



# Franklin & Marshall Sustainability Master Plan 2012

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## Contributors to the Sustainability Master Plan

### *Faculty*

*Linda Aleci*, Associate Professor of Art History

*Zachary Biles*, Associate Professor of Classics

*Nancy Kurland*, Assistant Professor of Business, Organizations and Society

*Carl Pike*, Professor of Biology

*Keely Maxwell*, Assistant Professor of Environmental Studies

*Rob Sternberg*, Bonchek College House Don and Professor of Geosciences

*Bryan Stinchfield*, Assistant Professor of Business, Organizations and Society

*Wendell Ressler*, Associate Professor of Mathematics

*Carol deWet*, Associate Dean of the Faculty

### *Administrators*

*David Proulx*, Vice President for Finance and Administration and Treasurer

*Barry Bosley*, Associate Vice President for Administration

*Maria Cimilluca*, Associate Vice President for Facilities Management and Campus Planning (Former)

*Sarah Dawson*, Wohlsen Center Director

*Kevin Dean*, Sodexo Dining Service General Manager

*Roger Godin*, Associate Dean and Prefect of Brooks College House

*Shawn Jenkins*, Special Assistant to the Dean of the College for Strategic Projects

*Keith Orris*, Vice President for Administrative Services and Business, Government, and Community Relations (Former)

*Kent Trachte*, Dean of the College

*Suzanna Richter*, Wohlsen Center Associate Dean and College House Prefect

*Thomas Simpson*, Millport Liaison/ Sustainability Coordinator

*Mike Wetzel*, Associate Vice President for Facilities Management and Campus Planning

*Mark Newkirk*, Director of Finance

### *Students*

*Sarah McGahran '13*

*Nicholas Auwaerter '11*

*David Faich '12*

*Elena Lopez '12*

*Nora Theodore '13*

### *Consultant Assistance:*

Environmental Resources Management, Exton, PA

Ayers Saint Gross, Baltimore, MD

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## Executive Summary

This Sustainability Master Plan is a sustainability vision for Franklin & Marshall College (F&M), a status report on the College's sustainability efforts, and an implementation plan for achieving the Plan's vision.

In 2010, F&M created a Sustainability Task Force (STF) and charged it to develop a Sustainability Master Plan for the College. The STF defined "sustainability" as follows:

Actions on the parts of individuals and institutions might be judged sustainable if

- There is a balance between resources used and resources regenerated.
- Resources are as clean or cleaner at end use as at beginning.
- The viability, integrity, and diversity of natural systems are restored and maintained.
- They enhance local and regional self-reliance.
- They help create and maintain community and a culture of place.
- Each generation preserves the legacies of future generations.<sup>i</sup>

Given current environmental, economic, and social challenges facing the globe, governments, businesses, and institutions are examining their patterns of consumption, seeking to enhance their local and broader environment, and to minimize their negative impacts.

Universities and colleges are uniquely positioned to cultivate responsible residents who have the ability to catalyze a transformative path towards global sustainability because they are a nexus of information—not just for those who work and study within their walls, but also for residents in the communities that surround them. Collaborative learning among all stakeholders who live within an ecosystem is integral to effective sustainability progress.<sup>ii</sup>

Therefore, sustainable initiatives at Franklin & Marshall should serve two populations: the entire F&M community (including students, professional staff, and faculty) and, through the efforts of a sizable subset of campus constituents, the broader Lancaster region.

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<sup>i</sup> Adapted from David McCloskey, Professor of Sociology, Seattle University.

<sup>ii</sup> Molnar, Ritz, Heller, and Solecki. (2011). Using Higher Education-Community Partnerships to Promote Urban Sustainability. Science and Policy for Sustainable Development; Pittman. (2004); "Living Sustainably Through Higher Education: A Whole Systems Design Approach to Organizational Change," in C. a. Wals, Higher Education and the Challenge of Sustainability: Problematics, Promise, and Practice. Kluwer Academic Publishers.

STF identified the following vision for the Sustainability Master Plan:

*Franklin & Marshall College will become a leader in sustainability.*

F&M is increasingly considering sustainability in its decision-making, but not within the construct of a common vision and plan. The Sustainability Master Plan provides this common vision by identifying clear Goals and Strategies in nine focus areas:

- Energy
- Water
- Built Environment
- Transportation
- Education and Outreach
- The Food System
- Solid Waste
- Campus Landscape
- Procurement

Each focus area section of the Sustainability Master Plan includes an introduction to the topic as it relates to F&M, background information on F&M's past and current practices, key challenges and opportunities, and Goals and Strategies designed to address the challenges. The Sustainability Master Plan's Goals are broad-ranging, but they focus, generally, on:

**Resource use reduction.** Examples include reducing fossil fuel use in the campus fleet; reducing the solid waste generated on campus; and reducing water use.

**Increased efficiency of resource use.** Examples include optimizing energy use in buildings, maximizing use of existing facilities and infrastructure.

**Use of renewable resources.** Examples include obtaining at least 80% of the college's energy needs through college-owned or leased renewable sources; integrating waste management and recycling components into new building design and remodeling.

**Minimizing impacts to the environment.** Examples include achieving a 100% reduction of carbon emissions below the 2007 carbon baseline by 2030 and a 100% containment of storm water by 2030.

**More sustainable supply chains.** Examples include increasing procurement of locally grown and responsibly produced foods, developing purchasing policies around environmental impacts (including waste), labor standards, local sourcing, and minority/women owned businesses.

**Education and outreach.** Examples include cultivating a campus community with a deeply rooted environmental ethic; creating an online presence for F&M's sustainability initiatives.

Table ES-1, at the end of this Executive Summary, lists all the Plan's Goals and Strategies.

### *Challenges*

F&M must address several challenges to achieve the vision of the Sustainability Master Plan.

- The Campus Master Plan includes a 30% increase in building square footage through 2030. The challenge is to realize this increase while reducing energy and environmental impacts of that growth and meeting F&M's commitments under the American College and University Presidents' Climate Commitment.
- Using renewable energy sources. The College developed its first Greenhouse Gas (GHG) inventory in FY 2007. This showed that 80% of the College's GHGs came from the consumption of fossil fuel-based energy. With the College's current energy load profile, renewable energy sources cannot fully meet this demand.
- Meeting the high cost of sustainable construction. F&M's current policy is to build or renovate to the US Green Building Council's Leadership in Energy and Environmental Design (LEED) Silver building standard. This requires significant upfront costs and has long-term paybacks.
- When considering ways to effectively support the local food economy and to increase the consumption of sustainably produced foods, the food needs, desires, and interests of a diverse campus population must be considered.
- Effecting change will require behavioral changes in the College community and prioritization by the College reflected in resource allocation, policies and campus culture.

### *Implementation*

Section 3 of the Plan (Implementation) proposes a 12-member Sustainability Committee (SC) to oversee and guide the College's sustainability efforts including monitoring progress on implementation of the Sustainability Master Plan. The SC would consist of faculty, professional staff, and student representatives, and would:

- Advise the College president regarding sustainability issues,



- Make recommendations for changes in college practices that will reduce its impact on the natural environment,
- Research and initiate specific sustainability projects,
- Communicate the progress F&M is making in campus sustainability and environmental citizenship,
- Be empowered to form working groups as needed to achieve the goals of the Sustainability Master Plan,
- Undertake the periodic review and update of the Sustainability Master Plan as needed, and
- Ensure that the Plan's goals, strategies, and tactics continually reflect best practices and the most up-to-date scholarship / science relevant to achieving them.

To ensure long-term management success, the Sustainability Master Plan recommends that by 2014 the SC evaluate the creation of a dedicated position (Chief Sustainability Officer) responsible for the on-going oversight of the Plan and all sustainability efforts at F&M.

### *Cost and Funding*

Implementing the Sustainability Master Plan will require an investment of financial and human resources. The estimated cash outlay to achieve the goals of the Sustainability Master Plan is as follows:

Phase I (FY13 - FY18): \$1 million - \$3 million

Phase II (FY18 - FY23): \$2 million - \$4 million

Phase III (FY23 - FY29): \$500,000 - \$1 million

Phase IV (FY30 and beyond): > \$5 million

Funding is proposed to come from several sources:

- 1) Existing budgets already allocated to sustainability projects. For example, Facilities and Operations spend thousands of dollars each year to convert existing equipment and systems to more sustainable solutions. An example is the ongoing effort to convert incandescent lighting to fluorescent or LED lighting.
- 2) \$1 million to \$2 million of existing cash reserves to use as a revolving fund. This fund would be overseen by the Sustainability Committee and the Vice President for Finance and

Administration. Investments would come from this fund and would be replenished from savings achieved from the specific investments. This concept requires review by the Budget Priorities Committee and approval by the President and the Board of Trustees.

- 3) Current use and income from endowment gifts. Many of the projects and concepts described in the Sustainability Master Plan may be attractive investments for donors. The Sustainability Committee needs to work with College Advancement to identify fundraising possibilities.
- 4) Grants. Federal, state, local and private agencies provide many opportunities for funding. The Sustainability Committee needs to work with the Office of College Grants to match Sustainability Master Plan projects with potential external funding opportunities.

The Sustainability Committee will need to monitor project costs and funding. Tactics, Strategies and Goals may need to be altered if funding is available or if opportunities arise at times not originally planned.

### *Conclusion*

The F&M Sustainability Master Plan is a carefully considered, measured response to the difficult, complex issues that F&M faces with regards to sustainability. F&M is a caring, committed community and is well-positioned to overcome its sustainability challenges. Sustainability is a journey and the route will need to be continuously reviewed and re-evaluated.

The proposed Sustainability Committee structure provides a forum that will allow the Sustainability Master Plan to evolve in response to changing knowledge. The Committee's management oversight is designed to ensure the Sustainability Master Plan is implemented successfully.

### **Table ES-1 Sustainability Master Plan Goals and Strategies Summary**

The Sustainability Master Plan's Goals and Strategies are organized by Focus Area and prioritized into four Phases. The first three Phases (years 1-5, 6-10 and 11 - 15) include the Goals and Strategies determined to be of the highest priority based on prioritization exercises

and discussions with the Sustainability Task Force as well as student input from the Diplomatic Congress and Environmental Action Alliance. Phase 4 consists of longer term Goals and Strategies that will be re-evaluated for prioritization periodically. For example, as priorities change, a strategy in Phase 4 could “move up” into Phase 1, 2, or 3.

Goals and Strategies are defined follows:

**Goal**            A measurable endpoint or ultimate desired condition for a particular topic or item to which effort is directed.

**Strategy**        A specific intermediate step/plan to reach the goal.

The Table provides additional information for each, where applicable, to help F&M make decisions regarding implementation:

- Relative cost for implementation: low (< \$25,000), medium (\$25,000 - \$100,000), high (\$100,000 - \$500,000), very high (>\$500,000)
- Return on Investment; the estimated amount of time before F&M would recover the cost on its capital investment in a project: < 3 years, 3 – 5 years, 5 – 10 years or greater than 10 years.

Associated with each goal and strategy are Tactics (action items), defined as “specific methods/activities implemented to support the strategy and ultimately meet the goal”. The Sustainability Master Plan identifies approximately 200 tactics. These are not listed in Table ES-1 but are included in Section 3.2 of the Sustainability Master Plan (Plan Implementation) along with information regarding cost, return on investment, potential benefits, and group, organization or person responsible for implementation.



**TABLE ES-1**

**SUSTAINABILITY MASTER PLAN GOALS AND STRATEGIES SUMMARY**

Goal/Strategy	Cost: (low (0 - \$25,000), medium (\$25,000 - \$100,000), high (>\$100,000), very high (>\$500,000)).	Return on Investment	Phase 1 (FY13-FY18)	Phase 2 (FY18-FY23)	Phase 3 (>FY23)	Phase 4
<b>Energy and Transportation (Energy)</b>						
G1: Achieve a 100% reduction of carbon emissions below the 2007 carbon baseline by 2030.	very high	-				
S1: Optimize energy consumption through best practices, procedures, policies, investments and initiatives, with targeted reduction of 15% in energy consumed by 2020 and 25% by 2030.	high	1-5				
S2: Evaluate options for achieving carbon neutrality based upon achieving energy optimization.	medium	-				
G2: Obtain at least 80% of college’s energy need through college owned or leased renewable sources by 2030.	very high	5-10				
S1: Evaluate potential to obtain 100% of energy needs through renewable resources and develop appropriate renewable energy implementation plan.	medium	3-5				
<b>Energy and Transportation (Transportation)</b>						
G1: Reduce fossil fuel consumption in campus fleet.	medium	-				
S1: Study alternative sources of power for the campus fleet.	medium	-				
S2: Work with DPS to re-introduce the officer bike program as an alternative to just utilizing the DPS vehicles.	Low	-				
S3: Reduce trips and allow for shorter travel distances to support operations.	Low	-				
G2: Reduce fossil fuel consumption in community travel.	medium					
S1: Reduce air travel trips.	medium	-				
S2: Promote walking, biking, car-pooling and use of public transit.	low	-				
S3: Use parking policies and practices as tools to reduce vehicle travel and fossil fuel usage.	low	-				
<b>Solid Waste</b>						
G1: Reduce the total solid waste generated on campus from 11 lbs. per capita to 8 lbs. by 2020.	medium	3-5				
S1: Reduce the total waste stream to achieve Goal 1 by developing a purchasing policy that addresses product packaging and waste, assesses the feasibility of composting or bio-digestion of food waste, focuses on raising awareness and changing behavior around recycling and waste.	medium	-				
S2: Develop better auditing mechanisms to ensure that F&M’s e-waste is being properly recycled.	low	-				
S3: In order to mitigate the environmental impacts of consumption, undertake cost/benefit analyses before replacing equipment, furniture, and the like to ensure upgrades are essential.	low	-				
S4: Develop a campus standard, strategy and procedure for recycling all waste materials or trash.	low	5-10				
S5: Expand construction demolition waste reduction, recycling, and reuse.	medium	3-5				

Goal/Strategy	Cost: (low (0 - \$25,000), medium (\$25,000 - \$100,000), high (>\$100,000), very high (>\$500,000)).	Return on Investment	Phase 1 (FY13-FY18)	Phase 2 (FY18-FY23)	Phase 3 (>FY23)	Phase 4
S6: Develop a waste minimization plan targeted at minimizing material packaging sent to campus.	low	3-5				
G2: Achieve zero solid waste in the dining hall food services facilities.	high	5-10				
S1: Establish a methodology for achieving zero waste (e.g., composting, bio-digestion, or an alternative technology). Consider looking at new compost vendors.	medium	3-5				
S2: Partner with Sodexo or other food service supplier to efficiently and effectively minimize waste from the dining hall.	low	3-5				
<b>Water</b>						
G1: Achieve a 100% containment of storm water by 2030.	very high	-				
S1: Develop further and refine the Storm Water Management Master Plan.	medium	-				
G2: Achieve a 25% reduction in water consumption per weighted campus user from 2010 levels by 2030.	high	-				
S1: Develop internal standards for water use focusing on conservation, re-use (grey water and storm water).	medium	-				
<b>Education and Outreach</b>						
G1: Cultivate a campus community that has a broad and deeply rooted environmental ethic.	high	-				
S1: Develop an instrument to assess environmental ethos (e.g., awareness, education, and behavior with respect to environmental ethics/best practices and F&M's environmental initiatives).	low	-				
S2: Increase environmental education for students.	medium	-				
S3: Increase behavior by students that reflects an environmental ethic.	medium	5-10				
S4: Increase environmental education for faculty and professional staff.	low	-				
S5: Increase the behaviors on the part of faculty and professional staff that will support sustainability and the goals of this plan.	medium	5-10				
S6: Use the actions taken in enacting the Master Plan as teaching opportunities whenever possible.	low to medium	-				
S7: Develop educational strategies that enable the community to understand the College's sustainability practices and learn about its landscape.	medium	-				
G2: Model, and cultivate a broad and deeply rooted environmental ethic among the Lancaster community and beyond.	medium	-				
S1: Make F&M an educational resource for the City of Lancaster and Lancaster County.	medium	-				
S2: Increase environmental outreach to Lancaster community.	medium	-				
S3: Formally evaluate and define the role of the Wohlsen Center for the Sustainable Environment so that it can become a very effective agent of change.	high	-				

Goal/Strategy	Cost: (low (0 - \$25,000), medium (\$25,000 - \$100,000), high (>\$100,000), very high (>\$500,000)).	Return on Investment	Phase 1 (FY13-FY18)	Phase 2 (FY18-FY23)	Phase 3 (>FY23)	Phase 4
G3: Create an online presence for the sustainability initiatives at F&M as a main tool for education and outreach.	medium	-				
S1: Comprehensively include all F&M environmental /sustainability initiatives on one easily accessed webpage.	medium	-				
<b>Campus Landscape: Grounds</b>						
G1: Create and adopt landscape management policies that minimize impact to the environment while maintaining the high level of beauty, program space, and landscape vision outlined in the Landscape Master Plan.	medium to high	-				
S1: Minimize the effort and inputs needed to maintain lawn and landscaped areas.	medium to high	-				
S2: Reduce the need for and use of chemically manufactured fertilizers.	medium	-				
S3: Reduce irrigation from potable water sources.	medium-high	-				
S4: Minimize environmental impacts, including run-off and soil contamination, of snow and ice management procedures while maintaining safety for pedestrians and vehicles.	low	-				
S5: Re-establish connections between fragmented natural habitat where possible.	medium to high	-				
S6: Improve water quality by emulating natural hydrologic conditions and minimizing stormwater run-off into off-site systems.	medium to high	> 10				
G2: Use the Arboretum as a tool for education and research while promoting best practices in landscape management.	low	-				
S1: Maintain a high quality, healthy campus landscape.	low	-				
S2: Develop plans to best use our landscape as a natural and academic resource.	low	-				
S3: Develop a comprehensive tree management plan for all aspects of the Arboretum that includes policies to encourage the use of native tree species, enhance the health of trees, address hazardous trees, avoid damage during construction activities, etc.	low	-				
S4: Conduct a tree survey for carbon sequestration as a tool for establishing carbon offsets and developing a goal for increasing the canopy percentage of the campus.	low	-				
G3: Reduce the environmental impact of grounds maintenance.	high	-				
S1: Reduce the environmental impact, including noise pollution, of the use of machinery in maintaining the grounds.	medium	-				
S2: Reduce light pollution from on-site fixtures.	high	-				
S3: Minimize potential sources of water pollution and decrease water usage for irrigation.	low	-				
<b>Campus Landscape: Built Environment</b>						
G1: Assess efficient space usage with the goal of controlling the need for additional space and new infrastructure. The most sustainable building is the one you never build.	low	-				
S1: Assess how spaces are managed and scheduled to maximize the use of the space across the day and year round.	low	-				

Goal/Strategy	Cost: (low (0 - \$25,000), medium (\$25,000 - \$100,000), high (>\$100,000), very high (>\$500,000)).	Return on Investment	Phase 1 (FY13-FY18)	Phase 2 (FY18-FY23)	Phase 3 (>FY23)	Phase 4
S2: Develop shared spaces which address needs across academic, student life, residence life, and community needs vs. single use spaces.	medium	-				
G2: Maintain and maximize the use of existing physical infrastructure, with the goal of controlling space and new infrastructure.	high	-				
S1: Wherever possible, adopt policies that prioritize protection, conservation, and maintenance of the historic building stock of the campus landscape.	low to medium	-				
S2: Proactively manage preventive maintenance, deferred maintenance, and emergency maintenance as maintenance is critical to the efficient operation and longevity of the college's assets.	low to medium	-				
S3: Regularly assess energy loss at key building points, prioritizing roofs, windows and doors. Address with increased efficiency insulation in roofs, regular repair and retrofits of existing windows (improved joints and seals; interior or exterior storm windows to increase thermal resistance).	medium-high	-				
G3: Build all new buildings and renovations to the greatest efficiency and to the least environmental impact which is economically feasible.	very high	-				
S1: Evaluate adopting a campus standard that sets a target for all projects to be designed and built to or towards carbon neutrality, without or with minimal use of offsets.	low	-				
S2: Assess the appropriateness of completing LEED certification versus other certification options. Consider developing F&M campus-specific guidelines. Consider applying the forgone cost of obtaining third-party certifications to sustainability budgets.	low	-				
S3: Develop project and purchasing guidelines which support and augment minimum energy efficient standards across the campus.	low	-				
S4: Incorporate energy-efficiency and life-cycle costs into the capital project development process; create accurate models for evaluating life-cycle costs; monitor building systems performance; incorporate user- interface education to ensure building systems performance meets original design intent.	low	-				
G4: Minimize construction activity pollution for all campus projects.	low	-				
S1: Reduce pollution form construction activities by controlling soil erosion, waterway sedimentation, and airborne dust generation.	low	-				
<b>Food Systems</b>						
G1: Reduce the negative environmental impacts of the campus food system and food procurement policies, with particular emphasis on impacts to the Chesapeake Bay Watershed.	medium	-				
S1: Establish a method that enables the College to quantify, as much as possible, its environmental impacts from product transportation, preparation, consumption and disposal of foods on campus for purposes of establishing baselines and tracking progress with a focus on impact to the Chesapeake Bay Watershed.	medium	-				
S2: Establish a food procurement plan that supports G1.	medium	-				
S3: Reduce food, solid, and recycling waste generated by dining services.	medium	-				

Goal/Strategy	Cost: (low (0 - \$25,000), medium (\$25,000 - \$100,000), high (>\$100,000), very high (>\$500,000)).	Return on Investment	Phase 1 (FY13-FY18)	Phase 2 (FY18-FY23)	Phase 3 (>FY23)	Phase 4
S4: Reduce the impact of the College's food procurement on the Chesapeake Bay Watershed by leveraging buying power, conducting outreach programs and promoting education on regional agricultural practices, water quality enhancement, soil conservation, reduction of pesticide use and toxicity, protection of wildlife habitat, and other conservation measures.	medium	-				
S5: Ensure that the campus food provider is contractually bound to enable achievement of Goal 1.	low	-				
G2: Develop a campus culture that supports the local food economy and the consumption of responsibly produced foods.	high	-				
S1: Provide opportunities for students and surrounding community members to become educated on the consumption of responsibly produced foods.	medium	-				
S2: Create and support internship programs for students that teach them about, and connect them to, the local food system and sustainable agriculture.	medium	-				
S3: Foster community food security efforts and ways to bring locally grown foods to more Lancaster residents.	medium	-				
S4: Ensure that the campus food provider is contractually bound to enable achievement of Goal 2.	low	-				
G3: Enhance the support of the local food economy through increased procurement of locally grown and responsibly produced foods.	high	-				
S1: Evaluate the strengths and weaknesses of the college's current food procurement system to adapt to increased sourcing of locally grown and sustainably produced foods, with the goal of addressing impediments and barriers. Elements to be considered include (but are not limited to) product liability insurance, supply volume, ordering logistics, brokerage fees, aggregation and standardized packaging.	medium	-				
S2: Be responsive to the evolving nature of the local food system in order to capture opportunities and maximize positive impacts.	low	-				
S3: Ensure that the campus food provider is contractually bound to enable achievement of Goal 3.	low	-				
G4: Increase the offering of holistically nutritious food whose quality and quantity support the health and well-being of the campus community.	medium	-				
S1: Make a commitment to using foods, menus, and preparation techniques that contribute to holistic wellness.	medium	-				
S2: Source an existing protocol (or develop an F&M-specific version) to guide the purchasing of meats, vegetables, and dairy products that are preferred alternatives to those grown, raised or processed conventionally.	low	-				
S3: Ensure that the campus food provider is contractually bound to enable achievement of Goal 4.	low	-				
<b>Procurement</b>						
G1: Increase the percentage of sustainable goods and services purchased above 2013 levels.	medium	-				
S1: Use FY13 purchasing data, obtained from the Controller, to establish a baseline that identifies spend, and sources of all goods and services purchased by the College. The FY13 baseline will be established by no later than August 1, 2014.	low	-				

Goal/Strategy	Cost: (low (0 - \$25,000), medium (\$25,000 - \$100,000), high (>\$100,000), very high (>\$500,000)).	Return on Investment	Phase 1 (FY13-FY18)	Phase 2 (FY18-FY23)	Phase 3 (>FY23)	Phase 4
S2: Develop purchasing policies around environmental impact (including waste), labor standards, local sourcing, and minority/women owned businesses.	medium	-				
S3: Centralize more of the College's procurement of good and services to manage consistent implementation of the established policies.	low	-				
G2: Establish a threshold for F&M in terms of percentage of goods/services procured consistent with the purchasing policy (e.g., 90% of F&M's purchases will be consistent with F&M Sustainable Purchasing Policy) to replace Goal 1.	low	-				
S1: Track compliance with procurement policy.	low	-				