

AUDITING SUSTAINABILITY OF OUR BUILDINGS

2015 is the year where we all gear up for solutions to climate change. All are invited to join not only by minimising our carbon footprints but also to be part of that crucial journey in changing our hearts and minds as reflected through our attitudes and lifestyles.

Coming from the perspective of “finding God in all things,” in our communities and also in how we care for our community through our houses and how we care for creation, we understand how in 2010, Reconciliation with Creation, Fr. Nicolas asked us to clean up our own act before we go out into the world preaching on what we do in our environment.

In the same way Pope Francis is asking us to be responsible, globally, showing how the Vatican is becoming carbon zero and divesting not only in armaments but in fossil fuels.

Healing a Broken World invites Jesuit communities and apostolic works to discern the management of our institutions and to exchange and develop more ecologically sustainable lifestyles in our communities. We are encouraged in our education, research and formation to engage students in transformation education and to explore new themes and areas of interdisciplinary research.

It is on this basis that we are looking at physical features of a household, the physical features such as walls, drainage, waste disposal facility, kitchen area, ventilation and the greenery that surrounds around us are essential to the house we are managing. These features may drain our resources and impact on our environment.

How do we go about our household/ building audit?

A building audit is a systematic approach to problem solving and decision-making. The primary goals of an audit are to:

- 1) address the present cost of energy, water and air pollution, and solid waste,
- 2) identify how that performance can be improved, and
- 3) plan the outcome of those improvements both in financial and non-financial terms.

The financial benefits from building audit assessments include tangible benefits of savings due to improvements in energy efficiency, reduced water use, materials use and waste. Intangible benefits include improvements in productivity in workplaces, better health and comfort in office settings, reduced burdens on infrastructure, quality of life, and humble recognition of how others have to live.



SUSTAINING STRUCTURES FOR WHOLE BUILDING AUDITS



Land use and Ecology

Tackles the existing techniques and technologies that were incorporated in the site development, which reduces the effects on the local environmental conditions. This includes the utilisation of previously developed land, the protection of ecological features and biodiversity, and the consideration of flood risks and fire.



Water

Tackles the existing potable water consumption and wastewater discharge, and how the building can reduce this. It is directed at efficient water management, provision of monitoring water meters, and the means by which the building diminishes its usage of water for maintenance and operational purposes.



Energy

Reviews existing energy consumption and reduction measures being employed by the existing building, as aspects affecting use of this resource is an integral part of this category. It encompasses how the consumption is monitored, the integration of sustainable design, and the incorporation of technologies and equipment, which make energy utilisation as efficient as possible. There is an effective monitoring system in place to track and record performance of these systems; records may be used as basis for energy saving opportunities in operations.



Waste

Reviews existing organisation of waste recycling and disposal. Examines existing waste stream of the building. As a result of conducting a waste stream audit, waste products are identified and classified, and means of disposal is tracked. From this a program for reducing waste production, segregation and sorting, and more eco-friendly means of disposal including re-use and recycling can be adapted.

AUDITING SUSTAINABILITY OF OUR BUILDINGS



Transportation

Tackles the impact of existing establishment on transport circulation, how alternative means of travel are encouraged, lowering the building's contribution to emissions. This includes the distance of the building from key establishments, its accessibility to public transport systems, and the availability of transportation amenities on-sites. Aims to encourage and recognise the use of bicycles as an alternative form of transport by the incorporation of cyclist facilities in the design.



Indoor environment quality

The category stresses the existing human comfort value of the building represented by the elements that contribute to the effectivity of its interior atmosphere. This encompasses the establishment's lighting, thermal levels, and acoustic treatments. Aim to ensure lighting has been designed for comfortable illumination as per specified area type of function.



Materials, products and equipment

Materials deal with the physical components used in the establishment, including the measure of recycled content used and the probability of future emissions. It covers ongoing consumables, alterations, cleaning products and equipment, and implementation of sustainable purchasing plan. Reduce the environmental impacts of materials acquired for use in the operations, maintenance and upgrades of buildings.



Emissions

Focuses on the existing state of carbon and pollution release of the building and looks into the preventive measures being enforced to reduce them. It includes carbon inventory, prevention, and control of emissions. Aims to provide a record of equivalent carbon emissions of the building.



Heritage conservation

Recognises development's preservation of heritage, historic, or cultural sites, structures and/or properties; and its promotion of heritage marks.



Innovation

Showcases the incorporation of groundbreaking technologies and incentive techniques for better environment performance. It provides additional recognition for pioneering initiatives in the field of sustainable design and development.

For further information:

PEDRO WALPOLE SJ

Coordinator for JCAP Reconciliation with Creation
3/F Sonolux Building Ateneo University Campus 1108 Loyola Heights
Quezon City PHILIPPINES
Telephone: +63.2.4260554
Email: pedrocojcap@gmail.com

NOVEMBER 2015



Practical Ecological Actions on Building Audit

Jesuit institutes, schools and communities are doing some levels of ecological work, which include basic waste segregation and water and energy. A sustainability team is often organised to help support green/sustainability initiatives in their campus, institute or community.

A basic checklist on practical ecological actions is provided to further assist us in doing our green/sustainability audit. It is important to note that recording daily consumptions of water and energy are critical in the same way as minimising our wastes by segregating from source.

1. Water

- ✓ Measure and monitor water usage regularly in relation to number of users (staff/students/occupants/guests). Record may serve as basis for drawing up policies and procedures to reduce water usage initiative
- ✓ Ensure that leaks are checked regularly and fixed promptly
- ✓ Ensure that water quality in drinking water fountains is checked regularly, especially for lead in schools/community with old plumbing
- ✓ Give priority to replacing old fixtures and appliances with water-efficient models
- ✓ Give priority to selecting drought-tolerant and native plants for landscaping
- ✓ Give priority to outdoor irrigation that uses non-potable water, drip irrigation, timers and rain sensors and other water conservation practices
- ✓ Water grounds in the early morning or evening when evaporation is lowest

2. Energy

- ✓ Measure and monitor consumption regularly in relation to number of users (staff/students/occupants/guests). Record may serve as basis for drawing up policies and procedures to reduce energy usage initiative
- ✓ Conduct periodic energy audits. These may include proper calibration of meters and sub-meters for all major power usages in the facility
- ✓ Ensure proper operation and regular maintenance of energy equipment and fixture
- ✓ Use energy-saving and energy-efficient equipment, devices and appliances. Eg. energy-efficient lighting to replace incandescent light bulbs
- ✓ Install renewable energy facility like solar, wind, hydro

3. Waste

- ✓ Wastes are segregated according to types: a) kitchen food, b) biodegradable for compost, c) paper for recycling, d) PET bottles, e) cans, f) electronics, g) building rubbles and woods, h) toilet/ CR wastes, i) plastics, j) bottles, and k) other wastes
- ✓ Coded biodegradable and non-biodegradable bins
- ✓ Organic materials or yard wastes are kept separate and composted
- ✓ Provide recycling receptacle for batteries, cell phones, computers, printer cartridges

4. Transportation

- ✓ Identify modes of transportation available relative to the building occupants' trip origin and destination and transportation habits of building occupants during a typical five-day work week or equivalent
- ✓ Allot preferred parking spaces for employees/students carpool and alternative transportation such as electric, liquefied petroleum gas (LPG), or compressed natural gas (CNG) powered vehicles
- ✓ Provide secured bicycle racks and encourage the use of bicycles as an alternative form of transportation inside the campus/community
- ✓ Maintain vehicles that include using clean-burning fuels or electricity
- ✓ Provide transportation or access to public transportation for local destinations
- ✓ Develop policies responsive to growth in cars and motorbikes of faculty, staff and students, and policies to promote a pedestrian- and bike-friendly campus.

5. **Indoor environment quality**

- ✓ Use environmentally-friendly cleaning materials and proper personal protective equipment for maintenance personnel
- ✓ Ensure personnel-in-charge are well informed of the proper use of green cleaning materials, including proper storage, dilution, handling, application, and disposal
- ✓ Discourage smoking by providing designated areas for use. Maintains the provision of outdoor smoking areas at a 10-meter distance from public entrances. Maintains proper enclosure and filtration systems for indoor smoking area
- ✓ Conduct a regular occupant comfort survey as basis for development and implementation of responsive programs

6. **Materials, products and equipment**

- ✓ Purchase environmentally friendly products for use: products with recycled content, rapidly renewable materials, rechargeable batteries, locally sourced materials, responsibly farmed timber, organic food
- ✓ Encourage traditional foods and packaging (e.g. rice cakes) and discourage buying/selling of junk foods & other commercial products (& packages)

7. **Emissions**

- ✓ Regularly inspect mechanical emission control systems implemented to ensure effective operation and assess the measures provided to mediate emissions from equipment operations, which involve combustion or burning
- ✓ Minimize and/or modify the emissions to meet air quality level within minimum standards set
- ✓ Prevent the use of ozone depleting substances for refrigerants and fire suppression systems and reduce the emission of refrigerants from leakages in a building's cooling plant. Monitor and prevent refrigerant leaks to reduce the emission of refrigerants
- ✓ Conduct a life cycle inventory (LCI) and record equivalent carbon emissions of the building in operation. Execute an LCI which will entail air emissions accounting, including carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and fluorinated gases: hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride

8. **Land use and Ecology**

- ✓ Use of gardens to educate and produce
- ✓ Use less toxic cleaning materials
- ✓ Minimise landscape waste production by proper handling of waste, composting or re-use and use of organic fertilizers
- ✓ Install (natural) drainage that enhances rainfall infiltration reducing flooding

9. **Heritage conservation**

- ✓ Investigate potential elements of historical significance of the building that may lead future value by being preserved such as markers showing dates of milestones in the operations of the building, documentation of past awards in environmental performance, and others.
- ✓ Protect and conserve significant heritage features of the building through the use of alternative materials or systems that promote green building in the conservation and maintenance process
- ✓ Promote the building as a significant element of Filipino heritage that is reflective of the artistry and ingenuity of its builders; indicative of significant turning points in history, and contributory to the development of Philippine art.

10. **Innovation**

Showcases the incorporation of groundbreaking technologies and incentive techniques for better environment performance. It provides additional recognition for pioneering initiatives in the field of sustainable design and development.