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Going Green: Sustainable Practices in Philippine Libraries

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Abstract:

Purpose/objectives. This study aims to investigate on the sustainability practices of Philippine libraries. It intends to identify where Philippine academic libraries are in the “green” continuum.

Significance of the study. Greening libraries is rarely talked about in Philippine libraries. This study is a modest contribution to the dearth of literature on greening Philippine libraries. Results of the study hopes to stimulate the interest of library administrators and bring awareness to other stakeholders on the current state of libraries in the Philippines as far as “greening” is concerned, so they can either start or further advance their greening initiatives.

Design, methodology, approach. Descriptive survey method was employed for this study with the Preliminary Green Assessment Checklist developed by McBane Mulford and Himmel as instrument. The respondents consisted of active members of the Philippine Association of Academic/Research Libraries, Inc. (PAARL) or those that have attended the organization’s activities in the last two years.

Findings. 68.75% of the surveyed libraries received green rating; 31.25% got yellow; and none fell under red. The overall rating for all libraries is 149.12 which is within the green zone. This only proved to show that Philippine libraries are obviously taking small but crucial steps towards greening their libraries.

Research limitations and implication (if applicable). While the survey questionnaire was sent to 206 librarians, only 32 (15.53%) accomplished the form.

Originality of the paper: The study is the first and so far, the only study which attempted to gauge where Philippine libraries are in the green continuum.

Keywords: green libraries, sustainable development, sustainability, green continuum, green practices

An average of 6 to 9 storms hit the Philippines annually, making it one of the most cyclone-prone countries in the world (Blanc & Strobl, 2016). Some of these typhoons have caused severe damages to properties and have taken hundreds or even thousands of lives. Super Typhoon Haiyan (locally referred to as Yolanda), for example, which struck the country in November 2013, left over 7,000 people dead, more than 28,000 individuals injured and above 1,000 people missing. Total damage to infrastructure and agriculture is estimated at Php40 billion (Kure, Jibiki, Iuchi, & Udo, 2016).

A number of factors contributed to the considerable number of deaths during Super Typhoon Haiyan such as massive external force, concentrated population in the coastal areas, vulnerability of buildings and evacuation facilities, and the lack of awareness and preparation (Kure, Jibiki, Iuchi, & Udo, 2016). Yeb Sano, a Taclobanon who led the Philippine delegation to the *2013 U.N. Conference of Paris on Climate Change*, believes that climate change is to be blamed for the devastation brought by the super typhoon (Salazar, 2015).

Climate change affects everybody, hence should be everybody's concern. Libraries, being flagships for socially responsible practices, are called to actively take part in environmental issues (Rowley, 2006). The International Federation of Library Associations (IFLA) through its *Statement on Libraries and Sustainable Development* urges libraries to promote/further the principles of sustainable development (IFLA, 2002).

The idea of greening libraries surfaced in the early 1990s with the establishment of the Green Library Movement (Antonelli, 2008). In the Philippines, however, greening libraries is rarely talked about. This study is a modest contribution to the dearth of literature on greening Philippine libraries. It investigated on the sustainability practices of libraries in the different regions of the country and tried to identify where they are in the "green" continuum. The study hoped to stir the interest of library administrators and bring awareness on the current state of libraries in the country insofar as "greening" is concerned, with the intention to advance sustainability initiatives.

METHODOLOGY

Survey Instrument

The *Preliminary Green Assessment Checklist* developed by McBane Mulford & Himmel (2010) was used as survey instrument, with some of the items edited to fit the Filipino audience. The checklist is meant to guide the respondents in identifying where they are in the Red, Yellow, or Green Continuum.

To determine the overall score of each of the libraries and gauge where they are in the continuum, the responses in each of the categories (Red, Yellow, and Green) were summed-up. The total score for the green category was multiplied by 5; the score for the yellow was multiplied by 3; and, that of the red was multiplied by 1. The sum of all 3 categories were added-up to determine their equivalent category:

Score	Equivalent Category
Below 46	Red
46 to 138	Yellow
138 to 230	Green

The checklist, according to the authors, is not a certification or award, and the questions were purposely made to be simple to facilitate use of the tool, thus, extreme green action/practices were excluded.

The online survey was conducted from July to September 2017.

Respondents

The respondents consisted of active members of the Philippine Association of Academic/Research Libraries, Inc. (PAARL) or those that have attended the organization's activities in the last two years. They were chosen as their contact details are current/updated, ensuring that the questionnaires will be successfully sent/received. The instrument was sent to 206 librarians from all over the country. Unfortunately, only 32 (15.53%) accomplished the form.

Majority of the respondents were from academic libraries (84.38%), mostly from the National Capital Region (NCR) (43.75%), CALABARZON (Region IV-A) (25%), and Bicol Region (Region V) (12.50%), and predominantly located in urban areas (81.25%).

DISCUSSION OF RESULTS

Sustainable Sites

The *Building for Ecologically Responsive Design Excellence (BERDE) Program*, a nationally accepted voluntary green building rating system, developed by the Philippine Green Building Council (PHILGBC) was introduced in 2010. A new version released in 2013, covered a chapter on building ecologically responsive design for educational institutions, including library buildings (Philippine Green Building Council, 2013). BERDE is comparable to the Leadership in Energy and Environmental Design (LEED) standard developed in the United States (Ang, 2017).

From among the many academic institutions in the country, the De La Salle University was the first academic structure recognized under the BERDE Assessment and Certification system. The Henry Sy, Sr. Hall, where the Learning Commons/Library is located, received a 2-star design recognition in 2015 (Philippine Green Building Council, 2017). While this, so far, is the only building in an educational institution that obtained BERDE certification, it does not necessarily mean that other institutions/libraries are not pursuing sustainability development projects/efforts.

Based on the survey, at least 15.63% of the libraries are already maintaining xeriscaped sites (Musleah, 1997). Fifty percent try to keep at least half of their gardens xeriscaped while 34.38% showed no effort at all. As water shortage is foreseen in the next ten years, these libraries are urged to start conserving water through the maintenance of xeriscape sites as irrigation account for 80% of water usage (Kritz, 2016).

Twenty-two (68.75%) of the surveyed libraries no longer use harmful chemicals for their gardening needs while 10 (31.25%) affirmed that they still use pesticides and chemical fertilizers. To help minimize/eliminate the need to use pesticides/chemical fertilizers, composting may be considered. Composting is a waste management system where organic waste decomposes rapidly by mixing other ingredients. Composts can be used to improve soil quality (Pergola et al., 2017) helping produce healthy plants. Survey showed that 21.88% of the libraries do 100.00% composting of spent vegetation and trimmings; 43.75% perform composting of at least 50.00% of its organic wastes and 34.38% do not undertake composting at all. Considering the amount of garden vegetation and food thrown into the garbage bin, composting may considerably contribute to solving the garbage problem in the country.

Trees, when positioned properly, provide shade and help cut down energy bills, specifically air conditioning costs, for up to 35.00% (Arbor Day Foundation, 2017). Similarly, sunlight as a source of

energy, provide the means to reduce energy cost. Half of the surveyed libraries were able to reduce the cost of electricity by 50.00% either through planting trees or the use of solar energy.

A sustainable site is one that is near public transportation as this helps reduce carbon footprint. Fortunately, 68.75% of the libraries are located near public transportation. As moving to a new location is an unlikely solution, providing alternative commuting options for library staff may be offered such as car pooling, biking, walking, etc. (McBane Mulford & Himmel, 2010). These options are made available to 59.38% of the respondents.

Water Efficiency

Water efficiency is concerned with the optimal use of water (Unver, Bhaduri, & Hoogeveen, 2017). It relates to water conservation and sustainability of clean water supplies (McBane Mulford & Himmel, 2010).

The survey revealed that 43.75% of the respondents have conducted water usage audit implying the need to reduce water usage and implement cost-effective measures.

Irrigation account for the biggest percentage of water consumption; yet, 9.38% of the libraries still irrigate 100.00% of their site landscapes. Conversely, 43.75% of the libraries have done away with landscape irrigation while 46.88% have managed to reduce landscape irrigation by 50.00%.

One way of reducing water consumption is through the use of water-efficient fixtures such as motion sensitive fixtures, low-faucet aerators, and dual-flush toilets, etc. Survey showed that 8 (25%) of the libraries have 100.00% of their fixtures already water-efficient; 18 (56.25%) have at least 50.00% water-efficient fixtures, while 6 (18.75%) still use traditional fixtures.

With the increasing awareness on the importance of water, harvesting of rain water has become a common practice especially in areas where water is a problem. The process involves capturing rainwater from roof gutters and storing it in tanks for later use (Sustainable Earth Technologies, n.d.-b). Reusing greywater/domestic wastewater likewise provide the means to cut down fresh water use and reduces the amount of wastewater flowing towards sewers, benefiting not only the library/institution but the community as a whole (Sustainable Earth Technologies, n.d.-a). Eleven (34.38%) of the surveyed libraries are now either adopting the use of rain harvesting and/or greywater system. Unfortunately, 21 (65.63%) admitted having no attempts to try these systems.

Energy and Atmosphere

Energy conservation, energy efficiency and the use of alternative renewable energy sources are vital to the improvement of the sustainability of a library building. Simple, effective and energy efficient initiatives may be adopted by libraries like turning off lights when not necessary, use of natural daylight, unplugging equipment and appliances when not in use, etc. (McBane Mulford & Himmel, 2010) to conserve energy.

Conducting energy audit is the first step in assessing your library's energy consumption so measures may be taken to conserve energy. More than half (53.13%) of the surveyed libraries have already conducted audits and track their energy usage indicating a conscious effort to control energy consumption.

With the rising cost of petroleum products and the advances in renewable energy technologies, the use of renewable energy sources in buildings, including libraries, has become intensive (Dursun, 2015). “Renewable energy refers to all energy resources that are naturally replenished at a rate that is equal to or faster than the rate of their consumption or permanent resources that are available in abundance” (Maradin, Cerović, & Mjeda, 2017, p. 49-50). Solar energy, wind energy, hydropower, geothermal energy, ocean energy, and energy produced from biomass are examples of renewable energy (Maradin et al., 2017). While the use of renewable energy sources is uncommon in Philippines libraries, 50.00% of the energy consumption of 6 (18.75%) of the surveyed libraries come from

renewable energy sources, while 8 (56.25%) make use of renewable energy sources for at least 25.00% of their energy consumption. Four (12.50%) generate 50.00% of their electricity onsite, whereas 8 (25.00%) are able to generate 25.00%.

Lighting burns up 20.00% of the total energy consumption of a building (Chow, 2016). Installing energy-efficient lighting like light emitting diode (LED) or compact fluorescent lights (CFL), help cut electricity bills and conserve energy. Twenty-one (65.63%) of the libraries have now replaced 100.00% of their lighting with energy efficient ones, while 28.13% (9) have 50.00% of their lighting already energy efficient. The remaining 6.25% still make use of traditional incandescent despite all its disadvantages.

To improve building efficiency, libraries have also taken advantage of building automation systems/systems controller. System controls are used to monitor the status of the heating, ventilation, and air conditioning (HVAC) of a building so those in charge of the maintenance are forewarned when problems arise (Senger, 2014). More than half (56.25%) of the surveyed libraries now utilize building systems controller to increase efficiency and reduce energy and operating cost.

Sustainable Materials and Resources

Waste reduction may be achieved by choosing to use sustainable materials and resources (McBane Mulford & Himmel, 2010). Recycling and reusing also contribute significantly to creating a clean environment making.

Greening efforts need not be complex. Providing simple solutions towards achieving a green library is a good start. Reusing/donating items that are still useful is a practice being fully implemented (i.e., 100.00%) by 40.63% of the respondents and partially implemented (i.e., 50.00%) by 53.13%. When procuring furniture, equipment, appliances, etc., choosing refurbished/reconditioned units, if possible, is suggested because they are cheaper and are kept away from the waste stream. More than half (56.25%) of the libraries are now into buying refurbished/reconditioned items. Similarly, purchasing items locally is considered beneficial to the environment as buying from afar requires the use of more energy in transporting the goods. A high 93.75% of the surveyed libraries are now researching their options and purchasing locally.

The surveyed libraries have also embarked on recycling with 25.00% of them recycling 100.00% of recyclable materials found in their libraries; while 71.88% recycle at least 50.00% of recyclable materials available to them. One (3.13%) library, though, admitted not having done any recycling initiatives at all. If recycling is currently not practiced, the use of products/consumables with recyclable content may be an option. Survey showed that 28.13% of the libraries use other products/consumables with recyclable content all the time (100.00% of the time) while 68.75% do the same sometimes (25.00% of the time).

The use of biodegradable plates and utensils for social occasions organized by the library is also a step towards greening. Aside from being affordable, they also are eco-friendly. Except for 2 libraries, all are using biodegradable plates/utensils at varying degrees.

Paper use is basic in all kinds of establishments including libraries. Formed from wood pulp/plant fiber, paper requires a resource-intensive manufacturing process. Reducing the use of paper, therefore, will reduce the library's impact on the environment. Majority (93.75%) of the surveyed libraries are exerting efforts to discourage unnecessary printing. Some (21.88%) have also set all (i.e., 100.00%) of their copier/printer default to duplex (print on both sides); 53.13% have at least 50.00% their copier/printer set to duplex printing; whereas 25.00% do not promote this at all. Mailing of printed materials (non-collection) upon request only, is also being fully implemented (i.e., 100.00%) by 28.13% of the libraries and minimally (i.e., 35.00%) implemented by 59.38% of the libraries. The use of paper with one hundred percent postconsumer waste content, is also being implemented by 25.00% of the libraries. More than half (59.38%) of the libraries make use of paper containing 30 percent recycled/postconsumer content, while the rest (15.63%) seemed to be unmindful of the type of paper

they use. Since libraries make use of forms for some of its transactions, electronically completed/submitted forms is also a means to help reduce the use of paper. All (i.e., 100.00%) of the forms used in 12.50% of the libraries are now in e-format whereas 75.00% of the libraries have at least 30.00% of their forms electronically completed and submitted. The remaining 12.50% still make use of paper forms in their transactions. The use of electronic/digital communication has significantly changed the way people communicate and likewise contribute considerably to reducing paper usage. All of the surveyed libraries communicate electronically/digitally to a varying degree.

However hard a library tries to reduce waste though, it still will most likely generate solid waste. "*Solid waste is the unwanted or useless solid materials generated from combined residential, industrial and commercial activities in a given area.*" (Ibrahim & Mohamed, 2016, p. 337). Survey showed that 100% of the waste generated by 18.75% of the libraries are solid waste. Most (75.00%) of the libraries, however, are able to keep their solid waste to 50.00% of their total waste. Two (6.25%) of the libraries apparently generate 0.00% of solid waste, which is exemplary. Conducting a solid waste audit provides the opportunity for the library to review its operations and the amount of waste it generates which subsequently can be used to develop a waste management program. More than half (56.25%) of the surveyed libraries have already conducted a solid waste audit suggesting awareness on the issue, with the intention, hopefully, to reduce, reuse and recycle waste.

Indoor Environmental Air Quality

Poor indoor environmental quality poses serious health risks (Wu, Jacobs, Mitchell, Miller, & Karol, 2007) and has been proven to cause discomfort to students/staff, affecting concentration, attendance and performance (Mak, 2011). Improving indoor air quality, therefore, is necessary to enhance user experience and ensure a healthy environment.

Conducting environmental quality audit, a step towards sustainable development, was conducted by 46.88% of the libraries, signalling a desire to introduce corrective measures to improve environmental condition.

Providing access to daylight minimizes the need for supplemental lighting while allowing access to outside views, thus contributing to enhanced user experience (McBane Mulford & Himmel, 2010). Half of the libraries have at most 75.00% of their interior spaces provided with access to daylight. Ninety percent (90.00%) access to outside views from interior (occupied) space is also offered by 53.13%, whereas, occupant-controlled lighting, where feasible, is provided by 78.00% of the libraries.

Some (65.63%) of the libraries provide natural ventilation, reducing the need for additional cooling. As thermal comfort preferences differ between clients/staff, providing individual climate control in workspaces also offer additional savings to energy bills. This is currently being offered by 56.25% of the libraries. Regular maintenance of HVAC is likewise being done by 68.75% of the libraries to improve air quality and increase energy efficiency.

The choice of cleaning products for the library also affects the quality of the environment. The use of green certified cleaning products provide a safe place for library clients/staff, reducing exposure to chemicals that may trigger asthma. Unfortunately, the use of these products seem not very popular as only 6.25% of the libraries make sure that 100.00% of the cleaning products they use are green certified; 71.88% have at least 50.00% of their cleaning products green certified; and, 21.88% still use chemical-based products that are harmful to the environment.

Innovation in Operations and Design

Embracing sustainability means exploring all possible opportunities. Some of the simplest and easiest ways are providing collections material (e.g. books, periodicals, audiovisual materials, etc.) on sustainability which is currently being done by 81.25% of the surveyed libraries; providing services on sustainability (e.g. remote access to databases, mobile-optimized library service, electronic notices, etc.) which is being practiced by 59.38% of the libraries; offering programming on sustainability (e.g. green libraries conference, creative workshops – e.g. composting, organic gardening techniques, etc.)

which is being carried out by 62.50% of the libraries; and, documenting and publishing the library's sustainability efforts and outcomes to inspire other libraries, which is being implemented by 40.63% of the surveyed libraries.

Other members of the organization may also contribute to the greening efforts of the library and the community as a whole, by being BERDE-accredited professionals, which 25.00% of the libraries have already attained.

How Green are Philippine Libraries?

It is encouraging to note that 68.75% of the surveyed libraries received green rating; 31.25% got yellow; and none fell under red (refer to the table below). The overall rating for all libraries is 149.12 which is within the green zone.

Level of “Greeness” of Philippine Libraries				
Type of Library	Red	Continuum Yellow	Green	Grand Total
Academic		9	18	27
Public			1	1
School		1	2	3
Special			1	1
Grand Total		10	22	32
Percentage		31.25	68.75	100.00

CONCLUSIONS AND RECOMMENDATIONS

Philippine libraries are obviously taking small but crucial steps towards greening their libraries. While most of the libraries landed on the green zone, greater opportunities should be explored to further sustainability and take it to a higher level. Developing sustainable maintenance programs/plans is recommended in order to achieve specific and aggressive sustainability goals. The libraries are also encouraged to establish sustainable services to reduce the library's footprint and provide for ecologically friendly customer solutions.

In a cyclone-prone country like the Philippines, the issue of sustainability must be taken seriously and with urgency. Libraries should lead the way and take an active role by providing creative and ethical examples to their communities (Genovese, Peter, Albanese, 2011).

Eric Tans of the Michigan State University Libraries believes that the support of the administration is key (Granger, 2017) to the success of greening the library, hence the library, school administrators, and other stakeholders are enjoined to actively take part and commit to pursuing sustainability development projects as the community's collective effort will surely make a difference in reducing the impact of the library.

Although sustainability awareness demonstrated to be high, promotion has to be enhanced to project a powerful green image and inspire other libraries to jump on the “green” bandwagon.

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