marked with an asterisk. A total of 28 percent of directors in municipalities with green purchasing policies have a small business purchasing policy, compared with 16 percent of directors in those municipalities surveyed without a green purchasing policy.

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.



Figure 4. Municipal-wide Implementation of Environmental Practices



Directors in municipalities with green purchasing policies reported having a greater presence of municipal-wide environmental practices. More than half of department directors (71 percent) in municipalities with green purchasing policies also report having goals/targets for environmental performance. About the same amount (65 percent) also publish an environmental sustainability report. This compares with 33 percent and 31 percent (respectively) of municipalities without a green purchasing policy. Additionally, 61 percent of department directors in municipalities with green purchasing policies have municipal-wide environmental training for all municipal employees, compared with 30 percent of directors in municipalities without a green purchasing policy.

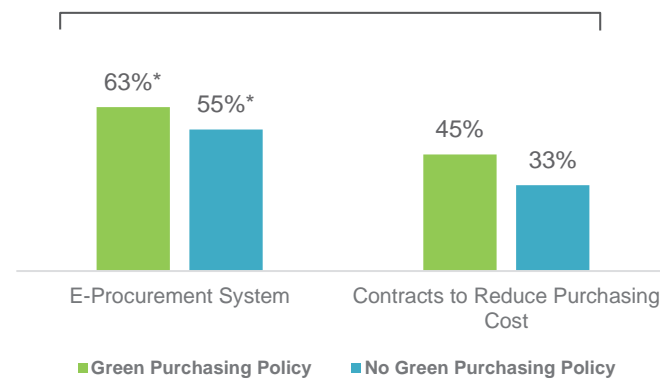
About 37 percent of directors in municipalities with green purchasing policies reported having municipal-wide practices that track spending of environmental activities, compared with 20 percent of directors in municipalities without a green purchasing policy. Similar patterns are seen for department directors' reported use of internal audits of environmental performance and the use of environmental management systems.

While department directors of municipalities with green purchasing policies tend to have more complementary environmental practices, many do not have them. Yet, 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. As such, 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 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 show that directors in municipalities with green purchasing policies are more likely to report using contracts to reduce purchasing costs. Almost half (45 percent) of directors in municipalities with green purchasing policies reported that they use these types of cost-reduction contracts as compared to one-third (33 percent) of directors in municipalities without green purchasing policies.

Figure 5. Municipal-wide Implementation of Complementary Purchasing Activities



E-procurement systems are recognized as being important facilitators of the successful implementation of green purchasing policies. These systems help routinize sustainability concerns in the purchasing process if they are coupled with information about green products and services. However, Japanese directors in municipalities with SPPs were no more likely to implement them.

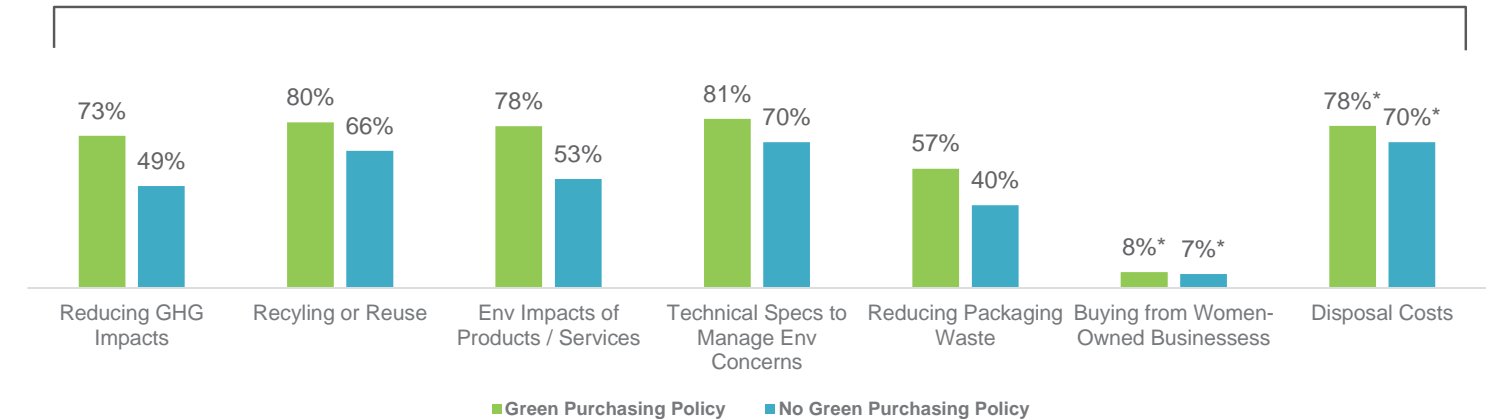
In sum, directors in municipalities with green purchasing policies reported having more complementary policies and practices than directors in municipalities without green purchasing policies. However, the rate of adoption of these complementary policies and practices is only moderate, even in municipalities that have adopted a green purchasing policy. Having these supporting policies and practices can reduce the cost of adopting a green purchasing policy and facilitate its overall implementation success. Our findings thus identify a potential opportunity for municipalities to further embed green purchasing concerns within the procurement process.

## 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 described in Figure 6. Nearly three-quarters of directors (73 percent) in municipalities with a green purchasing policy reported that reducing greenhouse gas (GHG) impacts as well as environmental impacts of products/services (78 percent) were "Important" or "Very Important" purchasing criteria, compared with 49 percent and 70 percent of directors in municipalities without green purchasing policies.

Figure 6. Importance of Departments' Purchasing Criteria



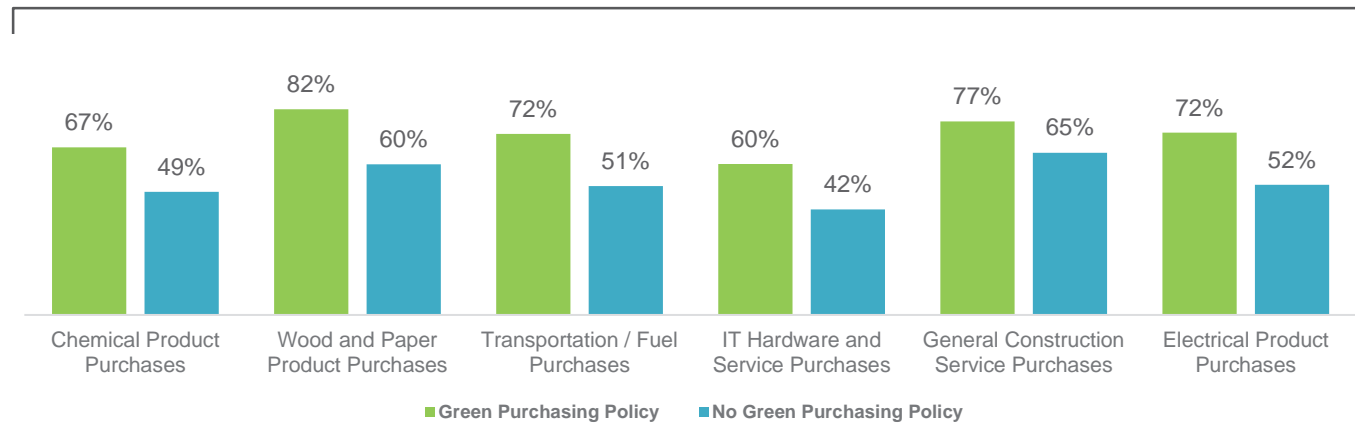
About the same number of department directors (80 percent) in municipalities with green purchasing policies also stated that recyclability or reuse is an "Important" or "Very Important" purchasing criterion. This compares to about 66 percent of directors in municipalities without a green purchasing policy. Similar differences are seen with respect to directors reported importance of purchasing criteria related to environmental impacts of products/services and reducing packaging waste. Purchasing criteria related to buying from women-owned businesses and disposal costs were statistically similar for directors in cities with and without green purchasing policies.

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 purchase of the following types of products and services?"



Department directors were presented a list of product/service categories, seen in Figure 7. All of these factors are also statistically significant for Japanese municipalities.

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



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. About 67 percent of directors in municipalities with a green purchasing policy recognized that the environmental concerns of chemical products are important, compared with less than half of directors (49 percent) in municipalities without a green purchasing policy.

The difference between directors in municipalities with and those without a green purchasing policy is also seen in wood and paper product purchases: 82 percent of directors in municipalities with a green purchasing policy reported that the environmental concerns specific to these types of products are “Important” or “Very Important.” This compares with only 60 percent of department directors without a green purchasing policy. Similarly, 72 percent of directors in municipalities with green purchasing policies reported that the environmental concerns associated with transportation and fuel products and electrical products are “Important” or “Very Important,” compared with 51 and 52 percent of directors in municipalities without a green purchasing policy.

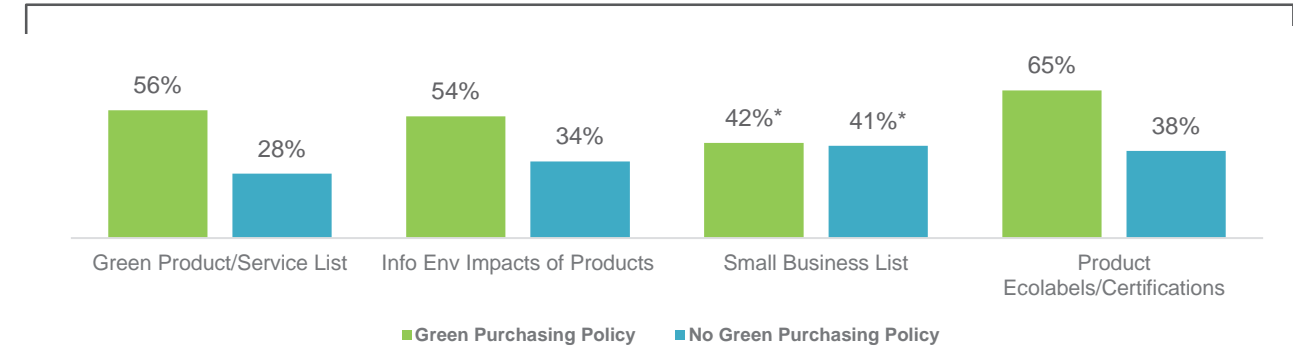
One observation about these findings (Figures 6 and 7) is that the overall importance of green purchasing criteria and environmental concerns varies between different product types in municipalities which have a green purchasing policy. Between 8 percent and 82 percent of these directors reported that their purchasing decisions are based on some type of environmental purchasing criteria. Such criteria are likely to be important to the success of a municipality’s green purchasing policy. These results are consistent with our overall finding that directors in municipalities with green purchasing policies have more complementary environmental policies/practices than directors in municipalities without green purchasing policies (Figures 2 and 4).

### 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 show that 56 percent of directors in municipalities with green purchasing policies report having a green product/service list available to their departments when making purchasing decisions (see Figure 8). By contrast, only 28 percent of municipalities without green purchasing policies report having access to green product/service lists.

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



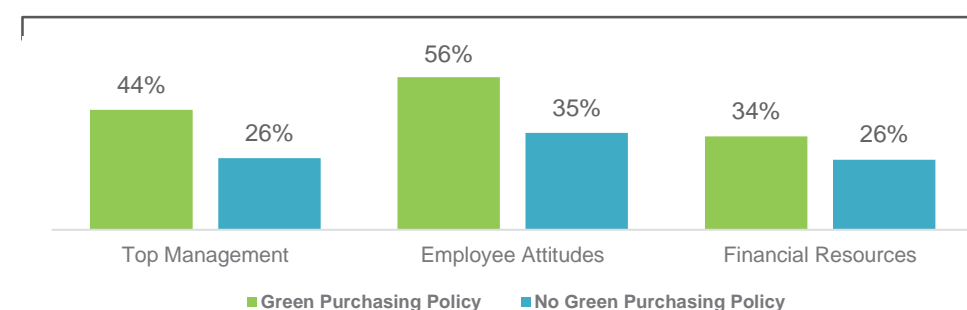
Additionally, more than half of directors (54 percent) in municipalities with green purchasing policies reported that when making purchasing decisions, access to information about the environmental impacts of products is available. By contrast, about two-thirds of municipalities (65 percent) with green purchasing policies have access to product ecolabel/certification information when making purchasing decisions. This compares to 38 percent of directors in municipalities without a green purchasing policy.

While these findings suggest that directors in municipalities with green purchasing policies have greater access to environmental information sources when making purchasing decisions, this access is still somewhat constrained. Moreover, according to MOE’s (2017) report, *Survey Results on Local Governments’ Green Purchasing and Contract Law*, officials in larger municipalities report difficulties in applying the information towards purchasing decisions. Since information access shapes decisions, low access or unusable information may be an important barrier to the successful implementation of municipalities’ green purchasing policies.

### 4. Leadership, employees and resources

Leadership, employees and resources are often cited as critical elements in the adoption and implementation 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?” Less than half of directors (44 percent) in municipalities with green purchasing policies reported that top management “Facilitates” or “Strongly Facilitates” their ability to implement green purchasing (see Figure 9).

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



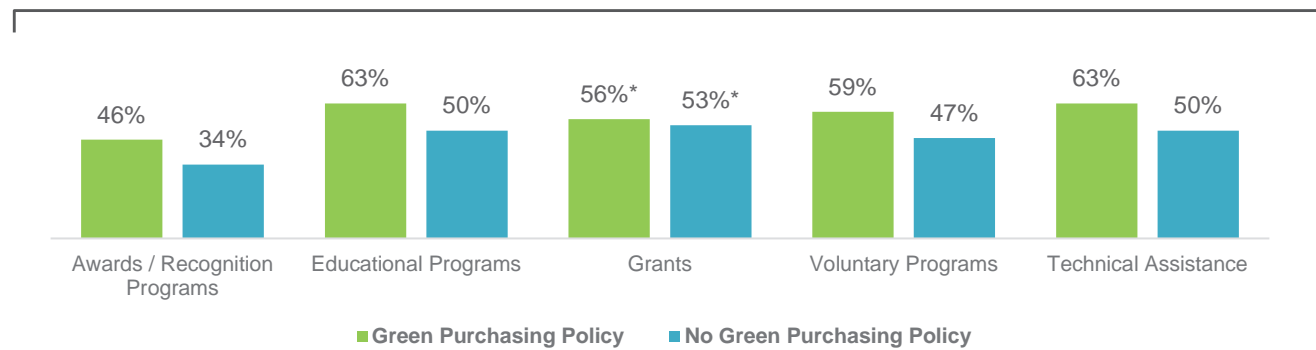


This compares with about a quarter of directors (26 percent) in municipalities without a green purchasing policy. 56 percent of directors in municipalities that have a green purchasing policy report that employee attitudes “Facilitate” or “Strongly Facilitate” their ability to implement green purchasing. This value compares to 35 percent of those directors whose municipalities do not have a green purchasing policy.

Finally, 34 percent of directors in municipalities with green purchasing policies reported that financial resources “Facilitate” or “Strongly Facilitate” their ability to implement green purchasing, while more than one-quarter of directors (26 percent) in municipalities without a green purchasing policy reported that financial resources are important.

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. The results are shown in Figure 10. Except for grants, all of these factors were statistically significant in the Japanese data.

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



About half of directors (46 percent) in municipalities with green purchasing policies reported that awards/recognition programs are important in promoting their municipality’s environmental sustainability, compared with about one-third of directors (34 percent) in municipalities without green purchasing policies. Additionally, 63 percent of directors in municipalities with a green purchasing policy indicated that educational programs are important to promoting their municipalities’ environmental sustainability. This compares with 50 percent of directors in municipalities without a green purchasing policy who indicated educational programs are important.

More than half of directors (56 percent) in municipalities with green purchasing policies reported that grants are important to promoting their municipalities’ environmental sustainability, and about one-half of directors (53 percent) of directors in municipalities without green purchasing policies reported the same. Similar patterns are seen with respect to the importance of voluntary programs and technical assistance in that directors in municipalities with green purchasing policies reported that these national/prefectural programs have greater importance in promoting their municipality’s environmental sustainability, compared with the responses of directors in municipalities without green purchasing policies.

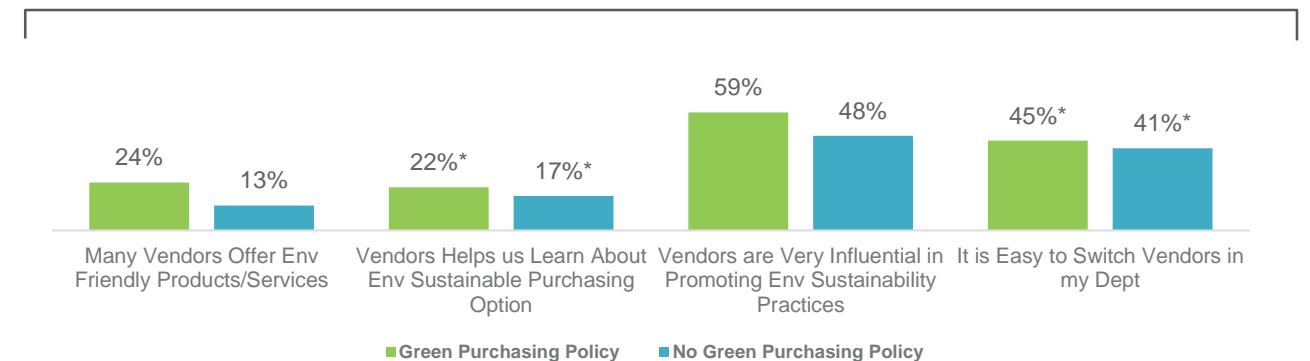
Overall, these findings are noteworthy because organizations often report that financial constraints prevent the adoption of sustainability-oriented policies. While financial resources are relevant, top-level management, employee support, awards/recognition programs, educational programs, voluntary programs, and technical assistance programs are more important. Moreover, directors in municipalities with green purchasing policies tend to leverage more financial resources from external sources, which can further facilitate their green purchasing implementation.

### 5. Vendor roles

“Vendor roles” refers to the ways in which municipalities engage their vendors over time. We asked directors about their department’s roles for vendors 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 show that 24 percent of directors in municipalities with green purchasing policies “Agree” or “Strongly Agree” that many vendors offer environmentally friendly products/services, compared to 13 percent of directors from municipalities that lack a green purchasing policy, and who answered the same (see Figure 11). Related to whether or not vendors help them learn about environmentally sustainable purchasing options, this value and whether or not it was easy to switch vendors was statistically insignificant for Japanese municipalities.

Figure 11. Vendor Roles



However, more than half of directors (59 percent) in municipalities with green purchasing policies “Agree” or “Strongly Agree,” compared with 48 percent of directors in municipalities without green purchasing policies that vendors are influential in promoting environmental sustainability practices. Overall, the results point to a couple of ways in which vendors may facilitate the adoption of municipalities’ green purchasing policies and implementation success.



### 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 include their municipality's use of purchasing criteria related to:

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

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

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

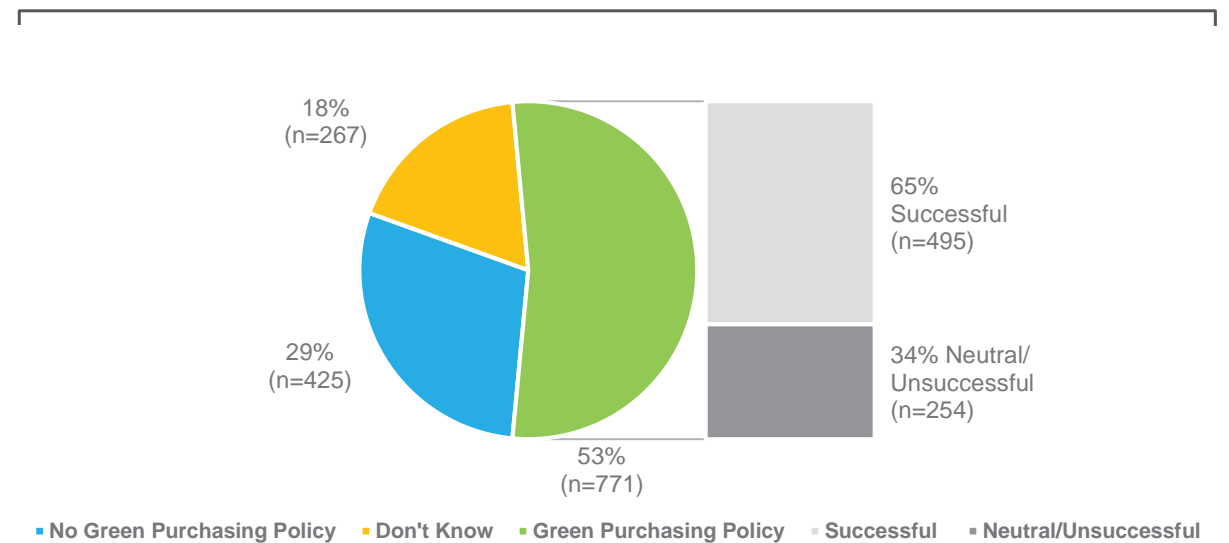
These results suggest that, like the U.S., Japanese department directors perceive that their municipality's general administrative environment (e.g. rule formalization, bureaucratization and degree of entrepreneurship) and traditional procurement criteria are the same, regardless of their municipality's 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 53 percent (771) of department directors who reported that their municipalities have adopted a green purchasing policy, more than half (65 percent, 495 total) indicated that their policy is "Successful." About 34 percent (254 total) reported their policy success is either "Neutral" (neither successful nor unsuccessful) or "Unsuccessful." Of the original 1,463 directors who answered the initial question about whether their municipality had a green purchasing policy, 22 did not respond to the question at the end of the survey about its successful implementation.

Figure 12. Green Purchasing Policy Adoption and Implementation Success



To determine what factors are associated with green purchasing policy implementation success, we examined their presence across a variety of activities or policies. From this analysis, we identified five key practices and activities associated with the likelihood of implementation success:

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

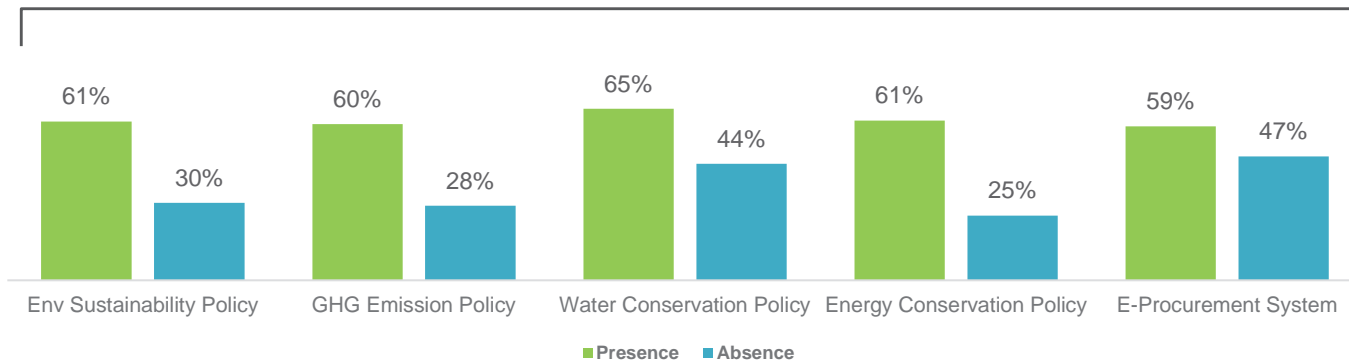


### 1. Complementary policies and practices

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. Our findings show that, in general, directors in municipalities that have specific complementary policies in place are more likely to report the successful implementation of their green purchasing policy than those without such policies (see Figure 13).

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

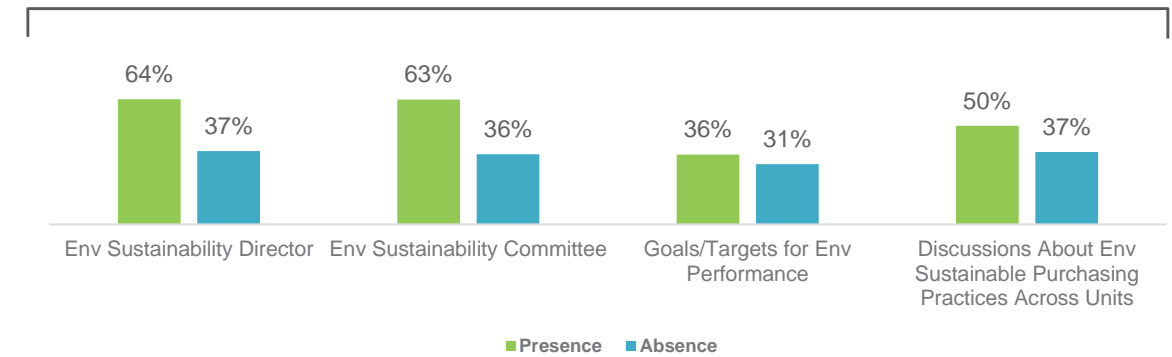


The presence of a municipal-wide environmental sustainability policy is much more likely (61 percent) to lead to green purchasing success than if a municipality does not have such a policy (30 percent). Another way to say this is that municipalities with municipal-wide environmental sustainability policies are 31 percent (61 percent minus 30 percent) more likely to be successful at implementing their sustainable purchasing policies. Additionally, the probability of successfully implementing a green purchasing policy increases in the presence of a greenhouse gas (GHG) emission policy, a water conservation policy and an energy conservation policy.

However, the differences are much smaller when considering probability of successful implementation of green purchasing policies when an e-procurement system is present. There is only a 12 percent difference in success when an e-procurement system is present, although this value is still statistically significant. Based on our focus group interviews with local government employees, we suspect that these results are because municipalities that have e-procurement systems are more likely to recognize the shortcomings of these systems when using them for green purchases. To be effective, these systems must utilize information about the environmental impacts of products or green product lists. However, as discussed previously (see Figure 8), directors reported that access to this information is still relatively low, even in municipalities with a green purchasing policy. Even though MOE has distributed lists of green products, officials in municipalities may not find it easy to use the list.

Directors' reported perceptions of the successful implementation of their municipalities' green purchasing policy success are similarly conditioned on complementary practices (see Figure 14). That is, having an environmental sustainability director appears to be relatively more important than other activities. For instance, our survey results show that the presence of an environmental director increased the probability of the successful implementation of a green purchasing policy from 37 percent to 64 percent. The presence of an environmental sustainability committee, goals and targets for environmental performance, and discussions on green purchasing policies across units also increased the probability of green purchasing success.

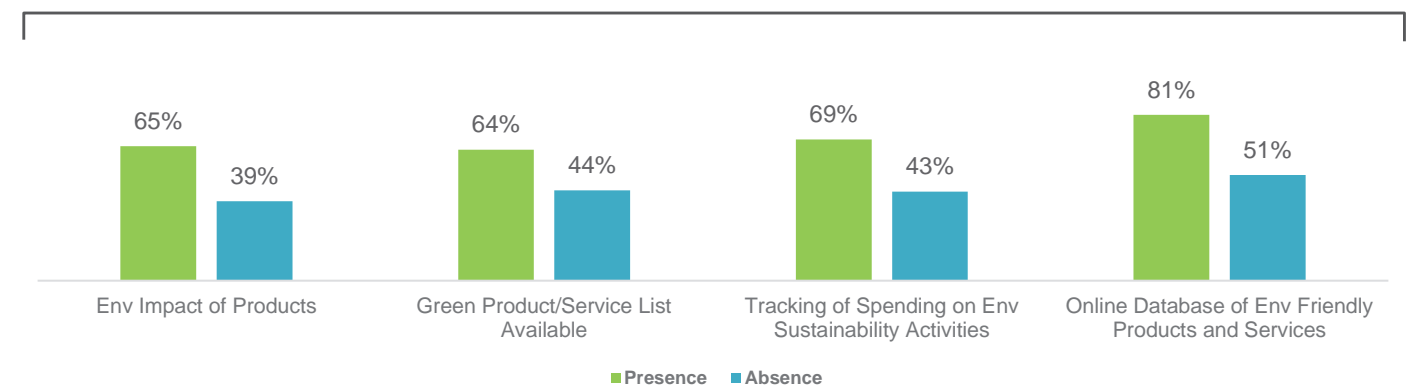
Figure 14. Probability of Successful Implementation of Green Purchasing Policy, Given Municipality Practices



### 2. Information access

Since information shapes purchasing decisions, it is not a surprise to learn that directors in municipalities that reported implementation success of a green purchasing policy were more likely to have access to relevant environmental information (see Figure 15). For instance, access to information about the environmental impacts of their products changes the probability of reporting a successful implementation from 39 percent to 65 percent when the information becomes available. The conditional relationship between information and policy success holds for other categories of information as well, including green product or service lists, tracking of spending on environmental products and services, and access to an online database of green products and services.

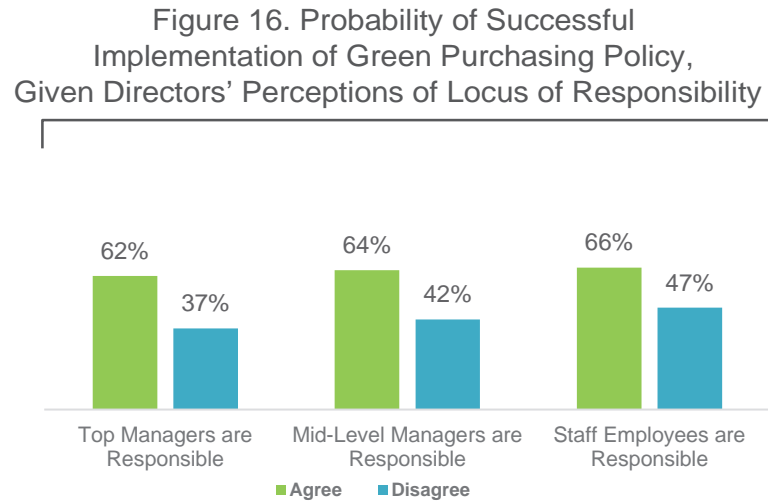
Figure 15. Probability of Successful Implementation of Green Purchasing Policy, Given Access to Types of Information



Despite the fact that access to information sources is relevant to the implementation success of green purchasing policies, between 42 percent and 65 percent of the municipalities with a green purchasing policy have access to these information resources (see Figure 8). Combined, these findings suggest that access to environmental information sources is potentially important in facilitating the implementation success of green purchasing policies.

### 3. Leadership and implementation responsibility

Earlier we described how leadership is related to municipalities' adoption of green purchasing policies. Figure 16 shows that leadership is also related to the implementation success of municipalities' green purchasing policies. Indeed, department directors' "agreement" that top managers are responsible for the implementation of the department's environmental practices increases the probability of reporting a successful implementation of green purchasing policy to 62 percent, compared with 37 percent when there is "disagreement." Directors were also significantly more likely to report implementation success when mid-level managers and staff employees are responsible for the implementation of environmental sustainability policies. These findings underscore the importance of accountability at all levels in the implementation of green practices and policies, but especially the role of top managers.

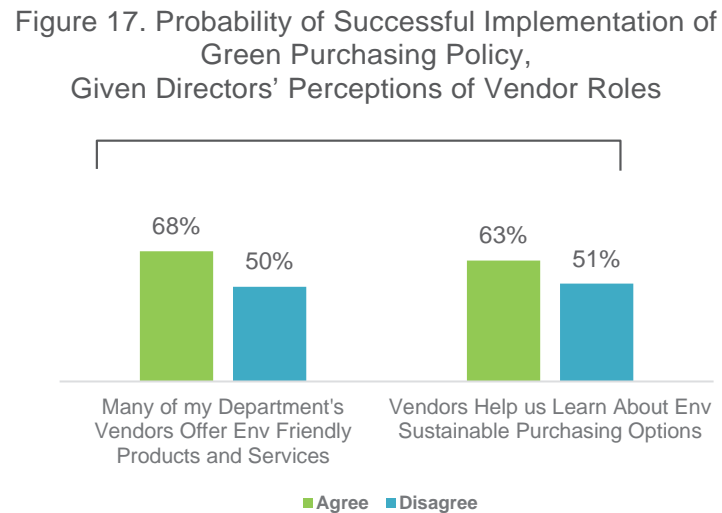


### 4. Vendor roles

Like leadership, the roles of vendors appear not only to be important to a municipality's adoption of green purchasing policies, but also to the municipality's successful implementation of that policy (see Figure 17). More specifically, department directors' "agreement" that when their department vendors offer environmentally friendly products and services the probability of reporting a successful implementation increases to 68 percent, compared with 50 percent when directors "disagree" with the notion that vendors offer environmentally friendly products and services.

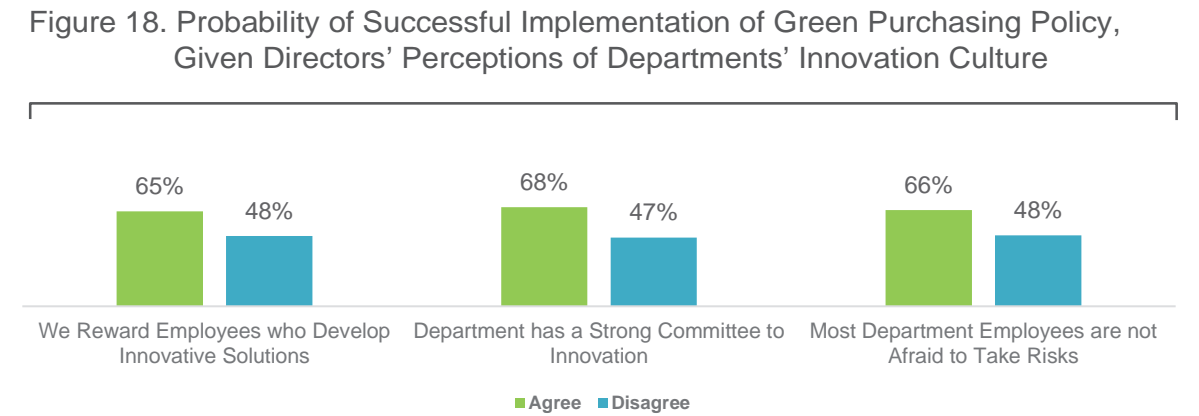
Additionally, directors' reported "agreement" that vendors help a municipality learn about environmentally sustainable purchasing options increases the probability of green purchasing policy implementation success to 63 percent, compared with 51 percent when directors "disagree" that vendors help a municipality learn.

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.



### 5. Innovation culture

An organization's culture is a function of leaders' and employees' values, norms, messages and behaviors. Strong cultures for innovation encourage organizational change and openness to new ideas. While a department's innovation culture is not related to its adoption of a green purchasing policy, it is related to the policy's implementation success (see Figure 18). Department directors' "agreement" that rewarding employees for developing innovative solutions is associated with a 65 percent probability of implementation success, compared with 48 percent when directors "disagree" that their department rewards employees for developing innovative solutions. Similarly, department directors' agreement that the department has a strong commitment to innovation is associated with 68 percent probability of implementation success, compared with 47 percent when directors "disagree" that their department rewards employees for developing innovative solutions. Moreover, departmental commitment to innovation and allowing employees to take risks are both positively associated with the probability of policy success.





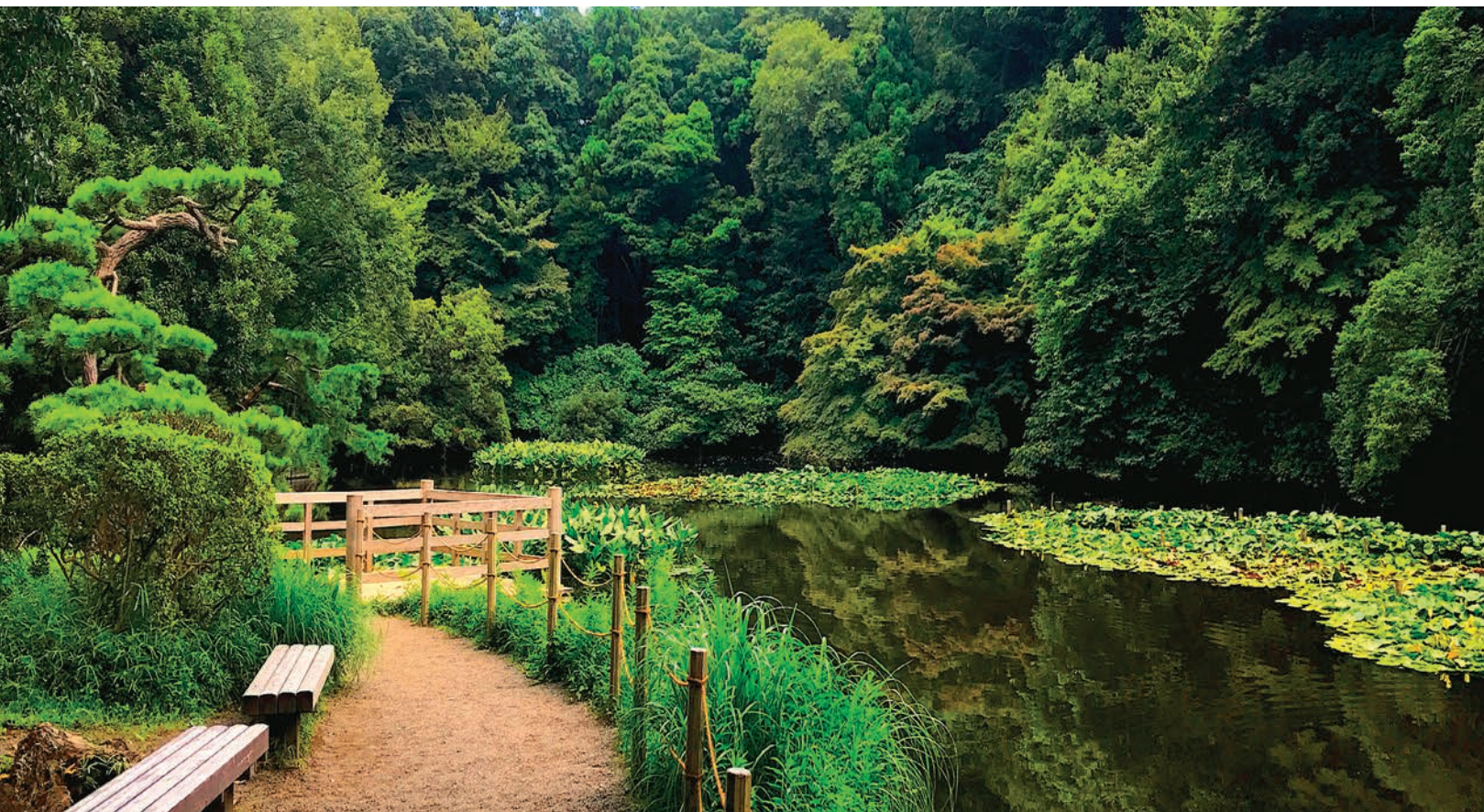
### *Similarities among municipalities with and without successful green purchasing policies*

Finally, as was the case in the U.S., there are 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 directors 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



## **Eight Actions to Advance Green Purchasing in Japanese Municipalities**

Our preliminary analysis of the survey data underscores several key facilitating factors for green purchasing adoption and implementation success in Japanese municipalities. We offer eight recommended actions to advance green purchasing in Japanese municipalities, which are parallel to the findings in the U.S. study. These recommendations are applicable to Japanese municipalities that lack a green purchasing policy and those that wish to strengthen their existing green purchasing activities.

### *1. Build on complementary policies and practices*

Many of the department directors we surveyed reported that their municipalities either did not have a green purchasing policy or did not know whether one existed; however, they have developed complementary policies and programs such as sustainability policies, GHG emissions policies, water conservation policies and energy conservation policies. In other instances, municipalities have hired environmental sustainability directors, formed environmental sustainability committees, and set goals/targets for environmental performance. All of these sustainability activities are associated with the successful implementation of green purchasing policies. Municipalities that have implemented complementary policies and activities are in a strong position to adopt a green purchasing policy.

For Japanese municipalities that already have a green purchasing policy, having also adopted complementary policies and activities puts them in a stronger position to improve the implementation success of their purchasing policy. This is because the internal capabilities necessary for managing both types of activities are either similar or related. This type of complementarity can create economies of scale and reduce operational costs. Complementary policies and practices also help create management commitment and shared vision around similar issues, reduce the cost of green purchasing adoption and facilitate the overall implementation success of green purchasing policies.

In general, Japanese municipalities' have only moderate levels of complementary environmental practices, especially for implementing environmental training for all municipality employees, tracking spending of green purchases, internal audits of environmental performance, and environmental management systems. However, these practices are related with the implementation successes of municipalities' green purchasing programs. Municipalities therefore have an opportunity to improve the implementation success of their green purchasing policies by developing these practices to a greater extent.

### *2. 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 between half and two-thirds 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 implementation success of municipalities' green purchasing activities necessarily will be constrained.



One rationale for why information about environmentally preferred products is not used may be that Japanese municipalities do not have the relevant resources to identify green products on their own. For example, Japan Environmental Association makes a list of products which are eligible for Ecomark. Ecomark is an official label of environmental friendly products certified by MOE. However, the list may not be sufficiently comprehensive to cover all items which municipalities purchase. Additionally, while MOE's list of green products/services now covers most product categories for routine purchase, only about 42 percent of municipal directors indicate that they are aware of the green product/service list. As such, one way MOE might be able to advance green purchasing is to offer greater guidance to municipalities about the availability of its green product/services list.

### 3. *Utilize e-procurement systems that integrate environmental product information*

On the whole, department directors reported only a moderate prevalence of e-procurement systems in purchasing processes. Directors also reported that they often do not have access to the environmental impacts of products, green product lists and online databases of environmentally friendly products and services.

In most Japanese municipalities, environmental product information is not integrated into an e-procurement system that facilitates green purchasing. This is problematic for at least two reasons. First, most municipal directors are required to change their positions every two or three years. As such, these directors may acquire skill related to green purchasing, however, they have limited opportunity for these skills to influence daily purchasing routines prior to moving to another position. Having an e-procurement system in place that integrates environmental information would help ensure continuity in green purchasing even when directors move. A second problem relates to a recent MOE survey finding that indicates the lack of capacity, especially in smaller municipalities, which is a major barrier to green purchasing. While MOE has assisted municipalities to adopt green purchasing policies, such assistance has been for a selected number of municipalities.

MOE can address both issues by developing a national procurement system that integrates environmental product information. Such a system would be useful for all municipalities, but especially smaller ones where capacities and resources are more constrained.

In the absence of MOE creating a national e-procurement system, municipalities should still pursue implementing one, but consider that some e-procurement systems currently available on the market may be more adept at tracking green attributes than others. In selecting an e-procurement system, municipality managers should consider whether the system is sufficiently flexible to add sustainability requirements to open tenders and default green purchasing requirements. Municipalities should also consider whether the system offers possibilities for customizing e-procurement to add more green purchasing features and create dashboards to help track spending related to green purchases.



### 4. *Track spending related to green purchases*

Organizations manage what they measure. Municipalities that track their green purchase spending therefore 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. *Enhance collaborative vendor relationships*

Our findings point to a number of ways in which vendors may facilitate municipalities' adoption of green purchasing policies and increase the probability of implementation success. Given (1) the complexity associated with green purchasing, (2) the fact there are a limited number of green product options, and (3) that municipalities have limited access to information about green products, vendors can serve as useful partners in facilitating the success of municipalities' green purchasing policies. Vendors have the potential to educate municipalities about green purchasing options. They can also create avenues for municipalities to increase their environmentally friendly purchasing. This is likely why municipalities with higher green purchasing policy implementation success tend to work more closely with their vendors and regard them as collaborators in the implementation of their green purchasing policies.

### 6. *Assign responsibility to top-level management*

Our results underscore the importance of top-management responsibility to both the adoption of green purchasing policies and the implementation success. Department directors indicate that top-management involvement is more important to the successful implementation of green purchasing than financial resources. Leadership resolve in the adoption and implementation of green purchasing policies will build momentum and commitment. Municipalities that wish to implement a successful green purchasing policy should consider seriously the role of leadership and assignment of responsibility to top-level managers.





### 7. Foster a culture for innovation

Municipalities that have already adopted a green purchasing policy should consider how they can increase employee incentives for developing innovative solutions around green purchasing. Incentives for green purchasing can help create a culture that encourages and rewards creativity. Incentives include typical internal recognitions and rewards. Other examples are creative competitions among (or across) departments or for specific purchasing categories or for overall green product purchases.

Employees can also be encouraged to apply for external awards that encourage an innovation culture and further embed green purchasing in the municipality's routines and practices. For instance, the Green Electronics Council honors leaders (including municipalities) in green purchasing of electronics. Additionally, the Sustainable Purchasing Leadership Council offers awards for organizational and individual green purchasing leadership and opportunities to develop case studies of organizational successes.

### 8. Participate in professional networks to share best practices

Our final recommendation is related to several of the recommended actions identified above. As more municipalities develop their green purchasing programs, an opportunity is created to learn from best practices. Professional networks such as the Japan Green Purchasing Network, Japan Environment Association, and ICLEI Japan have emerged to support green purchasing in municipalities, companies and other organizations. Participating in these networks also help members gain access to information on best practices and additional ways to introduce or strengthen green purchasing by making it part of the municipality's routines and processes and enhancing vendor relations. Further, because professional networks often offer learning opportunities through training webinars and conferences, municipalities avoid implementation hurdles already encountered by others. Networks can also inform municipalities of external support, such as grants, educational programs and awards/recognitions that can assist with the development of a green purchasing policy and its successful implementation.

## Additional Resources

Please visit our website [spa.asu.edu/greenpurchasing](http://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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## Sustainable Purchasing Research Initiative

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