Advancing Green Purchasing in Australian Municipalities

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Arizona State University

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Advancing Green Purchasing in Australian Municipalities

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Executive Summary

The Australian Government's Department of Agriculture, Water, and the Environment is promoting green purchasing policies across all levels of Australian government. A primary reason is that green purchasing policies have the potential to significantly reduce carbon impacts across the globe and can help Australia 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. The United Nations Environmental Programme, the Organisation for Economic Co-operation and Development, the Sustainable Purchasing Leadership Council (SPLC), and others suggest that these concerns must be resolved if we are to move toward an environmentally sustainable economy.

Researchers at University of New South Wales' (UNSW's) Business School and Arizona State University's (ASU's) Sustainable Purchasing Research Initiative (in the ASU Center for Organization Research and Design, or CORD) have sought to address these issues. Our three broad objectives are to:

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

To accomplish these objectives, we conducted a national survey of people in finance, procurement, public works, city planning, environmental compliance, waste management and sustainability-related positions in Australian municipalities. The survey generated 196 individual responses from 160 municipalities with 10,000 residents or more. These municipalities were representative based on their population size, income and geographic dispersion by prefecture.

Our results show that 61 percent of directors report that their municipalities have a green purchasing policy, and 39 percent reported they have no 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 and resources
5. Vendor roles

What factors are more strongly related to implementation success?

Of the 61 percent (108 total) of department directors who reported that their municipalities had adopted green purchasing policies, more than half (61 percent, 66 total) indicated that their municipalities have implemented the policy successfully.

By contrast, 39 percent (42 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 three general features:

1. Complementary policies and practices
2. Information access
3. Vendor roles

Recommendations:

Based on these findings, we have developed seven 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 ecolabel certifications.
3. Utilize e-procurement systems that integrate environmental product information
4. Track spending related to green purchases
5. Enhance collaborative vendor relationships
6. Foster a culture for innovation
7. Participate in professional networks to share best practices

Acknowledgements

We are grateful to all the Australian local government professionals who participated in the survey. We would also like to thank both the Australian Local Government Association (ALGA) and the Waste Management Association of Australia (WMAA) for their support and diffusion of our study.

Research Collaboration

This report was developed in collaboration with researchers at the UNSW Business School and the Arizona State University's (ASU's) Sustainable Purchasing Research Initiative.

The UNSW Business School includes seven research centres, five affiliated research centres, one research centre of excellence, eight schools and the Australian Graduate School of Management (AGSM). Its mission is to be a globally engaged, high impact and academically rigorous business school that enhances practice through leading edge research.

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. It is a leading authority for research insights and knowledge about sustainable purchasing globally.

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:

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Additional Information

To learn more about UNSW Wales Business School, visit https://www.business.unsw.edu.au/. Please visit ASU's Sustainable Purchasing Research Initiative (https://sustainability.asu.edu/spri/) for additional information about green purchasing, best practices, project updates and related research papers.

Authors

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Introduction

In Australia, government purchasing accounts for 36.2% of total 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 Australia, the national government has offered guidelines for sustainable purchasing. In 2018, the Australian Government created a Sustainable Procurement Guide which outlines the principles of sustainable purchasing and guides local governments through implementation. However, local governments are not required to implement sustainable procurement.

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 Australian 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 Australian municipalities*

To achieve this goal, we surveyed 196 directors, managers, and officers from 160 municipalities with 10,000 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 Australian 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 to professional organizations and international governance bodies that have agreed to distribute the report's findings to their network members
- 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 UNSW's Business School (https://www.business.unsw.edu.au) and the Sustainable Purchasing Research Initiative (https://sustainability.asu.edu/spri/) 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. Existing research examined guidelines, standards, and specifications in sustainable purchasing plans in Australian local governments but did not investigate rates of implementation or success. 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 Australia, it is the municipality, which is categorized as being either a major city, large town, medium town, or small town, depending on the population. According to the 2016 Australia Census, Australia had 545 local municipalities, of which, 299 had 10,000 residents or more. The target population for our survey was these 299 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.

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. Procurement departments
3. Public works departments
4. City planning departments
5. Environmental compliance departments
6. Waste management departments
7. Sustainability departments

Finance and Procurement Departments. In nearly all Australian municipalities, the finance department has either a primary or strong supportive role in municipal purchasing activities. The procurement department has a similar role in purchasing. 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.

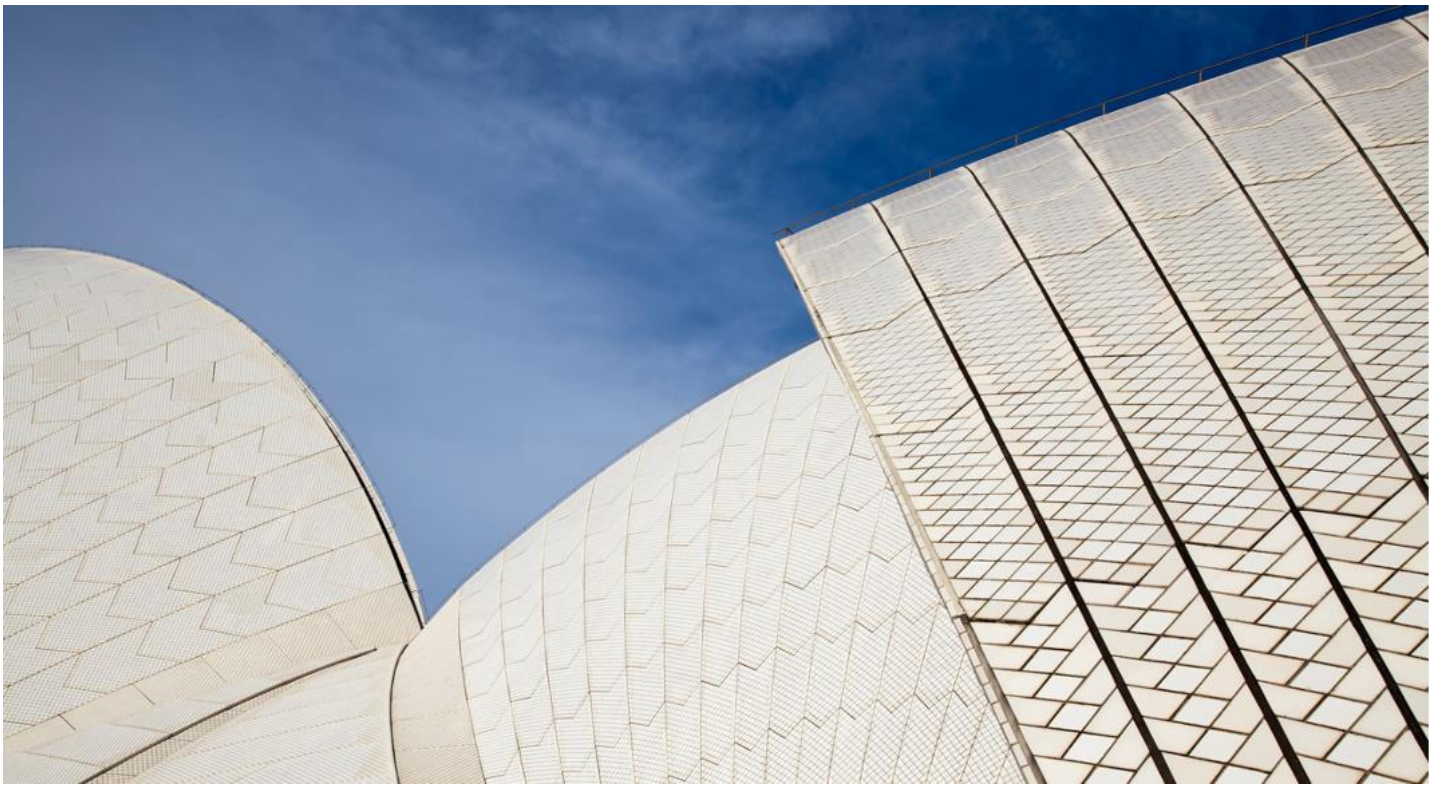
Public Works and City Planning Departments. Public works departments are typically large purchasers within municipalities. The public works directors therefore generally understand city purchasing policies and practices. Further, public works departments typically involve managing resources that have large environmental impacts (e.g., water, energy, construction, roads). City planning departments were surveyed for the same reasons.

Environmental Compliance, Waste Management, and Sustainability Departments. While not present in all municipalities, directors of environmental compliance and sustainability departments are generally tasked with the integration of environmental concerns into the city's routines and processes. These responsibilities sometimes fall under the discretion of waste management departments as well.

Consistent with the U.S. study, we used the following protocol to obtain department contacts within each of the 299 municipalities:

1. Using the 2016 Australian Census, we identified all Australian municipalities with $\geq$ 10,000 residents
2. In Google, we used search words (e.g., Hobart 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 Hobart municipality, we would enter the search term "Director of Finance, Hobart Municipality" to identify the appropriate individual. Smaller municipalities often did not have directors or managers, but rather officers or supervisors, who were identified instead.

The final population size was 1,794 individuals in 299 municipalities.



Survey administration

We finalized the survey in December 2018. The final survey was nine pages in length and contained 34 questions.

The survey was distributed to department directors via email using Qualtrics survey software. Two email reminders were sent to nonrespondents.

Our response rate at the individual level was 10.93 percent (n=196). We received responses from at least one director in 53.51 percent (n=160) of the municipalities in our sample.

A comparison of our sample to the population of Australian municipalities with 10,000 residents or more (using 2016 Australian Government Census data) indicates that our sample is representative of all Australian municipalities based on their mean income and location (state). Responding municipalities had a slightly higher average population, having an average of approximately 73,700 residents, as compared to the overall sample, whose average municipal population was 61,000 residents.

The following documents provide further explanation about our research approach. All documents are available at https://sustainability.asu.edu/spri/.

- Our broader research approach
- The final Australian survey
- Frequencies associated with each of the Australian 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 Australian 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.

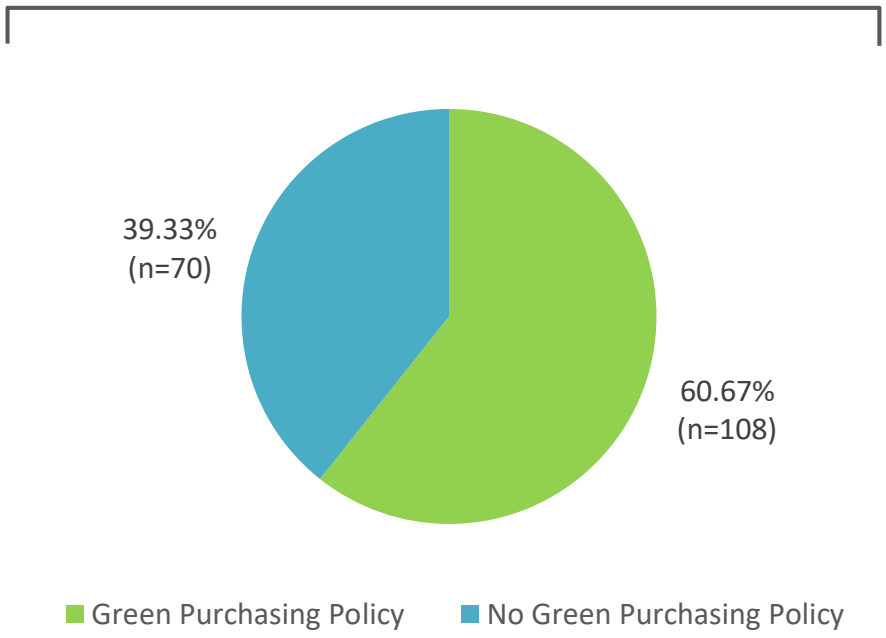
Responses to both questions were compared to all other survey responses using chi-square statistical tests. In order to facilitate comparison between the Australian setting and the U.S., we list all factors found to be statistically significant in U.S. local governments but mark those factors which were not statistically significant for Australian 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 Australian 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).

More than half (61 percent, n=108) of the department directors in our sample reported that their municipalities have a green purchasing policy (see Figure 1). This compares with 39 percent (n=70) of department directors who reported that their municipalities do not have a green purchasing policy. A total of 18 directors did not respond to this question (1 percent).

Figure 1. Green Purchasing Policy Adoption in Australian Municipalities



Which Factors Impede or Facilitate Green Purchasing Policy Adoption?

Overall, the survey responses indicate that Australian 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

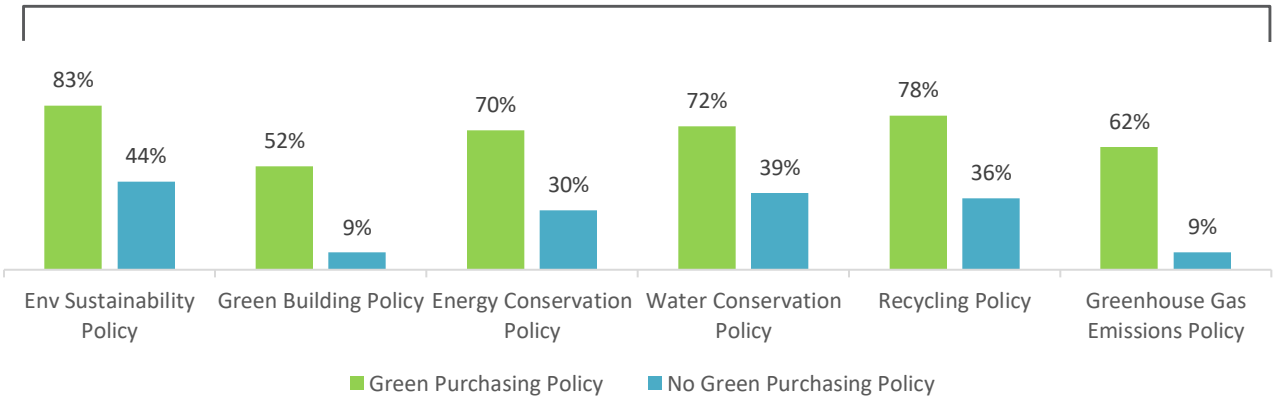
1. Complementary policies and practices

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 Australian municipalities.

Figure 2. Municipal-wide Implementation of Complementary Environmental Policies



Our findings show that 83 percent of directors in municipalities with green purchasing policies also have a municipal-wide environmental sustainability policy and 52 percent of directors reported also having a green building policy. This compares to directors in municipalities that lack a green purchasing policy, where only 44 percent have an environmental sustainability policy and 9 percent have a green building policy.

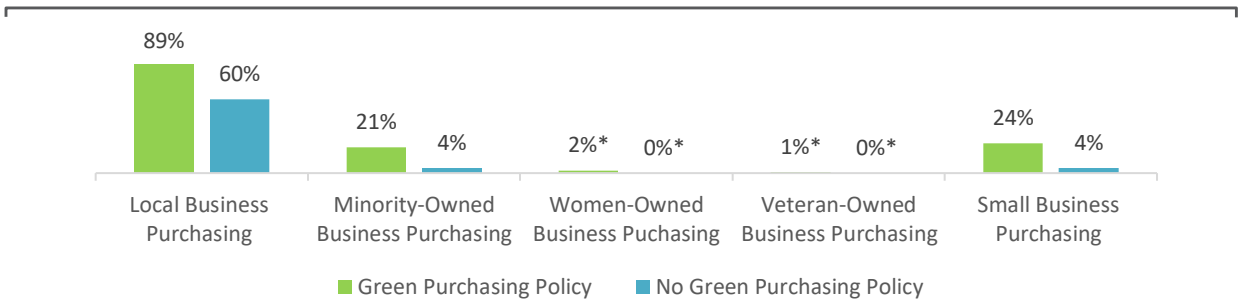
Similarly, 70 percent of directors in municipalities with a green purchasing policy also have an energy conservation policy and 72 percent have a water conservation policy. By contrast, 30 percent of directors in municipalities without a green purchasing policy have an energy conservation policy and 39 percent have a water conservation policy.

When considering municipalities' implementation of a recycling policy, 78 percent of department directors in municipalities with green purchasing policies reported that their municipalities have a recycling policy, compared with 36 percent of directors in municipalities that lack a green purchasing policy. A more significant difference is seen in municipalities' greenhouse gas emissions policies where 62 percent of department directors in municipalities with green purchasing policies reported that their municipalities have one, compared with 9 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, 89 percent of department directors in municipalities with green purchasing policies have a local business purchasing policy in place, compared with 60 percent of directors in municipalities without a green purchasing policy. Similarly, 21 percent of directors in cities with green purchasing policies have a citywide minority-owned business purchasing policy, while 4 percent of directors in cities that lack green purchasing policies have minority-owned business purchasing policies. Additionally, 24 percent of directors in municipalities with green purchasing policies have a small business purchasing policy, compared with 4 percent of directors in those municipalities surveyed without a green purchasing policy.

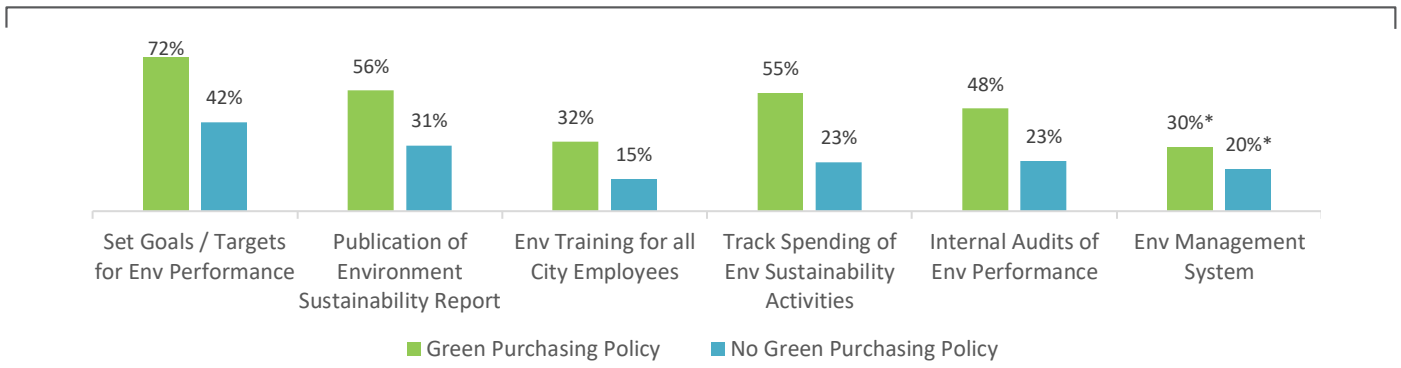
Figure 3. Municipal-wide Implementation of Complementary Social Policies



The influence of women-owned and veteran-owned business purchasing, while important in the U.S. context are not significant in Australia, hence those are marked with an asterisk. Both were analyzed with the Chi-Square Test for statistical significance as well as Fisher's Exact Test due to small values. Both women-owned and veteran-owned business purchasing were not statistically significant.

In addition to asking about complementary policies, we also examined municipalities' complementary environmental practices. Department directors were asked to, *"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 in the U.S., all of which were also significant in the Australian sample.

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 (72 percent) in municipalities with green purchasing policies also report having goals/targets for environmental performance. Slightly less (56 percent) also publish an environmental sustainability report. This compares with 42 percent and 31 percent (respectively) of municipalities without a green purchasing policy. Additionally, 32 percent of department directors in municipalities with green purchasing policies have municipal-wide environmental training for all municipal employees, compared with 15 percent of directors in municipalities without a green purchasing policy.

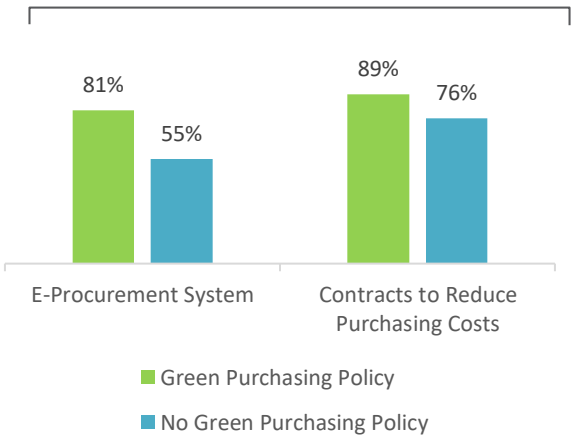
About 55 percent of directors in municipalities with green purchasing policies reported having municipal-wide practices that track spending of environmental activities, compared with 23 percent of directors in municipalities without a green purchasing policy. Similar patterns are seen for department directors' reported use of internal audits of environmental performance. However, the use of environmental management systems is not statistically significant.

While department directors of municipalities with green purchasing policies tend to have more complementary environmental practices, many do not have them at all. 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?"*

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. 81 percent of directors in cities with green purchasing policies have implemented an e-procurement system, compared with 55 percent of directors in cities lacking these policies.

Figure 5. Municipal-wide Implementation of Complementary Purchasing Activities



Our results show that directors in municipalities with green purchasing policies are more likely to report using contracts to reduce purchasing costs. Approximately 89 percent of directors in municipalities with green purchasing policies reported that they use these types of cost-reduction contracts as compared to three-quarters (76 percent) of directors in municipalities without green purchasing policies.

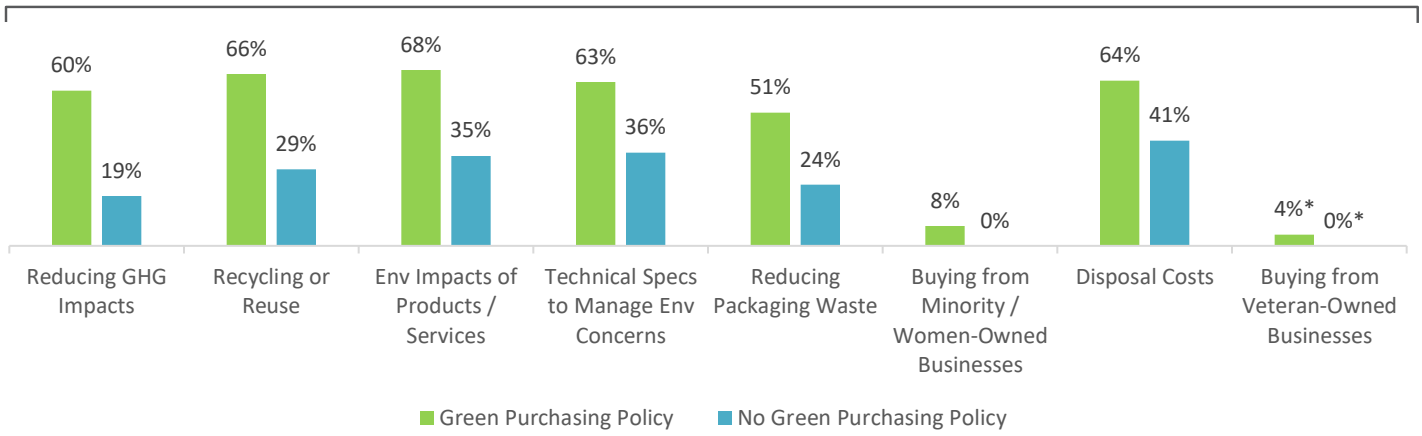
In sum, directors in municipalities with green purchasing policies reported having more complementary policies and practices than directors in municipalities without green purchasing policies. However, the rate of adoption of these complementary policies and practices is only moderate, even in municipalities 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. Over half of directors (60 percent) in municipalities with a green purchasing policy reported that reducing greenhouse gas (GHG) impacts as well as recycling or reuse (66 percent) were "Important" or "Very Important" purchasing criteria, compared with 19 percent and 29 percent of directors in municipalities without green purchasing policies.

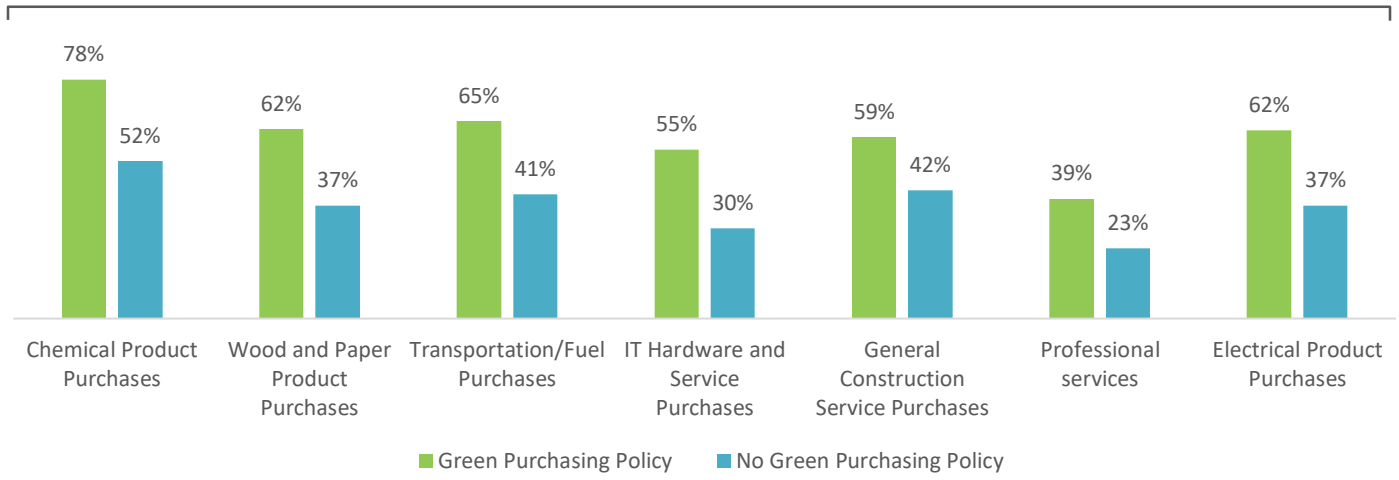
Figure 6. Importance of Departments' Purchasing Criteria



About the same number of department directors (68 percent) in municipalities with green purchasing policies also stated that environmental impacts of products/services are an "Important" or "Very Important" purchasing criterion. This compares to about 35 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 technical specifications to manage environmental concerns and reducing packaging waste. Differences lessen (but are still statistically significant) when considering purchasing criteria such as disposal costs and buying from minority/women-owned businesses. Due to small values, Fisher's Exact Test was performed to examine differences relate to buying from minority/women-owned businesses and buying from veteran-owned businesses. The former was statistically significant, whereas the latter was not.

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.

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



In 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 78 percent of directors in municipalities with a green purchasing policy recognized that the environmental concerns of chemical products are important, compared with about half of directors (52 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: 62 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 37 percent of department directors without a green purchasing policy. Similarly, 65 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 41 percent of directors in municipalities without a green purchasing policy. Similar patterns are seen in IT hardware and service purchases, general construction service purchases, professional service purchases, and electric product purchases.

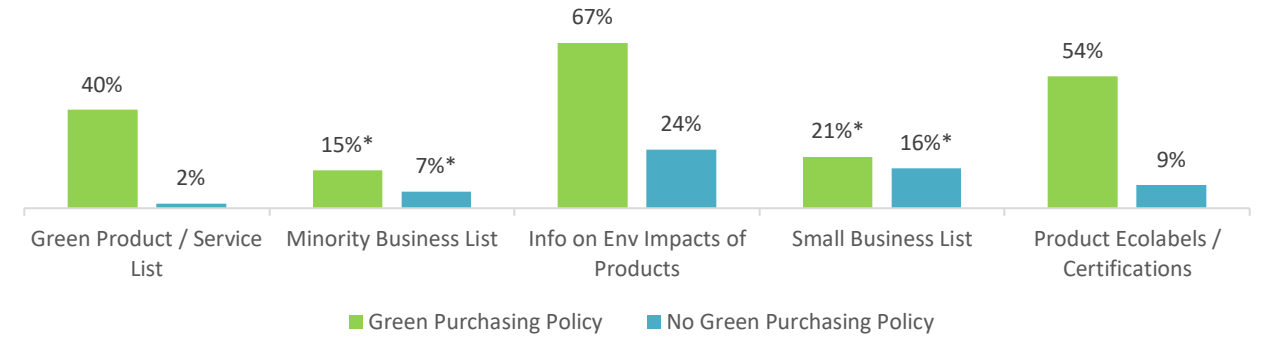
One observation about these findings (Figures 6 and 7) is that the overall importance of green purchasing criteria and environmental concerns varies between different product types in municipalities which have a green purchasing policy. Between 35 percent and 68 percent of these directors reported that 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 40 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 2 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



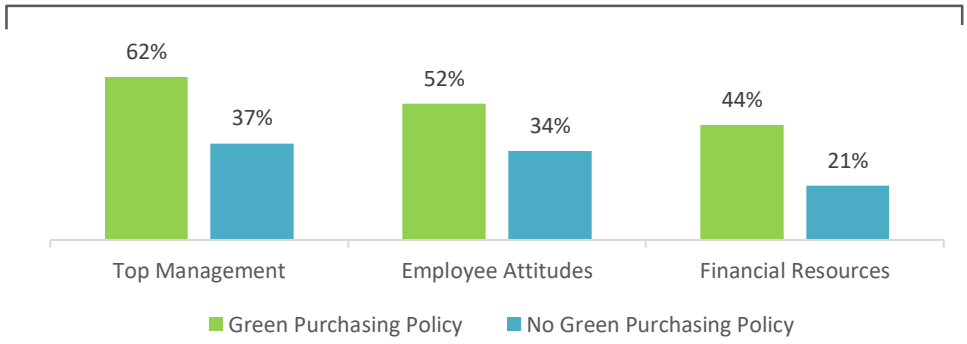
Additionally, more than half of directors (67 percent) in municipalities with green purchasing policies reported that when making purchasing decisions, information about the environmental impacts of products is available. By contrast, only 24 percent of directors in municipalities without green purchasing policies have access to this information. Similarly, 54 percent with green purchasing policies have access to product ecolabel/certification information when making purchasing decisions. This compares to 9 percent of directors in municipalities without a green purchasing policy. Rates of access to minority and small business lists are low and the relationships are not statistically significant.

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. 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?"*

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

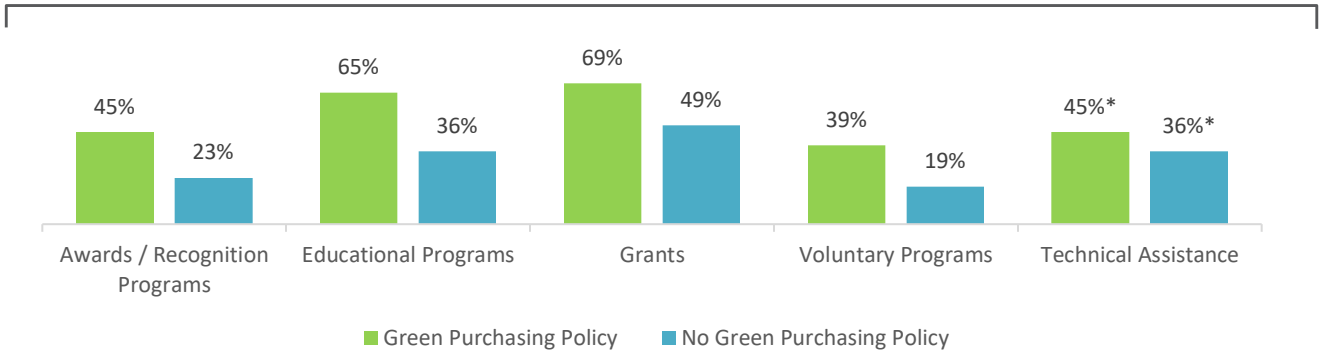


More than half of directors (62 percent) in municipalities with green purchasing policies reported that top management "Facilitates" or "Strongly Facilitates" their ability to implement green purchasing. This compares with 26 percent of directors in municipalities without a green purchasing policy (see Figure 9).

Further, 44 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-fifth of directors (21 percent) in municipalities without a green purchasing policy reported that financial resources are important. Additionally, more than half of directors (52 percent) in municipalities with green purchasing policies reported that employee attitudes "Facilitate" or "Strongly Facilitate" their ability to implement green purchasing. This compares with 34 percent of directors in municipalities without a green purchasing policy.

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 federal 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 and technical assistance, all factors were statistically significant in the Australian data.

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



About half of directors (45 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-fourth of directors (23 percent) in municipalities without green purchasing policies. Additionally, 65 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 only 36 percent of directors in municipalities without a green purchasing policy who indicated educational programs are important. Further, 69 percent of directors in municipalities with green purchasing policies reported that grants are important in promoting their municipality's environmental sustainability, compared to 49 percent of directors in municipalities without green purchasing policies. Over a third (39 percent) of directors in municipalities with green purchasing policies reported that voluntary programs are important to promoting their municipalities' environmental sustainability, and about one-fifth of directors (19 percent) of directors in municipalities without green purchasing policies reported the same.

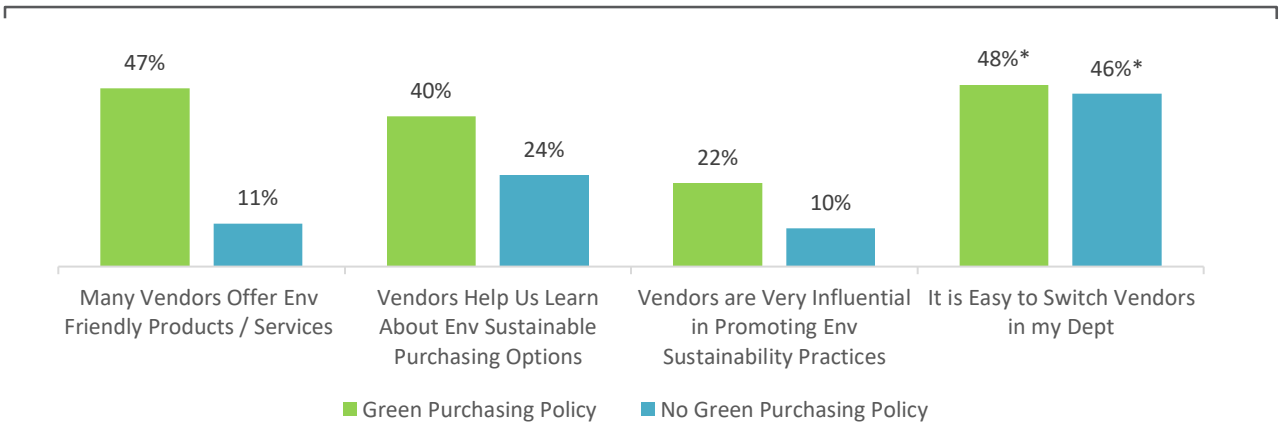
Overall, these findings are noteworthy because organizations often report that financial constraints prevent the adoption of sustainability-oriented policies. While financial resources are relevant, top-level management, awards/recognition programs, educational programs, and voluntary programs are more 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 47 percent of directors in municipalities with green purchasing policies "Agree" or "Strongly Agree" that many vendors offer environmentally friendly products/services, compared to 11 percent of directors from municipalities that lack a green purchasing policy, and who answered the same (see Figure 11). Smaller, but still statistically significant, differences are seen in factors related to whether vendors help municipalities learn about environmentally sustainable purchasing options, and whether vendors are influential in promoting environmentally sustainable practices. Factors related to whether it was easy to switch vendors are not statistically significant for Australian municipalities.

Figure 11. Vendor Roles



Overall, the results point to a number of ways in which vendors may facilitate the adoption of cities' green purchasing policies and implementation success. The likelihood of a municipality having a green purchasing policy is significantly higher if the municipality's vendors offer compatible products and services.

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 or not 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 lifecycle costs

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

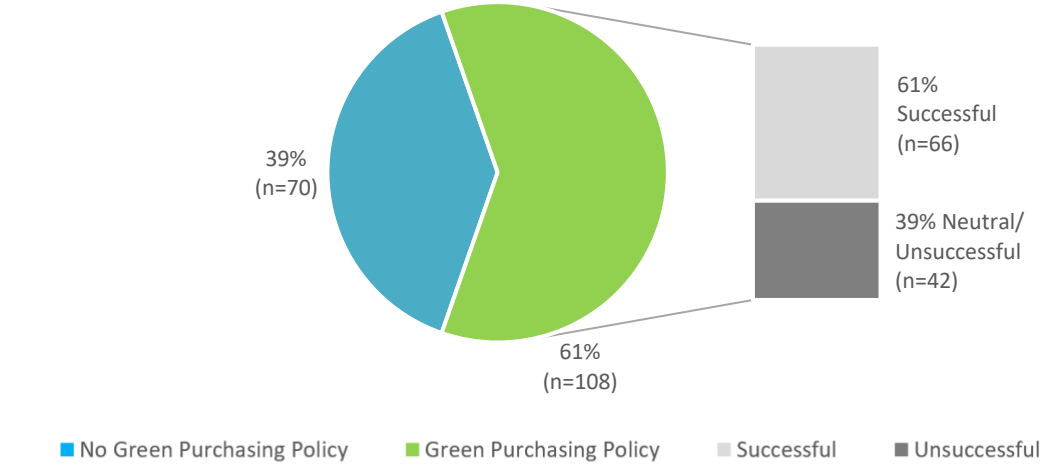
- Purchasing rules and procedures
- Commitments to innovation
- Employee rewards systems for innovative solutions
- Entrepreneurial nature and risk-tolerance

These results suggest that, like the U.S., Australian 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 original 178 directors who answered the initial question about whether their municipality had a green purchasing policy, 108 directors responded to the question at the end of the survey about its successful implementation. Of the 61 percent (108 total) of department directors who reported that their municipalities have adopted a green purchasing policy, more than half (61 percent, 66 total) indicated that their policy is "Successful." About 39 percent (42 total) reported their policy success is either "Neutral" (neither successful nor unsuccessful) or "Unsuccessful."

Figure 12. Green Purchasing Policy Adoption and Implementation Success



To determine which 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 in the U.S. study:

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

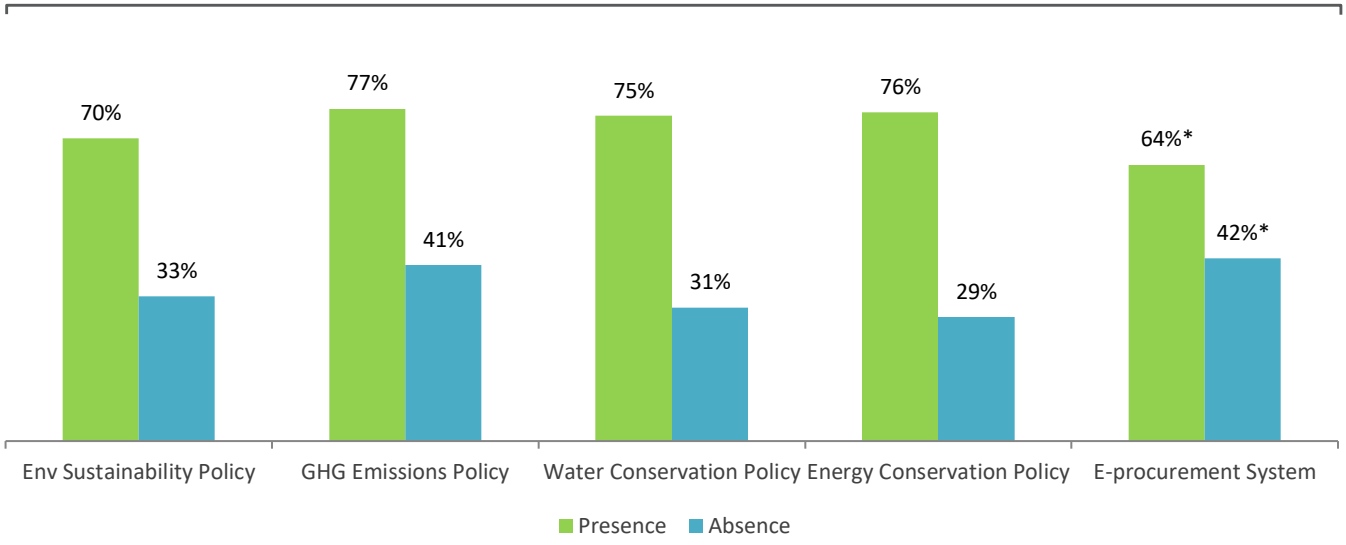
Those marked with an asterisk are not statistically significant in Australian municipalities, although they are significant in the U.S. setting.

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).

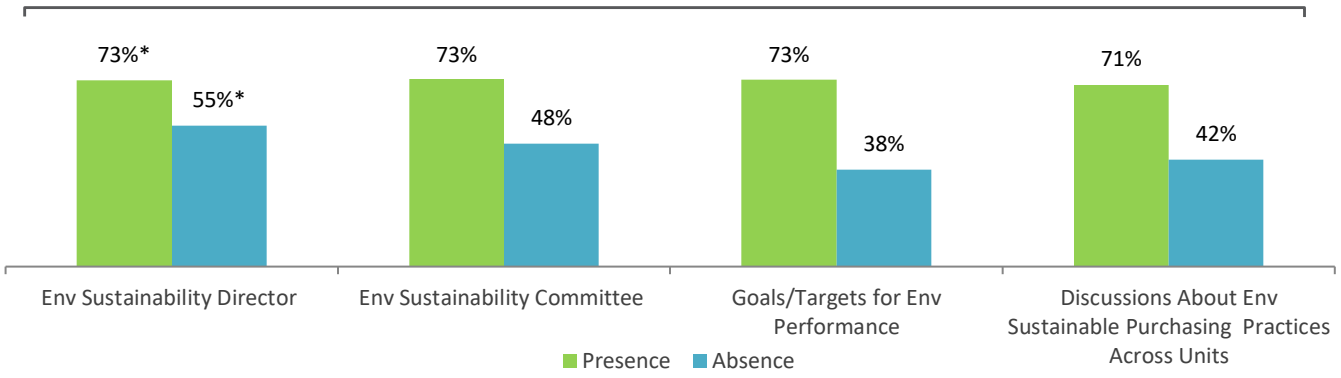
Figure 13. Probability of Successful Implementation of Green Purchasing Policy, Given Municipal-wide Policies



The presence of a municipal-wide environmental sustainability policy is more likely (70 percent) to lead to green purchasing success than if a municipality does not have such a policy (33 percent). Another way to say this is that municipalities with municipal-wide environmental sustainability policies are 37 percent (70 percent minus 33 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. The presence of an e-procurement system is not statistically significant.

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 goals/targets for environmental performance appears to be slightly more important than other activities. For instance, our survey results show that the presence of goals and targets increased the probability of the successful implementation of a green purchasing policy from 38 percent to 73 percent. The presence of an environmental sustainability committee and discussions on green purchasing policies across units also increased the probability of green purchasing success. However, rate relates to the environmental sustainability director is not significant.

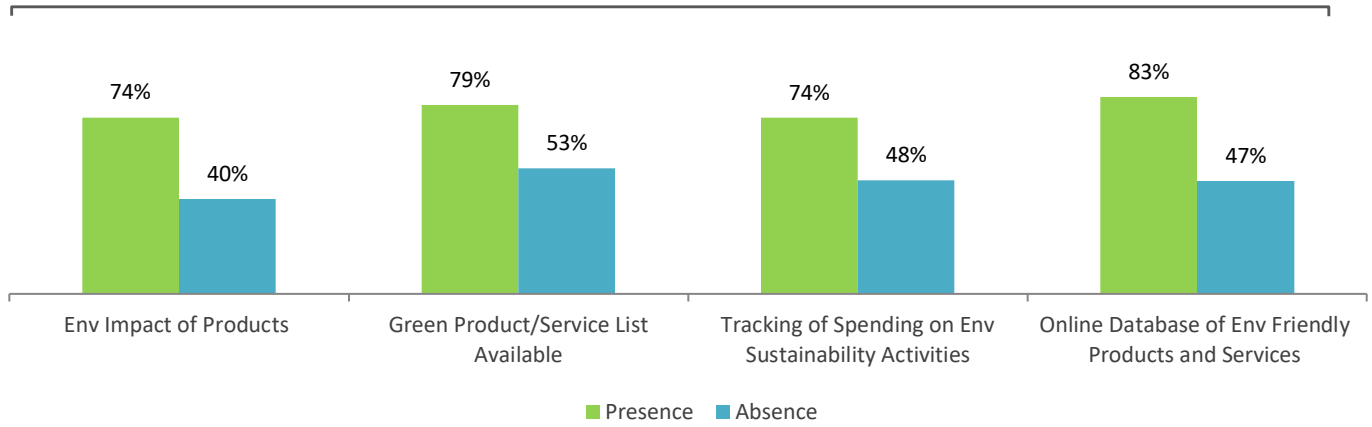
Figure 14. Probability of Successful Implementation of Green Purchasing Policy, Given Municipality Practices



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 40 percent to 74 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

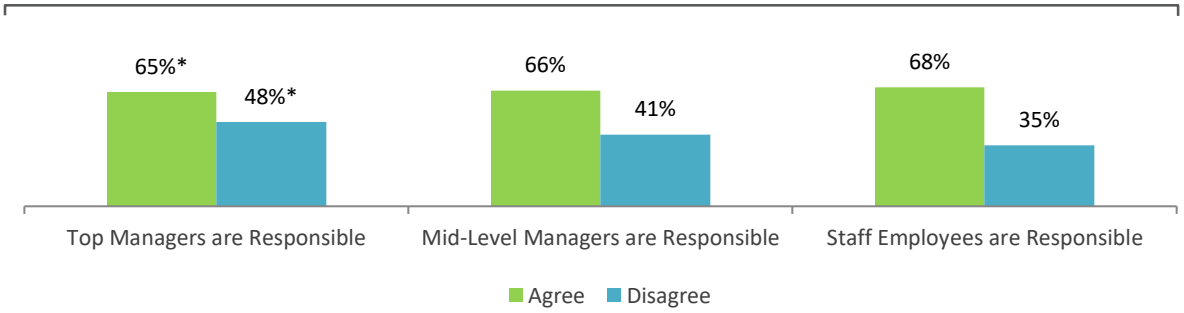


Despite the fact that access to information sources is relevant to the implementation success of green purchasing policies, only between 40 percent and 67 percent of the municipalities with a green purchasing policy have access to these information resources (see Figure 8). Combined, these findings suggest 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 cities' green purchasing policies. However, the data shows that there is no statistically significant relationship between the probability of successful implementation and the "agreement" that top managers are responsible for successful implementation of green purchasing policies. Instead, the statistically significant relationships are seen in whether directors "agree" that mid-level managers and staff employees are responsible for successful implementation of green purchasing policies. The findings underscore the importance of lower-level responsibility regarding the implementation of green practices and policies.

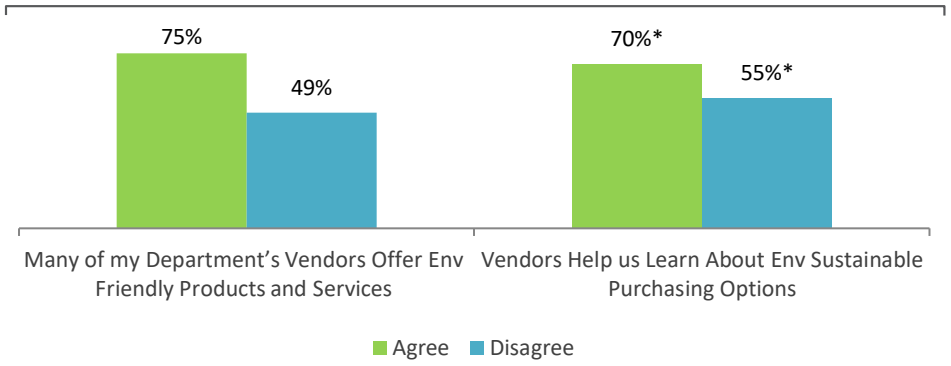
Figure 16. Probability of Successful Implementation of Green Purchasing Policy, Given Directors' Perceptions of Locus of Responsibility



4. Vendor roles

One aspect of the roles of vendors appears to significantly relate to successful implementation of GPP (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 75 percent, compared with 49 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



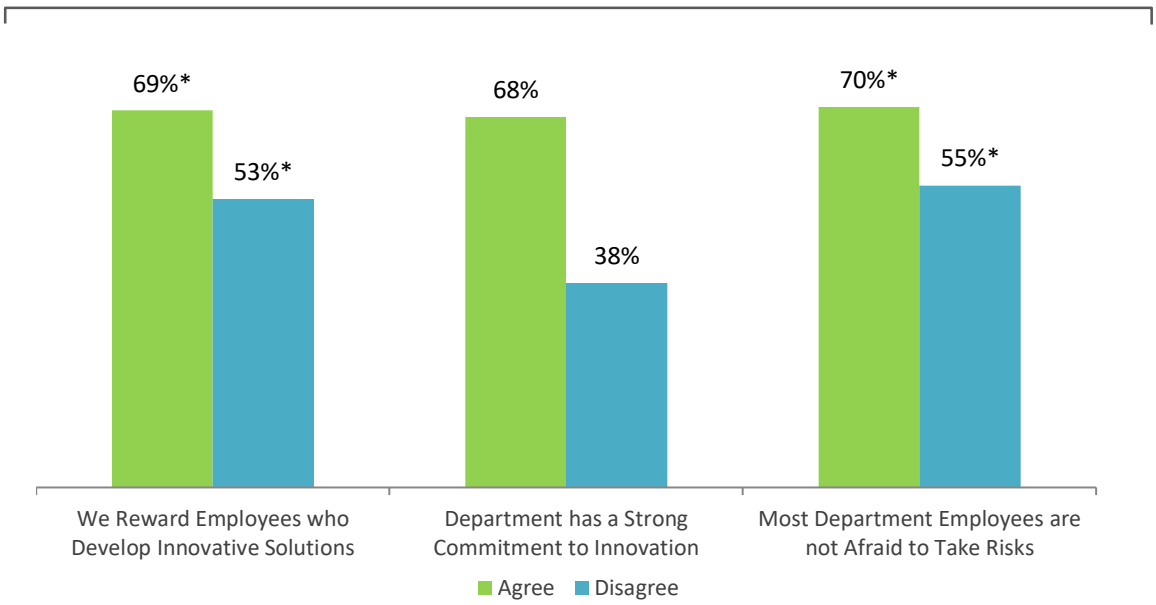
Directors' reported "agreement" that vendors help a municipality learn about environmentally sustainable purchasing options increases the probability of green purchasing policy implementation success to 70 percent, compared with 55 percent when directors "disagree" that vendors help a municipality learn. However, this result is not significant.

These findings point to the potential importance of the types of products vendors offer. 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 having a strong commitment to innovation is associated with a 68 percent probability of implementation success, compared with 38 percent when directors "disagree" that their department has such a commitment. However, results of rewarding employees for developing innovative solutions and allowing employees to take risks are not statistically significant.

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 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
- Environmental pressures exerted by internal or external stakeholders

Seven Actions to Advance Green Purchasing in Australian Municipalities

Our preliminary analysis of the survey data underscores several key facilitating factors for green purchasing adoption and implementation success in Australian municipalities. We offer seven recommended actions to advance green purchasing in Australian municipalities. These recommendations are applicable to Australian 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 did not have a green purchasing policy; 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 Australian 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, Australian municipalities' have only moderate levels of complementary environmental practices, especially for implementing environmental training for all municipality employees and internal audits of environmental performance. 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 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 this information is not used may be that cities do not have the resources to identify green products on their own. However, external resources may assist. In 2018, the Australian Government's Department of Agriculture, Water, and the Environment published its *Sustainable Procurement Guide* to help purchasers identify and procure environmentally sustainable products and services. The guide recommends a website, coolaustralia.org, which provides a list of internationally recognized ecolabels for municipal governments to look for when making purchasing decisions.

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.

Simply utilizing an e-procurement system to facilitate green purchasing is likely to be less effective unless the system is integrated with environmental product information so that purchasing employees can access it at their point of purchase. Doing so creates opportunities to increase green purchases by creating default green purchasing requirements and reducing purchasing officers' search costs for green products. E-procurement systems that integrate environmental product information also allow cities to track their spending on green products and incentivize green purchasing behavior. To increase their use, when implementing these systems, cities should educate purchasing officers about how and why they should use to the tools.

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. 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. Employees can also be encouraged to apply for external awards that encourage an innovation culture and further embed green purchasing in the city's routines and practices.

7. 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 Sustainable Purchasing Leadership Council, Australasian Procurement and Construction Council, and ICLEI Oceania have emerged to support green purchasing in municipalities, companies and other organizations. Participating in these networks also help members gaining 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 https://sustainability.asu.edu/spri/ 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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