

# Advancing Green Purchasing in South Korean Municipalities

---





Please cite this report as:  
Choi, H., H.J. Kim, H.A. Jeon, H. Yim, A. Elovitz, M. Dubois, Y. Chen, N. Darnall, J.M. Stritch, and S. Bretschneider. 2022. *Advancing Green Purchasing in South Korean Municipalities*. Arizona State University, Sustainable Purchasing Research Initiative.

# Advancing Green Purchasing in South Korean Municipalities

## Table of Contents

Executive Summary	4
Acknowledgments	6
Research Collaboration	6
Additional Information	6
Authors	7
Introduction	8
Project Goals	9
Research Approach	10
Survey Recipients	11
Survey Administration	12
Measurement and Statistical Assessment	13
Green Purchasing in South Korean Municipalities	14
Which Factors Impede or Facilitate Green Purchasing Policy Adoption?	15
1. Complementary policies and practices	15
2. Purchasing criteria	18
3. Information access	20
4. Leadership, employees, and resources	20
5. Vendor roles	22
6. Similarities among municipalities with and without green purchasing policies	23
What Factors are Associated with Green Purchasing Implementation Success?	24
1. Complementary policies and practices	25
2. Information access	26
3. Leadership and implementation responsibility	26
4. Vendor roles	27
5. Innovation culture	28
6. Similarities among municipalities with and without successful green purchasing policies	29
Five Actions for Municipalities to Advance Green Purchasing	30
1. Build on complementary policies and practices	30
2. Use information about environmentally preferred products	30
3. Assign responsibility to top-level management	31
4. Enhance collaborative vendor relationships	31
5. Participate in professional networks to share best practices	31
Additional Resources and Contacts	32



## Executive Summary

The South Korean Ministry of Environment, Korea Environmental Industry and Technology Institute, Ministry of Economy and Finance, and Public Procurement Service are working collaboratively to promote green purchasing policies across all levels of South Korean government. A primary reason for this action is that green purchasing policies have the potential to significantly reduce carbon impacts across the globe, while helping South Korea achieve its specific 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 full potential to help municipalities mitigate their environmental impacts. These are significant concerns that the United Nations Environmental Programme, the Organization for Economic Co-operation and Development, the Sustainable Purchasing Leadership Council (SPLC), and others suggest must be resolved if South Korea is to move toward an environmentally sustainable economy.

Researchers at Arizona State University's (ASU's) Sustainable Purchasing Research Initiative 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 South Korean municipalities
- Recommend actions for advancing green purchasing practices more effectively
- Encourage South Korean municipalities that lack green purchasing policies to adopt and implement them within their jurisdictions

To accomplish these objectives, researchers in the Institute of Governmental Studies at Korea University, in partnership with ASU's Sustainable Purchasing Research Initiative, conducted a national survey of members of finance, industry, environment, and civil engineering departments in South Korea. The survey generated 243 individual responses from 85 municipalities with 25,000 residents or more. A total of 146 respondents were in the position of director or manager and 97 respondents were team leaders or members, resulting in a total of 243 respondents. These municipalities were representative based on their population size, income, and geographic dispersion by prefecture.

Our results show that 72 percent of directors reported that their municipalities have a green purchasing policy; 7 percent reported they have no policy, and 21 percent did not know if their municipality have such a policy.



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

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

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

### What factors are more strongly related to implementation success?

Of the 72 percent (172 total) of department directors who reported that their municipalities had adopted green purchasing policies, most (66 percent, 114 total) indicated that their municipalities have implemented the policy successfully.

By contrast, 33 percent (58 total) of the department directors considered the implementation of their green purchasing policies to be either “neutral” (neither successful nor unsuccessful) or “unsuccessful.”

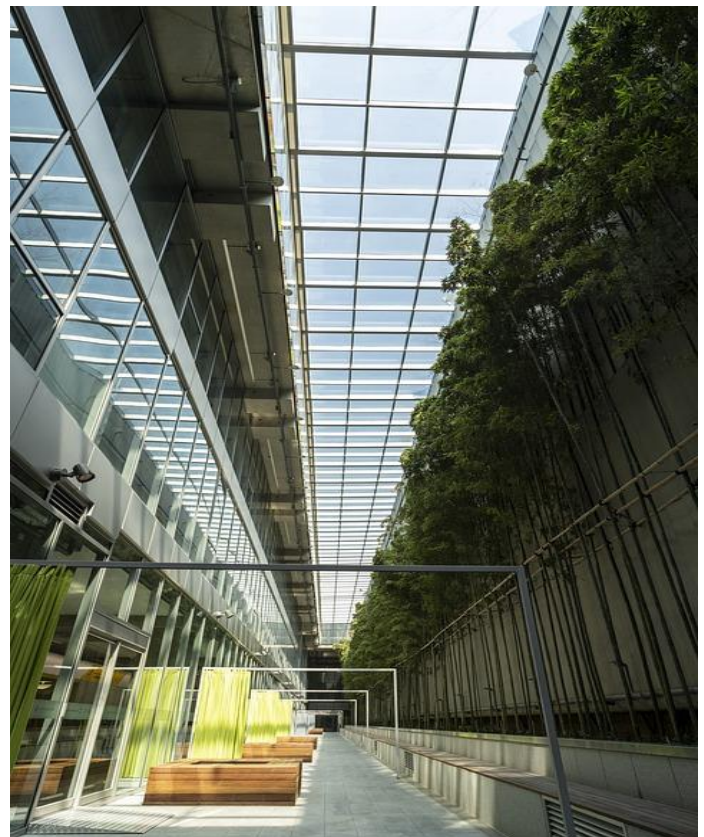
Directors in municipalities who reported successful implementation of their green purchasing policies noted that their departments are more likely to have five general features:

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 five 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
3. Assign responsibility to top-level management
4. Enhance collaborative vendor relationships
5. Participate in professional networks to share best practices



# Acknowledgements

We thank the National Association of Mayors in Korea for their active support in distributing the survey. We also extend thanks to all the South Korean government professionals who participated in the survey.

## Research Collaboration

This report was developed in collaboration with researchers at the Institute of Governmental Studies at Korea University and the Arizona State University's (ASU's) Sustainable Purchasing Research Initiative.

The Institute of Governmental Studies at Korea University is dedicated to educating a new generation of leaders for South Korea. It conducts research efforts such as theory and policy research on public administration. The Institute of Governmental Studies has positioned itself as the representative research institute in the field of public administration in Korea

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.

## Additional Information

To learn more about the Institute of Governmental Studies at Korea University, visit <https://igs.korea.ac.kr/>

For additional information about green purchasing, best practices, project updates and related research papers, please visit ASU's Sustainable Purchasing Research Initiative, <https://sustainability-innovation.asu.edu/spri/>





**Heungsuk Choi** is a professor in the Department of Public Administration at Korea University in South Korea. He completed his Ph.D. in public administration at Syracuse University. His research interests include public management, local administration, e-government, regional and national innovation systems, and government reform.

**Ha-Young Jeon** is a Master's student of public administration at Korea University. Her area of interest includes diversity management in public organizations, intergovernmental organizations, and citizen participation.

**Hyun Joon Kim** is a professor in the department of public administration at Korea University. His research and teaching interests include collaborative public management, performance management, public service design, and digital transformation.

**Hyosook Kim** is an assistant professor at the Seoul School of Integrated Sciences and Technologies. She received her Ph.D. in public administration from Korea University. She is interested in applying systems thinking and modeling to sustainability research.

**Anna Elovitz** is an undergraduate student at ASU's School of Sustainability and W.P. Carey School of Business. She is an intern for the Sustainable Purchasing Research Initiative. Her area of interest includes environmental and economic policy analysis.

**Matthew Dubois** is an undergraduate student at ASU's College of Global Futures where he is pursuing a BS in Sustainability and a minor in Urban Planning.

## Authors

He is particularly interested in topics related to organization sustainability and working with cities to help them advance their sustainable development initiatives.

**Yifan Chen** is a Ph.D. candidate in public administration and policy at ASU. Chen's research interests primarily lie in public management and organization theories. She is particularly interested in topics concerned with e-government, policy adoption and implementation, and sustainability development. Her current work explores the adoption and implementation of sustainability policies in local governments.

**Dr. Nicole Darnall** is Foundation Professor of Management and Public Policy at ASU's School of Sustainability and Director and co-founder of ASU's Sustainable Purchasing Research Initiative (SPRI). Her research examines the factors that facilitate and impede organizations' and individuals' sustainability behaviors. She is an Abe Fellow and an Erasmus Mundus International Scholar. She has served as Collaborative Visiting Fellow with the Economic and Social Research Council (U.K.) and the Social Science Research Council.

**Dr. Justin M. Stritch** is an Associate Professor of Public Administration at ASU, SPRI co-founder, a CORD Affiliate, and Research Fellow at the Local Government Workplace Initiative (LGWI) at UNC-Chapel Hill's School of Government. His research focuses on employee motivation, management, performance and decision-making in public organizations. He applies these topics to a variety of settings, including how organizations can encourage workplace participation in pro-environmental behavior.

**Dr. Stuart Bretschneider** is Foundation Professor of Organization Design and Public Administration at ASU's School of Public Affairs. He is also CORD's Director and SPRI co-founder. His research focuses on innovation in public organizations, the use of information technology and the effects of those technologies on public organizations, and the evaluation of environmental and energy policies. He is founding editor of public management's premier journal.



# Introduction

In 2020, South Korea's government purchasing accounted for 25.7% 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.

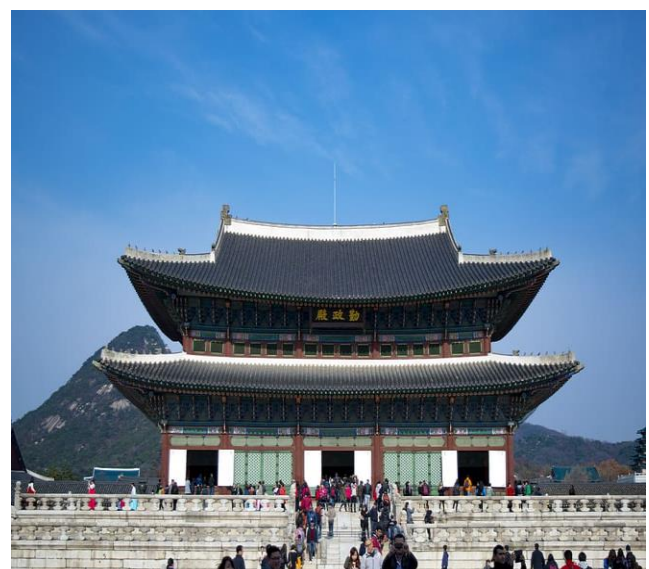
Since green products often are designed with enhanced durability features, green purchasing policies have the potential to reduce consumption, while creating significant market incentives for companies to reconsider their production processes, incorporate environmental principles into their daily business 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 South Korea, the national government has embraced the global call to action for green public procurement by implementing the Act on the Encouragement of Purchase of Environmentally Friendly Products. This policy promotes sustainable consumption and production by increasing demand for eco-labeled products. Adopted in 2005, South Korea's policy requires public institutions to set targets and report the amount of environmentally friendly products purchased.

In 2007, the Korea Environmental Industry and Technology Institute (KEITI) instituted the Green Procurement Information System (GPIS-I). This system provides green purchasing information, including graphs, records, and data reports from public authorities. Additionally, KEITI launched GPIS-II to provide resources to all stakeholders, such as green purchasing guidelines, certified product lists, and best practices by public authorities.

Korea's Act on the Encouragement of Purchase of Environmentally Friendly Products was amended in 2011 to be the Act on the Promotion of Purchase of Green Products. The Minister of Environment is tasked with formulating a master plan for encouraging the purchase of green products every 5 years.





# Project Goals

To enhance green purchasing in South Korean 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 South Korean municipalities***

To achieve this goal, we surveyed 243 directors in finance, industry, environment, and civil engineering departments from 79 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 South Korean 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.



# Research Approach

To achieve our project goals, we first reviewed prior research relating to public purchasing. While prior surveys had assessed sustainability efforts and practices in local governments, they were not specific to green purchasing. Additionally, many green purchasing practices are not applicable to cities that have not adopted a green purchasing policy. 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 that included:

- 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)



The first step in adapting the U.S. sustainable purchasing survey to South Korea was to translate it to Korean. The survey was then adapted to Korean context by adding and deleting some questions accordingly. The survey was distributed online, via email by the National Association of Mayors in Korea. The departmental contacts were managed by the Association and all municipalities represented in the survey are members of this Association. The replies were gathered and delivered by the Association and the researchers coded them into a dataset.

\* 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 and Economic Departments
2. Industry and Trade Departments
3. Environmental Departments

**Finance and Economic Departments:** Directors of finance and economic departments generally have a large role in procurement within a given municipality. Their activities include policy coordination, budget planning, and efficient allocation of national resources. In South Korea, the Ministry of Economy and Finance collaborates to implement sustainable purchasing policies.

**Industry and Trade Departments:** In many South Korean municipalities, the Ministry of Trade, Industry, and Energy has a large role in purchasing. They are responsible for designating certain products for purchase in different governmental organizations. These purchases generally cover a large number of items relating to energy.

**Environmental Departments.** Across South Korean municipalities, environmental departments are generally responsible for a large range of activities that contribute to the purchasing done by the municipality. These activities include public green maintenance, waste management, inspections, remediation, and environmental assessments. Furthermore, they generally have a reasonable understanding of environmental concerns. The Ministry of Environment is responsible for the overall management of sustainable purchasing policies and monitoring the progress of policy implementation.

The departmental contacts were managed by the National Association of Mayors in Korea. Since the Association distributed the survey, all municipalities surveyed were members of the Association. The final sample size was 243 directors in 85 municipalities.





### *Survey administration*

The survey was distributed to department directors via email and contained 39 questions. Three reminders were sent to nonresponding directors. The replies were gathered and delivered by the National Association of Mayors in Korea and the researchers coded them into a dataset.

We received a total of 243 responses from directors from 85 local governments. There were 218 local governments of which the population was greater than 25,000 as of 2020. This was our target population which resulted in a response rate at the municipal level of 39 percent.

A comparison of our sample to the population of South Korean municipalities of 25,000 residents or more (using 2020 data from the official South Korean government data website [www.index.go.kr](http://www.index.go.kr)) indicates that our sample is representative of all South Korean municipalities, based on their total population, location, and mean income.



## 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 South Korean 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 sustainable 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 and Fishers' exact statistical tests, depending on if the datasets were large or small respectively. In order to facilitate comparison between the South Korean 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 South Korean municipalities with asterisks (\*). Our findings offer a preliminary assessment of the factors that facilitate the adoption of green purchasing policies and their implementation success.

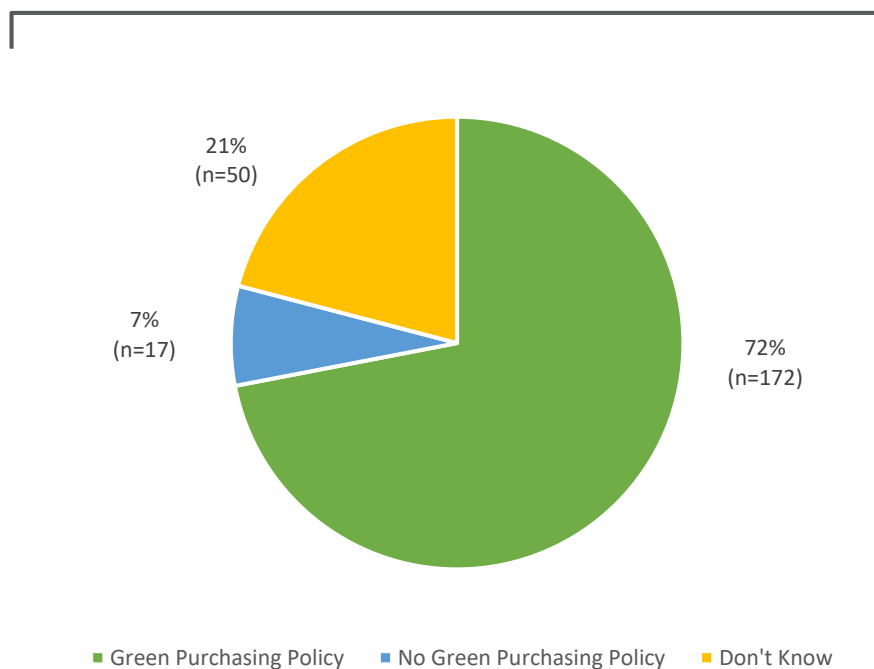


# Green Purchasing in South Korean Municipalities

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).

From those surveyed, the majority (72 percent, n=172) of the department directors in our sample reported that their municipalities have a green purchasing policy (see Figure 1). This compares with 7 percent (n=17) of department directors who reported that their municipalities do not have a green purchasing policy. About 21 percent (n=50) 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.

Figure 1. Green Purchasing Policy Adoption in South Korean Municipalities



# Which Factors Impede or Facilitate Green Purchasing Policy Adoption?

Overall, the survey responses indicate that South Korean 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



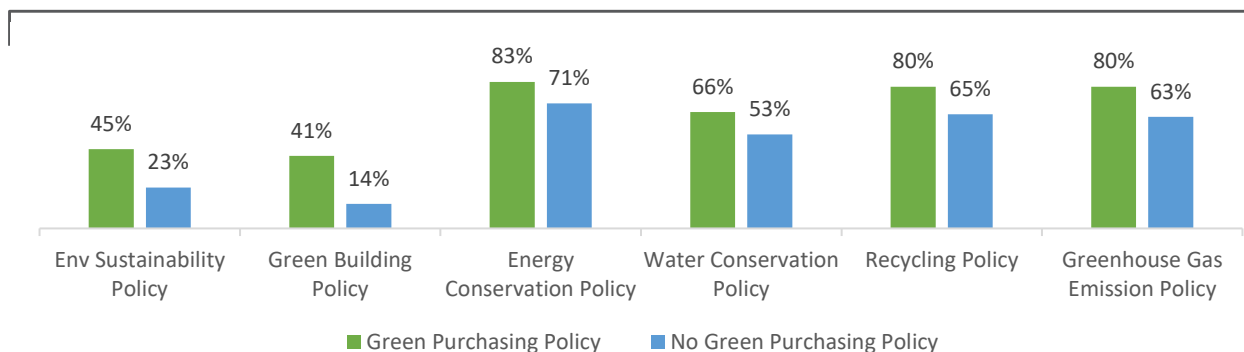
## 1. Complementary policies and practices

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 were also statistically significant for South Korean municipalities.

Figure 2. Municipal-wide Implementation of Complementary Environmental Policies



Our findings show that 45 percent of directors in municipalities with green purchasing policies also have a municipal-wide environmental sustainability policy and 41 percent of directors reported also having a green building policy. This compares to directors in municipalities that lack a green purchasing policy, where 23 percent have an environmental sustainability policy and only 14 percent have a green building policy.

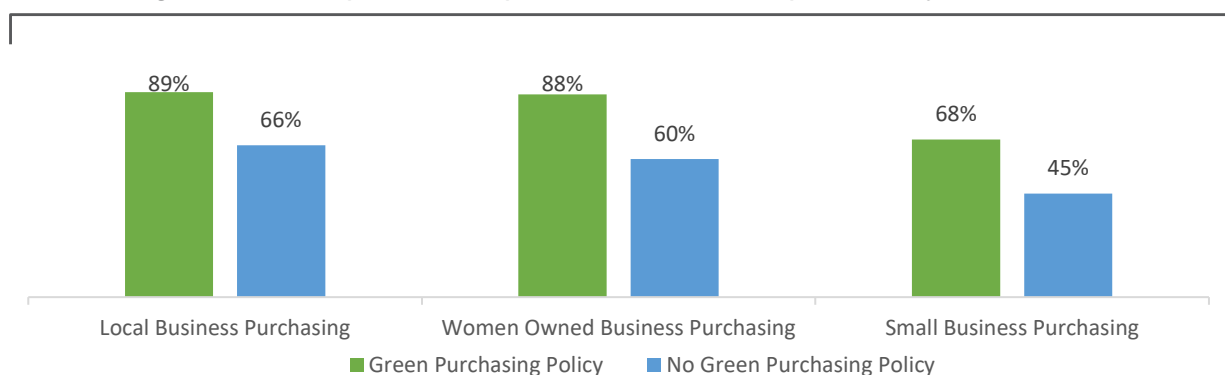
Additionally, 83 percent of directors in municipalities with a green purchasing policy also have an energy conservation policy and 66 percent have a water conservation policy. In comparison, 71 percent of directors in municipalities without a green purchasing policy have an energy conservation policy and 53 percent have a water conservation policy.

When considering municipalities' implementation of a recycling policy, 80 percent of department directors in municipalities with green purchasing policies reported that their municipalities have a recycling policy, compared with 65 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 63 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, all of which were also statistically significant for South Korean municipalities. 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 66 percent of directors in municipalities without a green purchasing policy.

Figure 3. Municipal-wide Implementation of Complementary Social Policies



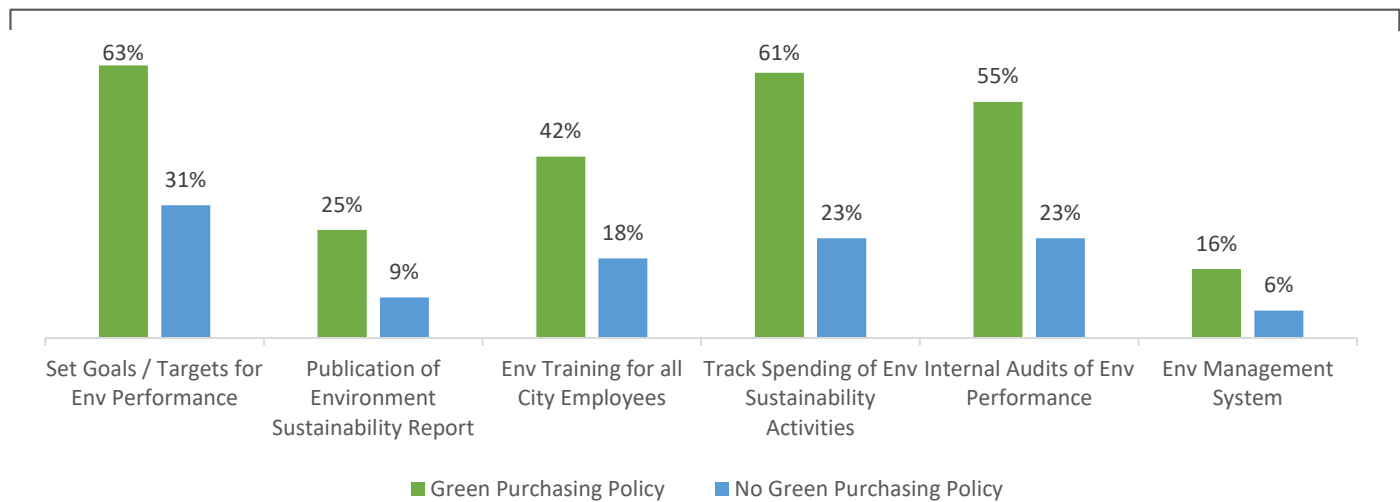
Of directors with a green purchasing policy, 88 percent indicated the presence of a purchasing policy to increase purchases from women-owned businesses, whereas 60 percent of the directors without a green purchasing policy had a similar policy. Additionally, 68 percent of directors in municipalities with green purchasing policies have a small business purchasing policy, compared to 45 percent of directors 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 in the



U.S. survey, again all of which were also statistically significant for South Korean municipalities.

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. Nearly two-thirds (63 percent) of directors in municipalities with green purchasing policies also report having goals/targets for environmental performance. 25 percent of directors also publish an environmental sustainability report. This compares with 31 percent and 9 percent (respectively) of municipalities without a green purchasing policy. Additionally, 42 percent of department directors in municipalities with green purchasing policies have municipal-wide environmental training for all municipal employees, compared with 18 percent of directors in municipalities without a green purchasing policy.

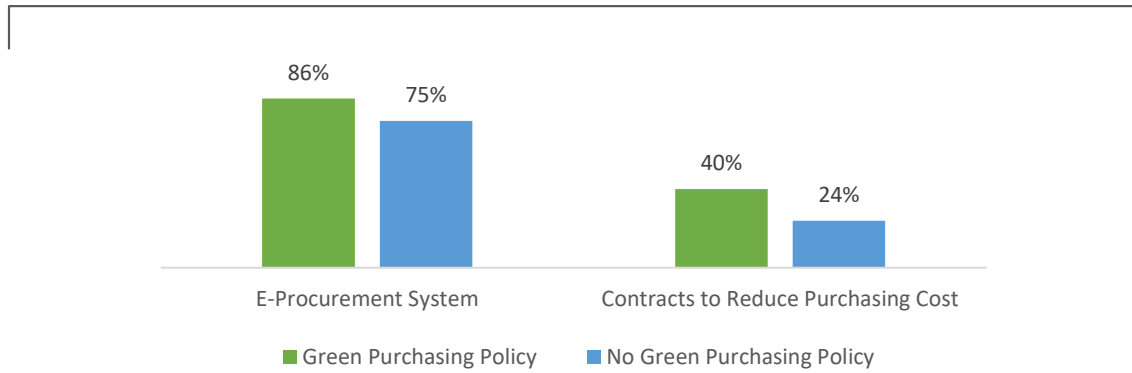
About 61 percent of directors in municipalities with green purchasing policies reported having municipal-wide practices that track spending of environmental activities, compared with 23 percent of directors in municipalities without a green purchasing policy. Similar patterns are seen for department directors' reported use of internal audits of environmental performance 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 policy. 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 (see Figure 5). 40 percent of directors in municipalities with green purchasing policies reported that they use these types of cost-reduction contracts as compared to 24 percent of directors in municipalities without green purchasing policies.

Figure 5. Municipal-wide Implementation of Complementary Purchasing Activities



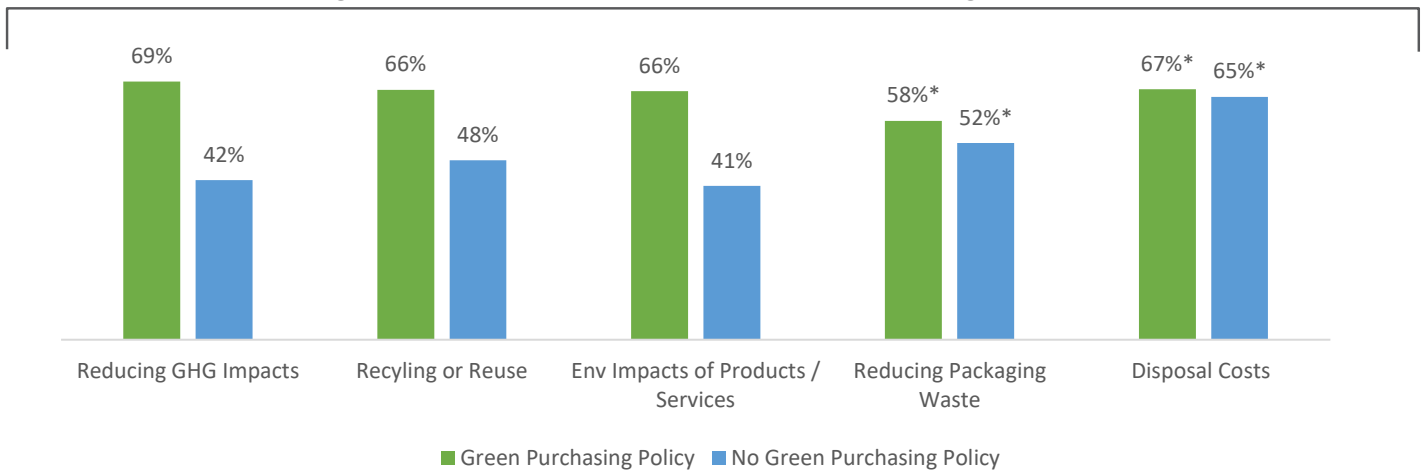
In sum, directors in municipalities with green purchasing policies reported having more complementary policies and practices than directors in municipalities without green purchasing policies. However, the rate of adoption of these complementary policies and practices is only moderate, even in municipalities 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 two-thirds (69 percent) of directors in municipalities with a green purchasing policy reported that reducing greenhouse gas (GHG) impacts, recycling or reuse (66 percent), and environmental impacts of products/services (66 percent) were “Important” or “Very Important” purchasing criteria, compared with 42 percent, 48 percent, and 41 percent of directors in municipalities without green purchasing policies.

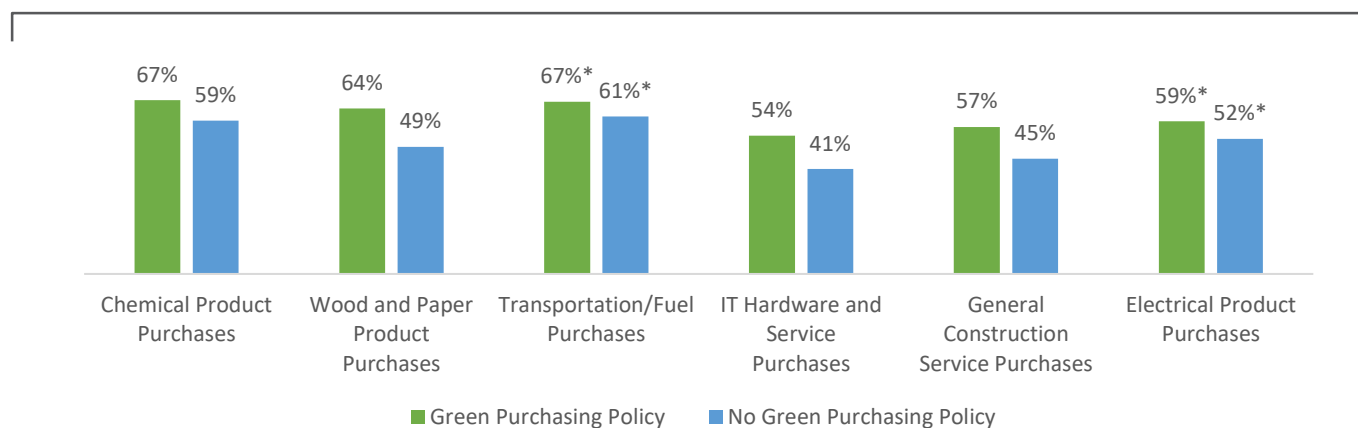
Figure 6. Importance of Departments’ Purchasing Criteria



A similar percentage of department directors (58 percent) in municipalities with green purchasing policies stated reducing packaging waste is an “Important” or “Very Important” purchasing criterion as did directors in municipalities without green purchasing policies (52 percent). The responses for criteria related to disposal costs conveyed a similar finding. This indicates that criteria for reducing packaging waste and disposal costs are not statistically different for directors in cities with and without green purchasing policies. **These results, analyzed with the Chi-Square Test, were found to be not statistically significant and are marked with an asterisk (\*).**

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



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 59 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: 64 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 49 percent of department directors without a green purchasing policy.

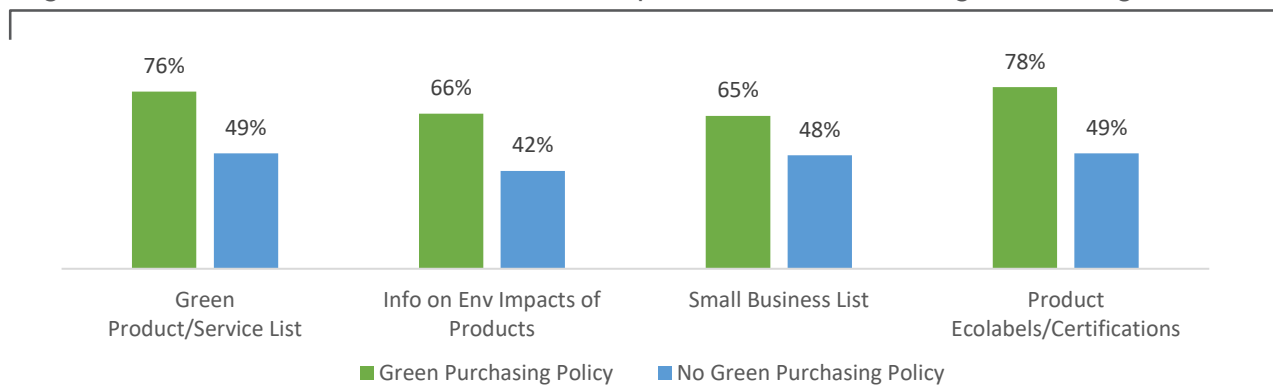
One observation about these findings (Figures 6 and 7) is that for municipalities with a green purchasing plan, between 54 and 69 percent report their purchasing decisions are based on some type of environmental criteria. This compares to between 41 and 65 percent of municipalities without a green purchasing plan. 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 76 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 49 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, two-thirds of directors (66 percent) in municipalities with green purchasing policies reported that when making purchasing decisions, access to information about the environmental impacts of products is available, while only 42 percent of directors in municipalities without green purchasing policies reported access to this information. Similarly, 65 percent of directors in municipalities with green purchasing policies have access to a small business list and 78 percent have product ecolabel/certification information available when making purchasing decisions. This compares to 48 percent and 49 percent of directors in municipalities without a green purchasing policy.

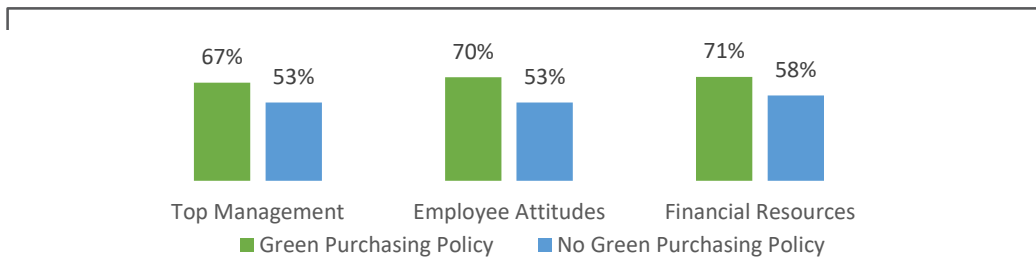
These findings suggest that directors in municipalities with green purchasing policies have greater access to environmental information sources when making purchasing decisions than municipalities without a green purchasing policy.

### 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?"* About two-thirds of directors (67 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

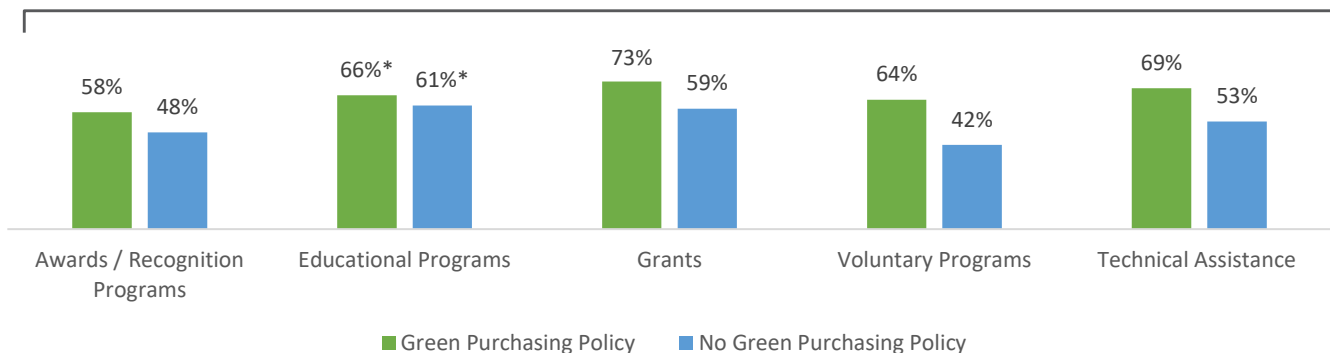


This compares with 53 percent in municipalities without a green purchasing policy. 70 percent of directors in municipalities that have a green purchasing policy report that employee attitudes “Facilitate” or “Strongly Facilitate” their ability to implement green purchasing. This value compares to 53 percent of those directors whose municipalities do not have a green purchasing policy.

Finally, 71 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 half (58 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 with 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.

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



Over half of directors (58 percent) in municipalities with green purchasing policies reported that awards/recognition programs are important in promoting their municipality’s environmental sustainability, compared with 48 percent in municipalities without green purchasing policies.

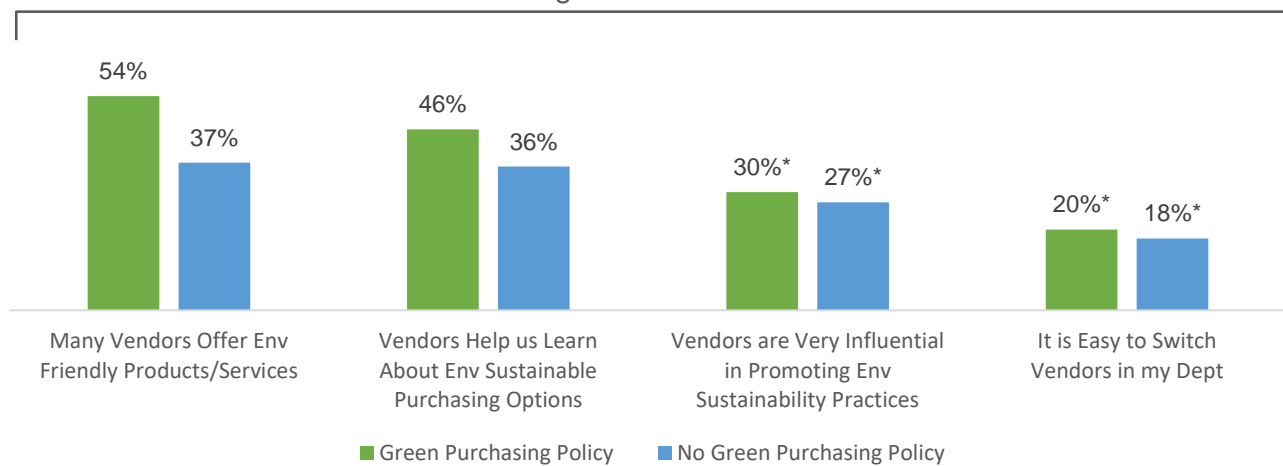
73 percent of directors in municipalities with green purchasing policies reported that grants are important to promoting their municipalities’ environmental sustainability, and 59 percent of directors in municipalities without green purchasing policies reported the same. Similar patterns are seen with respect to the importance of voluntary programs and technical assistance in that directors in municipalities with green purchasing policies reported that these federal/state programs have greater importance in promoting their municipality’s environmental sustainability, compared with the responses of directors in municipalities without green purchasing policies. However, the importance of educational programs in promoting environmental sustainability was shown to be statistically insignificant for South Korea.

## 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 54 percent of directors in municipalities with green purchasing policies “Agree” or “Strongly Agree” that many vendors offer environmentally friendly products/services, compared to 37 percent of directors from municipalities that lack a green purchasing policy, and who answered the same (see Figure 11). Related to our results on whether vendors are very influential in promoting environmental sustainability practices and whether or not it was easy to switch vendors was statistically insignificant for South Korean municipalities.

Figure 11. Vendor Roles



However, 46 percent of directors in municipalities with green purchasing policies “Agree” or “Strongly Agree,” compared with 36 percent of directors in municipalities without green purchasing policies that vendors help them learn about sustainable purchasing options. 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.

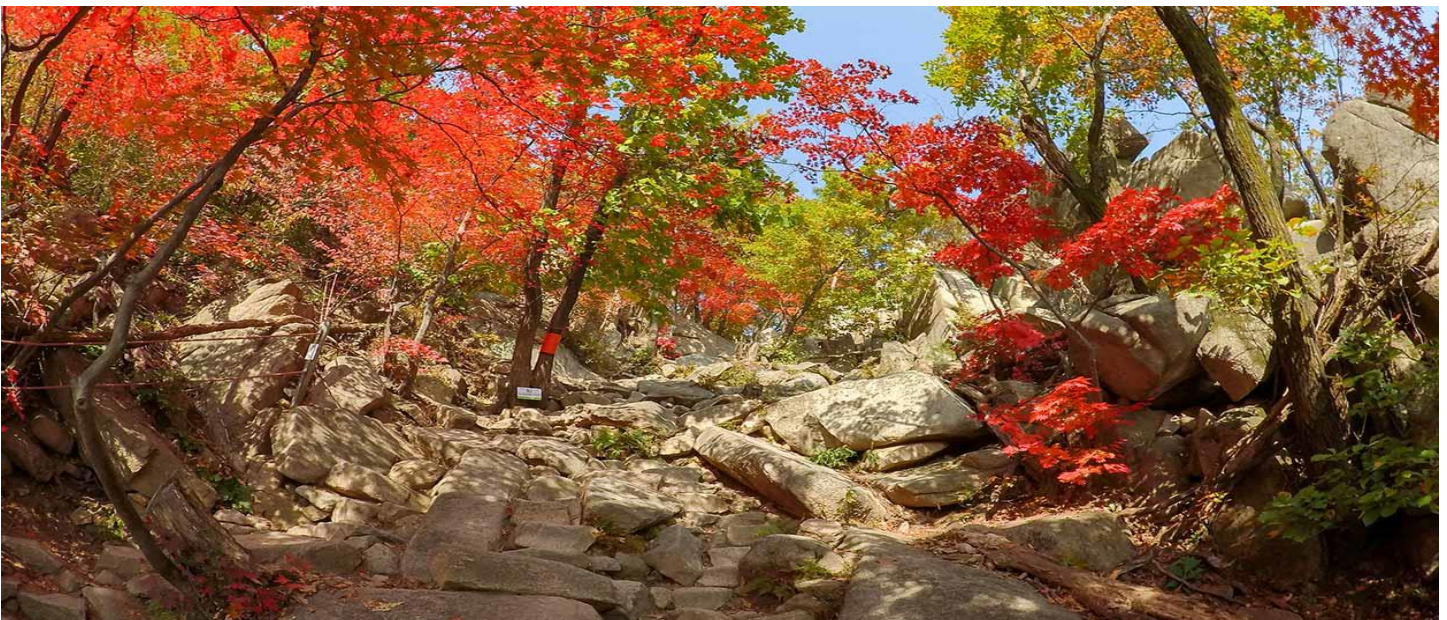
These similarities parallel the U.S. findings. They include their municipality's use of purchasing criteria related to:

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

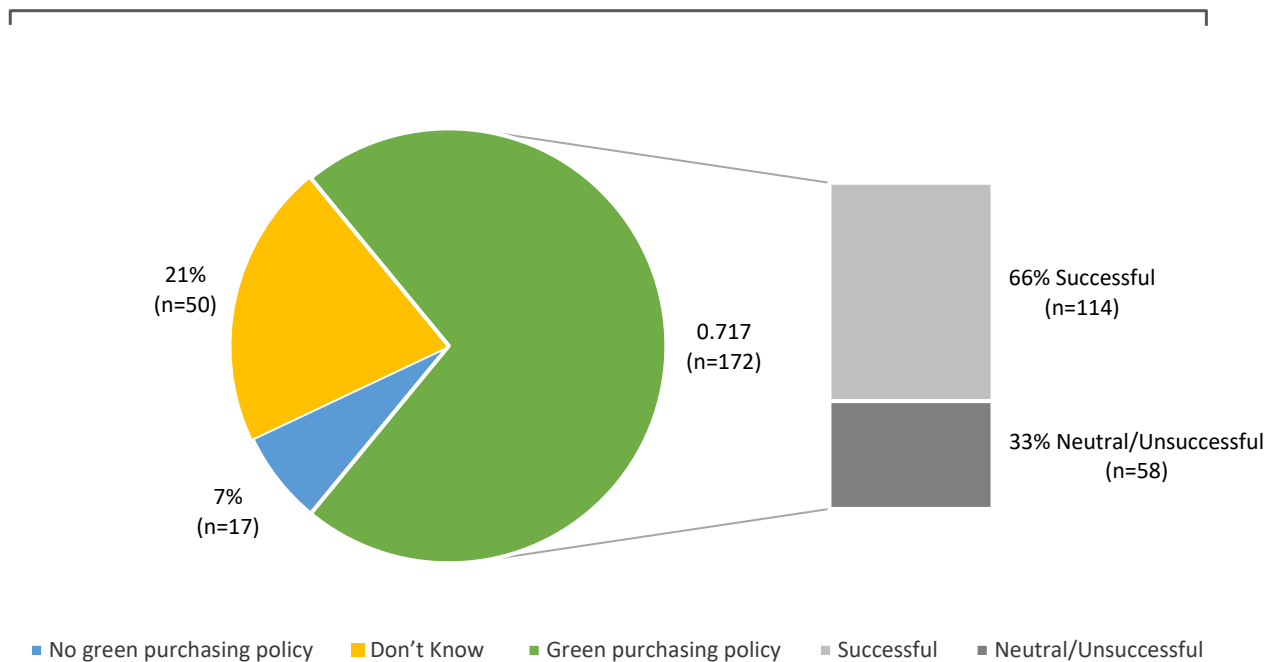
These results suggest that, as in the U.S., South Korean department directors perceive that their municipality's general administrative environment (e.g. rule formalization, bureaucratization and degree of entrepreneurship) and traditional procurement criteria are the same, regardless of their municipality's 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 72 percent (172 total) of department directors who reported that their municipalities have adopted a green purchasing policy, most (66 percent, 114 total) indicated that their policy is “Successful.” About 33 percent (58 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 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

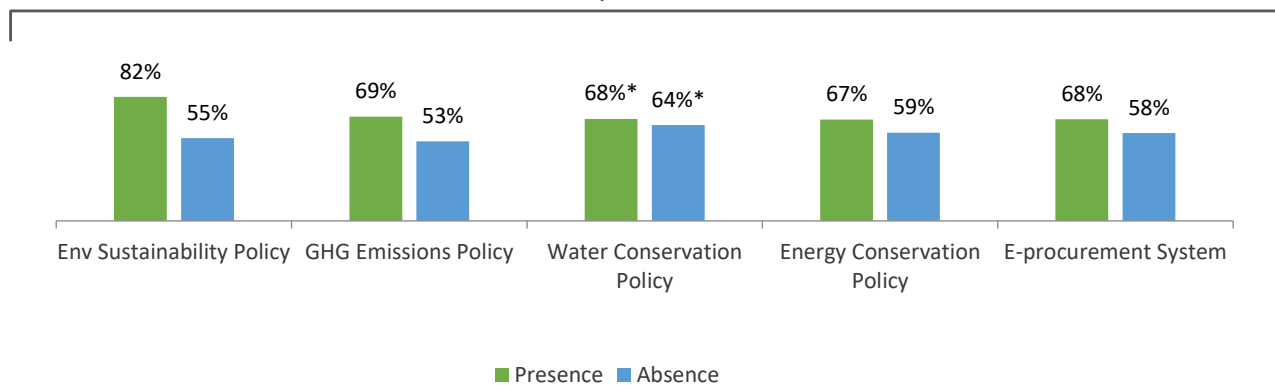


### 1. Complementary policies and practices

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.

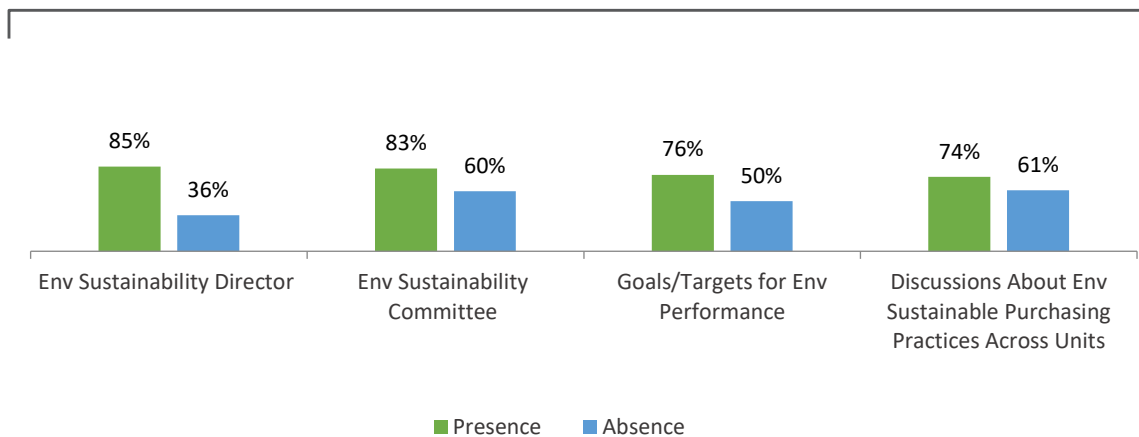
For directors who indicated that the green purchasing policies in their municipalities were successful, we compared them based on whether the municipality had or had not implemented complementary policies. Our findings show that, in general, directors in municipalities that have specific complementary 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 more likely (82 percent) to lead to green purchasing success than if a municipality does not have such a policy (55 percent). Another way to say this is that municipalities with municipal-wide environmental sustainability policies are 49 percent more likely to be successful at implementing their sustainable purchasing policies. Similar results are found when municipalities have a GHG emissions policy, energy conservation policy, and an e-procurement system. The presence of these municipal-wide policies is correlated with increased successful implementation of green purchasing policies. However, the results relating to the presence of a water conservation policy was found to be not statistically significant for South Korea.

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

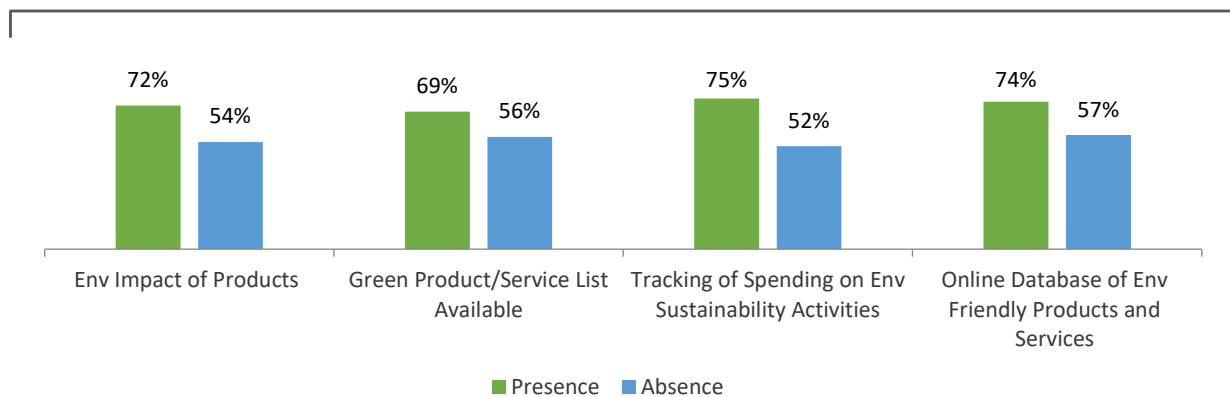


Directors' reported perceptions of the successful implementation of their municipalities' green purchasing policy success are similarly conditioned on complementary practices (see Figure 14). That is, having an environmental sustainability director appears to be relatively more important than other activities. For instance, our survey results show that the presence of an environmental sustainability director increased the probability of the successful implementation of a green purchasing policy from 36 percent to 85 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, although these increases were smaller than in the presence of having an environmental sustainability director.

## 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 54 percent to 72 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

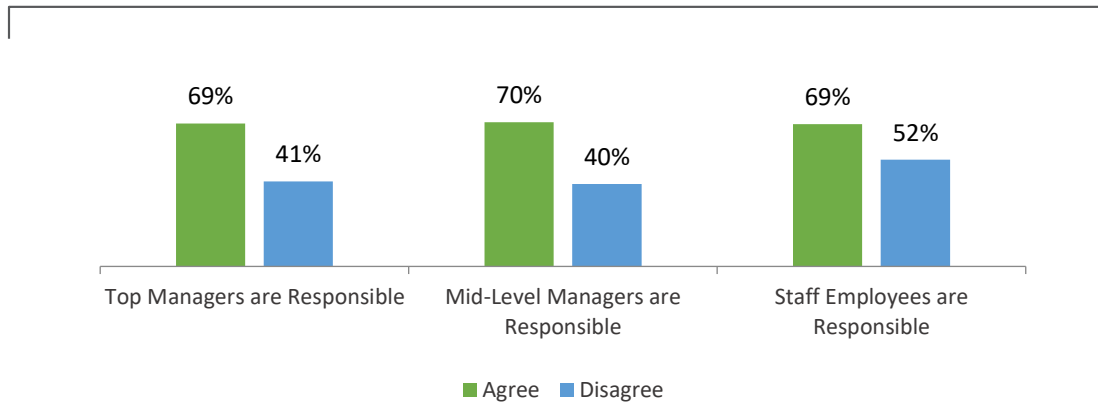


Even though access to information sources is relevant to the implementation success of green purchasing policies, between 65 percent and 78 percent of the municipalities with a green purchasing policy have access to these information resources (see Figure 8). Combined, these findings suggest that access 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 successful implementation of a green purchasing policy to 69 percent, compared with 41 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.

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



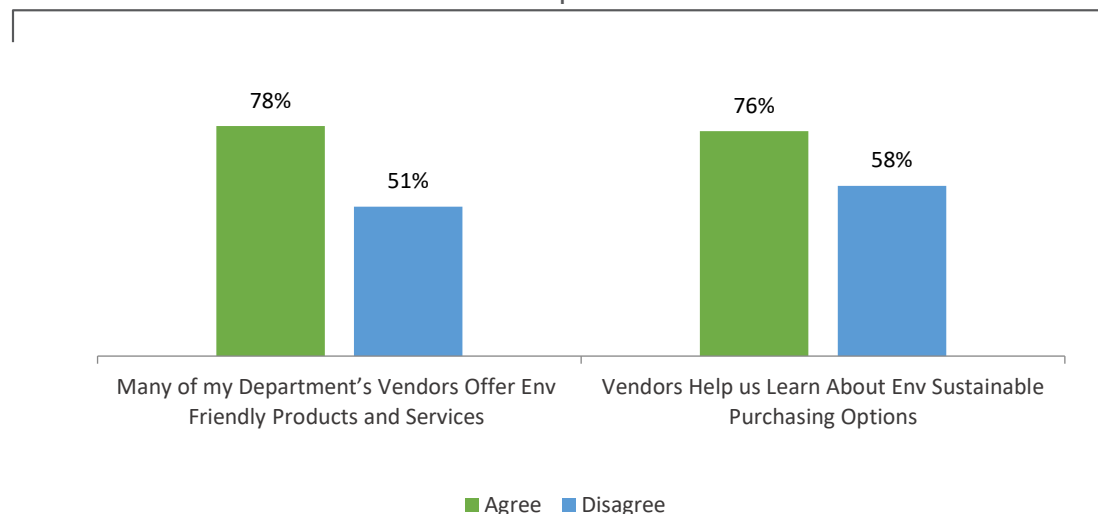
#### 4. Vendor roles

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 city's successful implantation 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 78 percent, compared with 51 percent when directors "disagree" with the notion that vendors offer environmentally friendly products and services.

Additionally, directors who reported "agreement" that vendors help a municipality learn about environmentally sustainable purchasing options have a probability of green purchasing policy implementation success of 76 percent, compared with 58 percent when directors "disagree" that vendors help a municipality learn.

These findings point to the potential importance of collaborative relationships with vendors. Cities with green purchasing policies tend to regard their vendors more as collaborators when it comes to implementing their green purchasing programs.

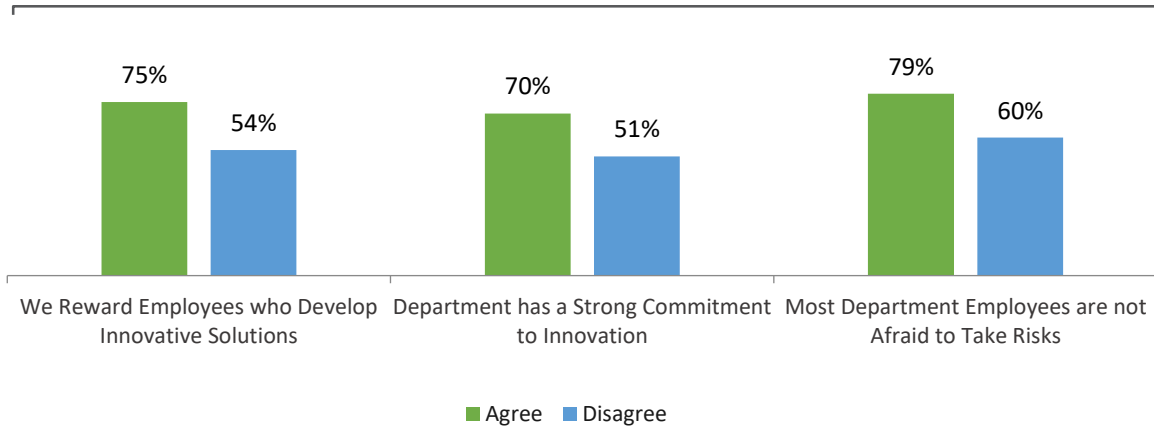
Figure 17. Probability of Successful Implementation of Green Purchasing Policy, Given Directors' Perceptions of Vendor Roles



### 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 75 percent probability of implementation success, compared with 54 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 70 percent probability of implementation success, compared with 51 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.

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
- Levels of bureaucracy
- Environmental pressures exerted by internal or external stakeholders



# Five Actions to Advance Green Purchasing in South Korean Municipalities

Our preliminary analysis of the survey data underscores several key facilitating factors for green purchasing adoption and implementation success in South Korean municipalities. We offer five actions to advance green purchasing in South Korean municipalities, which parallel the findings in the U.S. study. These recommendations are applicable to both South Korean 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*

Over one-fourth 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 some complementary policies and programs such as GHG emissions policies, water conservation policies and energy conservation policies. In other instances, municipalities have set goals/targets for environmental performance. All 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 South Korean 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.

## 2. *Use information about environmentally preferred products*

Even for simple decisions, information is critical to the decision-making process. Directors in municipalities with green purchasing policies experience some success with their green purchasing activities, and roughly two-thirds of directors reported that they have access to environmental information for the implementation of these policies. Such information includes access to green product and services lists, product ecolabels/certifications, and online databases of environmentally friendly products and services. Based on our findings, access to this information does contribute to a more successful green purchasing policy. In the absence of this information, the implementation of municipalities' green purchasing activities is constrained.

Environmental labels and certifications are already a main component of the Act on Promotion of Purchase of Green Products, which explains why municipalities with green purchasing plans were more likely to use them in decision making. Since the infrastructure of environmental labels, product declarations, and certifications is already available, South Korean municipalities are at a unique advantage to base purchasing criteria on the environmental impact of the products and services. Although this information is available during the purchasing process through South Korea's e-procurement system, only 42 to 78 percent of directors surveyed reported that this information was available when making purchasing decisions. Local governments are not mandated to use South Korea's Public Procurement Service (PPS) to manage purchases. The utilization of PPS and the Korean Online E-Procurement System (KONEPS) may enhance municipalities' access to more green procurement opportunities.



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

Our results underscore the importance of top-management responsibility to the adoption of green purchasing policies. In South Korea, department directors indicate that financial resources and employee attitudes are more important to their ability to implement green purchasing than top-management involvement. Leadership resolve in the adoption and implementation of green purchasing policies will build momentum and commitment. Top-level management plays a crucial role in the culture of sustainability within a municipality and our results indicate that top managers can assume more responsibility for their municipalities' successful implementation of green purchasing. 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.

### 4. *Enhance collaborative vendor relationships*

Our findings point to several ways in which vendors may facilitate municipalities' adoption of green purchasing policies and increase the probability of implementation success. Given the complexity associated with green purchasing, as well as the fact there are a limited number of green product options, vendors can serve as useful partners in facilitating the success of cities' green purchasing policies. Vendors have the potential to educate municipalities about green purchasing options. They can also create avenues for cities to increase their environmentally friendly purchasing.

In South Korea, our findings suggest that the role of vendors has a similar importance in municipalities with and without green purchasing policies. Enhancing these vendor relationships would improve the successful implementation of green purchasing policies and encourage the adoption of green purchasing policies. Specifically, our results indicate that vendors in South Korea can improve their educational resources and take advantage of the influence they have in purchasing processes. Vendors can assume more responsibility for their role in successfully implementing green purchasing policies and provide municipalities with more information about and access to sustainable products.

### 5. *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 International Green Purchasing Network (IGPN), Korea Environmental Industry and Technology Institute (KEITI), Local Governments for Sustainability (ICLEI), and the Global Lead City Network on Sustainable Procurement (GLCN) 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 <https://sustainability-innovation.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

## Contacts

### ***Hyun Joon Kim***

Professor, Department of Public Administration  
Korea University  
Faculty Affiliate, Sustainable Purchasing Research Initiative  
Arizona State University  
Email: [joon@korea.ac.kr](mailto:joon@korea.ac.kr)

### ***Nicole Darnall***

Foundation Professor, School of Sustainability  
Director and Co-Founder, Sustainable Purchasing Research Initiative  
Arizona State University  
Email: [ndarnall@asu.edu](mailto:ndarnall@asu.edu)

### **Please cite this report as:**

Choi, H., H.J. Kim, H.A. Jeon, H. Yim, A. Elovitz, M. Dubois, Y. Chen, N. Darnall, J.M. Stritch, and S. Bretschneider. 2022. *Advancing Green Purchasing in South Korean Municipalities*. Department of Public Administration of Korea University and Arizona State University, Sustainable Purchasing Research Initiative.





Please cite this report as:

Choi, H., H.J. Kim, H.A. Jeon, H. Yim, A. Elovitz, M. Dubois, Y. Chen, N. Darnall, J.M. Stritch, and S. Bretschneider. 2022. *Advancing Green Purchasing in South Korean Municipalities*. Arizona State University, Sustainable Purchasing Research Initiative.