



Sustainable libraries, Sustainable Services: A Global view

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Introduction/Abstract:

Developing buildings that are sustainable and walk softly on the landscape is an area where libraries have shown considerable accomplishment, and in so doing, serve as examples of both ingenuity and ethical leadership. This paper presents experiences and research on sustainable library buildings that are inspiring, functional, and successful.

The paper consists of two sections. The first section answers the questions: What does sustainable mean? What are examples of library building projects across the world that have developed sustainable, green buildings? What are the characteristics of those buildings that define sustainability, effectiveness, and cost efficiency? The focus is on well-developed, full size library facilities and includes two case studies of award-winning Green Libraries, including interviews with the architects that designed them.

The second section suggests that developing a green building is only the first step to assuring sustainability. Other necessary, long term components are required, including, understanding the needs of the community being served, developing strategies to deliver services, building organizations and providing leadership relevant to the community. Two examples of creative and innovative responses to challenged situations are offered in this section -- one whose solutions have been critical to the survival of a number of communities in East Africa, and another in Greece, that through leadership strategies, unique services and the use of technology to build community and collaboration, has marketed their successes and brought significant benefit to their community.

What is Green/Sustainable Library Building Project?

In beginning a discussion of green or sustainable building, it is important to establish a shared definition. While there are many possible interpretations, we address a set of common design elements and consideration including sustainable site selection and

development, water conservation, energy efficiency, local resources, material conservation and waste reduction, indoor environmental quality, and innovation in design (www.greenbuildings.com). For the purposes of this discussion, we will use the broad definition that developing a green building is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle from site selection to design, construction, operation, maintenance, renovation and deconstruction (www.epa.gov/greenbuilding/pubs/about.htm). It is important to recognize that the context for sustainability in this discussion extends beyond just developing green or sustainable library buildings to also include developing sustainable services as part of the ongoing life cycle of library service.

Key Goals of Green/Sustainable Library Buildings

It is widely acknowledged that we have reached a tipping point in global awareness -- our current rate of consumption and use of unhealthy products, processes, and systems are producing a serious, unsustainable impact on the economy, on communities, and on individuals. The evidence is growing daily that the very ecosystems necessary to support and sustain healthy life on the planet are in jeopardy. Unless we consciously make choices and decisions that reflect a more sustainable approach to our buildings and way of life, the fate of the earth and its populations are in danger of irreversible ecologic shifts.

The central goals of green buildings are to produce physical structures that from their initial conception and design recognize and demonstrate that with some thoughtful early planning the project or system can minimize the consumption of resources and the environmental impact throughout the full life cycle of the structure. This approach extends to include efficient use of energy, water, and other resources, as well as the reduction of waste, pollution and environmental degradation. Along with the physical characteristics and systems of the building, a green/sustainable approach to library buildings recognizes the critical importance of protecting building occupant's health by addressing factors such as air and lighting quality.

When these factors are considered with the long view in mind, design and construction can produce cost effective buildings and operations for the entire life cycle of the structure. Creating buildings that value and support environments and operations that are healthy, flexible, and that fit naturally in their local conditions, are the goals of green/sustainable libraries. Central to this approach is the creation and promotion of the library that enriches the community and ecology with both the physical building and information rich environment, thus adding vitality and continuity to the quality of life of the area.

International Green/Sustainable

As the interest in green building has grown, so have the methods used to evaluate buildings adherence to green principles. There are several country specific evaluation standards in place (en.wikipedia.org/wiki/Green_building). Among the most widely recognized is Leadership in Energy & Environmental Design (LEED), an internationally recognized, points based, green building certification system, which includes projects in over 30 countries. With accommodation for regional specific issues through country based building councils and the LEED International Program, (www.usgbc.org/DisplayPage.aspx), LEED provides third-party verification of building design and construction using green/sustainable strategies. LEED offers four levels of certification: Certified, Silver, Gold, and Platinum which measure a building's performance in several key areas -- addressing aspects of building performance from site selection, to awareness and education of the building systems (www.usgbc.org/Default.aspx).

Building Research Establishment Environmental Assessment Method (BREEAM) based in the UK, is another widely acknowledged green building assessment system, in use for over

20 years. BREEAM has 5 levels ranging from Pass to Outstanding. While LEED and BREEAM differ in approach and emphasize different aspects of green building, both are widely recognized in assessment and verification of green buildings
(www.bsria.co.uk/news/breem-or-leed/)
(www.inbuilt.co.uk/media/406565/breemvsleed.pdf)

The Big Picture

A green/sustainable perspective and approach to library buildings and services considers all aspects of the library ecosystem -- the building, the services, the finishes, the systems that support the physical building and operations, as well as the supplies and services offered or used by the library. Green approaches are based in broad awareness of the short and long term impact on the local community and demonstrate sustainable mindset in approaching the physical and informational resources and services of the community they serve.

SECTION ONE: Tour and Case Studies

In this first section of this paper we will offer two case studies on recent green library buildings from the perspective of the architects who designed them. The first is from a prominent architectural firm that has designed many libraries and most recently an excellent example of a green library. From there we offer a brief tour of five green libraries around the world. The information on these libraries has been taken from a variety of sources and we encourage you to explore the links provided for deeper descriptions of the projects. Our hope with the tour is to offer some snapshots of distinctive and important libraries and the characteristics that define them. This section is concluded with another case study and interview with an architect for whom sustainability is a lifestyle, and who shares his perspectives on one of his projects, a green public library building.

Case Study One: Ramsey County Roseville Public Library, Minnesota, USA

Jack Poling and Sean Wagner, Architects, Meyer Scherer & Rockcastle, Ltd.



Photo by Jack Poling

M S & R as a firm, have designed or renovated over 100 libraries and Mr. Poling A.I.A. has personally worked on 50 libraries; he was a lead architect on the renovation of the Roseville Public Library, expanding it from 44,900 NSF to 70,000 NSF. Sean Wagner A.I.A. has worked on many libraries including the Fayetteville Public Library, which won the Thomson Gale/Library Journal 2005 Library of the Year Award. Sean has also presented at many seminars and conferences nationwide discussing sustainability. He was a contributor to the IFLA publication, A Library Building Guideline: Developments & Reflections, editors, Karen

Latimer and Hellen Niegaard (Edited on behalf of IFLA) his contribution was: Green Building Management and Sustainable Maintenance, w/ contributions by Jeffery Scherer, MS&R. (Global Library Consulting is currently working with MS&R and Jack Poling on the Buffalo Erie County Main Library/ Usability Study, in New York State.)

Why did a library in Roseville, Minnesota decide to build Green?

When we asked Jack and Sean this, we were curious if it was the community or the library leadership that pushed for the development of a Green building. They indicated that the commitment to build a green building was established at the very onset of the project. "Actually it was the county that mandated this path. The County Board was committed to a high standard in the use of public funds, and to present a model program, a "lead by example" project for the community. There are seven libraries in Ramsey County. When Roseville was budgeted to be renovated, the goal was to create a building designed to save taxpayers money over the life of the building, and in addition represent the potential to educate the community about a better way to do things. For instance water is an issue in this region, due to the population density. The county now uses the Roseville Library as an example of a better approach for the sustainable use of rainwater/storm water for other county buildings. It is now a showcase for other projects." Since the County Board was ultimately interested in cost effective use of funds we asked a question of Jack and Sean, that sometimes arises in the discussion of whether to build Green or not.

Is it more expensive to build a sustainable building than a traditional building?

Sean had this to say, "8-10 years ago building "green" would have been more expensive, but not today. The industry has progressed so it is really just a better choice as a decision. Perhaps this is particularly true for the cost to build a Silver LEED rather than a standard building; there is no longer a premium in this case. For a building committed to a Gold LEED certification, it may carry a small premium of costs."

"The fact is that the discussion on sustainable buildings has matured to where it's the normal standard for many, but not all areas of the world. Context is an important factor, what is sustainable in the US may not be in other countries. Our acceptable energy consumption may be much higher than in a developing country. The measure of ROI (return on investment) also presents contextual differences, for example, in many places in Europe, they accept a 30-40 year ROI, whereas in the US, a 3-year ROI is considered desirable or expected."

Sean explained, "The end user will determine the ROI. It is essential to understand that managing the facility, taking a lot of care with maintenance schedules will be a significant factor. This includes everything from upkeep of energy systems, purchasing decisions, cleaning, etc. Facility crews, for instance, tend to have routines of maintenance that must be adapted to serve a sustainable building. This takes some reprogramming on their part. This is why using an *integrated design process* also known as a *community input process*, that engages the facility people, the staff, the community, and all stakeholders in design development often generates many benefits. It becomes both an educational as well as a consensus building experience. In the end the hope is that during the process, supporters and champions are created for a new approach, one where value is understood, procedures are followed and thereby the greatest benefit of a sustainable building is achieved."

Building Design:

Roseville has many features that are green including the water conservation and reuse of storm water (see the breakdown that follows). Building material selection included use of local materials, thus reducing transportation costs and is supporting the local economy & labor. Key to the design was the extensive use of natural light and providing great views.

Jack Poling felt that this was a key feature in the design that allowed for significant natural light to fill the building. “There is a psychological factor both for the patrons and staff. Working in a building with natural light creates a better and more comfortable work and learning environment.” Another factor that Mr. Poling emphasized was designing space for efficient use of staff. At Roseville from the central desk sight lines provide views into several departments fore efficient staff use and management. Although the building nearly doubled in size, it was still covered by four desks where staff managed the various services points. Efficient use of staffing is integral to planning service area layouts successfully. “

Final Advice on building Green from the architects.

“A building is not a static entity; it is active and growing. A critical factor for an efficient and successful design process is a clear understanding of, not only the operational concerns, but also to develop a long term strategic plan for the building, one that considers the organization and services that it houses, and how they evolve over time.”

Ramsey County Roseville Library, Roseville, Minnesota, USA

Building Details and Description

Square Footage:	70,000 Total (44,900 remodel and 25,100 addition)
Total Cost:	\$9,200,000
Completed:	June 2010

Ramsey County Roseville Public library attained Gold LEED certification by achieving 40 points from the certification process. The newly remodeled building will reduce energy consumption by 15 percent and reduce water consumption by 30 percent.

Indoor Environmental Quality

Indoor Air: Low-Volatile Organic Compound (VOC) emitting adhesives, paints, carpets and wood were selected to improve indoor air quality.

Daylight. The large windows throughout the building allow natural light to penetrate into the building, resulting in less electrical use.

Cleaning. Library cleaning products are Green Seal Certified, which means they are better for health and the environment.

Water Efficiency *Low-flow Fixtures.* Library fixtures, including toilets, sinks and urinals, are low-flow. These low-flow plumbing fixtures reduce water consumption inside the building by 30 percent.

Landscaping. There are more than 30 native plants, trees, shrubs and perennials planted on the site that are well adapted to the climate and soils of the region, and require less irrigation. Rain gardens: The rain gardens provide onsite storm water filtration and reduce surface runoff from paved areas, allowing us to collect, filter and protect our water.

Materials & Resources Reuse. More than 75 percent of the original building was reused: When you walk around on the second floor of the library, you are walking on the original roof. The fireplace in the children’s area is the original, it’s been resurfaced.

Recycle. More than 97 percent of construction waste was recycled or reused, meaning it was kept out of our landfills. Many of the materials were made from recycled materials: Each bench in the Children’s Reading Garden is made from 704 recycled milk jugs. The chairs in the children’s room are made out of recycled yogurt containers.

Local and sustainable. In an effort to keep things close to home, many of the materials used in the building came from within a 500-mile radius. More than 95 percent of the wood in the Library is sustainably harvested and Forest Stewardship Council (FSC) certified.

Storm water. Through the use of rain gardens, a large rain barrel and underground filtration systems, the Library is collecting and filtering storm water onsite, protecting the watershed.

Parking. There is preferred parking for carpools and fuel-efficient vehicles (for a list of 601 fuel-efficient vehicles visit our Web site). Look for the artwork, which was done courtesy of local Girl Scout troop, to signify which spots are reserved.

Bicycles. There's more parking - for your bike! There are a total of 27 bike parking spots in the bike racks.

Energy & Atmosphere: Energy. The newly remodeled building was designed to be highly efficient. Improved mechanical systems, roofing materials and windows means the state-of-the-art HVAC systems will consume 15 percent less energy than a similar building.

Lighting. Sophisticated lighting controls and reduced-wattage fixtures result in substantial maintenance and energy savings To learn the many aspects of the certification process and the complete LEED report on Roseville Library go to:

Snapshots of Green Buildings Across the Globe

This portion of the paper takes readers around the world to view five examples of green/sustainable libraries. This quick tour offers an overview of the characteristics, locations, systems, services, etc, of some outstanding examples. Within the tour are academic, national, public, as well as a library/cultural center.

1. B. Thomas Golisano Library at Roberts Wesleyan College This is the first academic library building to achieve a LEED Silver certification and uses various methods to make it 40 percent more energy efficient than the New York State Energy Code recommendations.



Photo by Patricia Albanese

Built:	Opened 2007
Awards:	The first academic facility to achieve LEED Silver certification.
Green Features:	<p>Temperature of the two-story, 43,000 square foot facility is regulated through geothermal methods. Water is either heated up or cooled off as it is pumped through varying depths of its many wells.</p> <p>The building also uses energy derived from wind or biofuels by purchasing renewable resource energy from a New York-based company.</p> <p>Library shelves limit daylight from side windows, so the design compensated by using a large atrium to provide natural daylight to both levels of the building. Use of white paint and solar shades reflect the direct rays of the sun and bounce light to specific areas. The internal lights respond to outside conditions.</p> <p>Building includes renewable materials, such as cork flooring, carpet squares made of highly recycled content, and sunflower board cabinetry; efficient T-5 fluorescent lighting, and locally harvested building materials.</p>
Service Features:	3,000-SF commons area comprised of a café, computer lab, study spaces, and meeting rooms.
Other	This building energized the library community in its'
Features:	<p>Region and inspired other institutions to consider options that incorporated sustainable features..</p> <p>http://www.libraryjournal.com/article/CA6687430.html By Lynn Blumenstein -- Library Journal, 09/15/2009</p>

2. Singapore National Library Building national library combines a focus on energy efficiency and partnerships to create a building that engages the community and welcomes millions of visitors each year.



Image from:

http://commons.wikimedia.org/wiki/File:National_Library_3,_Singapore,_Dec_05.JPG

Photo by User:Sengkang of English.Wikipedia

Age:	Built: 2005
Awards:	Green Mark Platinum Award
Green Features:	<p>Building is oriented away from the East-West sun, combined with sun-shading features on the West face of the building as an additional shield against solar heat gain and glare. Sun-shading features include the low-emissive double-glazing glass panel facade and large overhangs on the external facade. Light shelves that extend into the library space reflect sunlight further into the building. This optimizes daylight and thus reduces the use of artificial lighting. Extensive landscaping, sky terraces and roof gardens are utilized to lower local ambient temperature. Use of rain sensors as part of the automatic irrigation system for rooftop gardens. Water efficient taps and cisterns are also used to conserve water. Energy efficient features include daylight sensors that are used together with automatic blinds at the building facades, public toilets installed with motion sensors. There is night setback for the air-conditioning system in the library spaces after library operation hours. Energy monitoring via BMS (Building Management System) provide additional energy management controls</p> <p>http://www.nl.sg/NLWEB.portal?_cn_nodePath=NL/VisitUs/NLSBuilding&_nfpb=true&_cn_bookLevel=1&_cn_bookTitle1=Visit+Us&_pageLabel=NL_CMSPage1&_cn_pageTitle=NLS+Building</p> <p>http://www.nlb.gov.sg/Corporate.portal?_nfpb=true&_pageLabel=Corporate_portal_page_aboutnlb&node=corporate%2FAbout+NLB%2FNational+Library+Building&corpCareerNLBParam=National+Library+Building</p>
Service Features:	<p>Visited by close to four million locals and tourists annually. Collocation of reference collection with public library makes service more accessible through out phases of life; high tech and high touch;</p>
Other Features:	<p>Functions as a cultural facility as well as a civic place for Singapore. a place for other public activities, including a 615-seat theatre run by the National Arts Council., icon for people's passion for life long learning; designed as a "Library for the Tropics" using bioclimatic design techniques.; calculations show that we save an average of about 33% on the monthly energy bill compared to a similar building</p>

3. Beitou's green library: East Asia's most eco-friendly building
(Taipei Public Library: Beitou Branch)



By Lijun (Own work) [GFDL (www.gnu.org/copyleft/fdl.html) or CC-BY-SA-3.0 (www.creativecommons.org/licenses/by-sa/3.0/)], via Wikimedia Commons

Age:	Built: 2006
Green Features:	<p>“The library’s wooden walls recall Japan’s 1895-1945 occupation of Taiwan, during which thousands of buildings were constructed of timber felled from the island’s forests. Its shape and the vast amount of window area, however, make it very different in appearance to Beitou’s Japanese-era bungalows. The library’s large windows help cut electricity use in two ways. An abundance of natural light means less interior lighting is needed. Also, the windows are often opened wide for ventilation, thus reducing the need for fans and air-conditioning. One part of the roof is covered by photovoltaic cells that convert sunlight into electricity. Inside the building, by the loans-and-returns desk, an electronic information board shows how much electricity is being generated and consumed. The board also records humidity and carbon dioxide levels, plus precise interior temperatures (to 1/10,000th of a degree) in different parts of the library. Another part of the roof is covered by 20 centimeters of soil to provide thermal insulation. During Taipei’s chilly winters, this soil layer cuts heat loss through the ceiling while in the summer, it helps shield the building from the sun’s heat. The library conserves water by capturing rainfall. The sloping roof gathers rainwater, which is then stored and used to flush the library’s toilets.”</p> <p>http://www.chinapost.com.tw/travel/taiwan-north/taipei/2007/11/01/129117/Beitous-green.htm</p>
Service Features	<p>Civic pride; its’ design gives the impression of being outside while still inside the building. Located within a park http://www.chinapost.com.tw/travel/taiwan-north/taipei/2007/11/01/129117/Beitous-green.html</p>

4. Brighton’s Jubilee Library (UK), winner of multiple building awards.

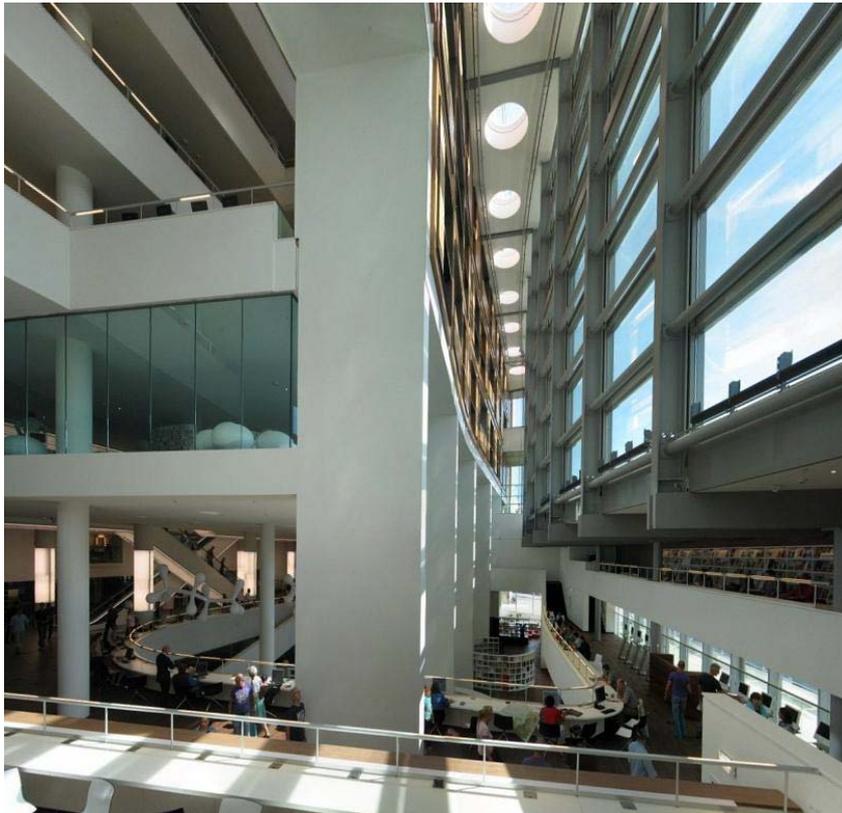


Simon Carey [CC-BY-SA-2.0 (www.creativecommons.org/licenses/by-sa/2.0)], via Wikimedia Commons

Age:	Built: 2005
Awards:	14+ awards, including a BREEAM Excellent Rating
Green Features:	Use of setting, sunshine and wind; south facing, heat stored in walls and floors, slow release to assist in HVAC of building, wind towers draw off excess heat from building, use of concrete as thermal mass, toilets use recovered rainwater. South facing glass for solar gain; use of louvers to deflect heat in summer; heat recovery from lights, building occupants, equipment and reused in building systems; Use of Termodeck and exposed concrete thermal mass reduces the HVAC systems requirements.
Service Features:	<p>“A New Approach to Library Service Delivery”</p> <p>Jubilee Library aims to offer choice, comfort and accessibility. Uses self service check out; Staff walk the floor to provide assistance when and where people need it. Designed to empower library users, encouraging them to browse and explore; use of open stacks where ever possible. Heavily used building-nearly 1 million visits every year, hosts around 500 events per year. It continues to attract new members to Libraries Services</p> <p>http://www.brighton-hove-rpml.org.uk/Libraries/sites/Jubilee/Pages/JubileeLibraryAwardWinning.a.spx</p>
Other Features:	Design process engaged community early in the process with regular community public meetings. Relative low cost; less than conventional HVAC systems. “Brighton has got itself a new civic amenity that seems a hit with the public and somewhere that makes reading cool again, in more senses than one. The building sits modestly in its landscape, yet with a great impact on the eye - and a minimum impact on the environment.”

http://www.concretecentre.com/online_services/case_studies/jubilee_library,_brighton.aspx
<http://www.brighton-hove.gov.uk/index.cfm?request=c1139701>

5. Amsterdam Public Library, the most sustainable building in Amsterdam, 2008



http://en.wikipedia.org/wiki/File:BibliotheekOBA_1.jpg photo taken by Ceinturion

Age:	Opened 2007
Awards:	Named the most sustainable public building in Amsterdam in 2008, based on BREEAM method
Green Features:	The building uses a ground source heat system together with highly efficient boilers. It also makes use of free cooling from the cold air outside whenever possible. The building is equipped with abundant solar panels, it has double glazing, and sustainable materials have been used. The building is connected to the Long-Term Energy Storage System that sustainably generates heat and refrigeration (for the entire island). This sustainable energy system is a joint initiative of the development partners involved: the Municipality of Amsterdam, the Stichting Amsterdamse School voor de Hoge Kunsten, New China Town, and OOA CV (a joint venture between Bouwfonds MAB and Meyer Bergman). It is easily accessible by bicycle and by public transport, so that OBA also scored high on the element of transport.

Service Features:	There is a theatre, a readers' cafe and a restaurant overlooking the city It is designed to connect learning with participation and experience.
Other Features:	The building Attracts 2 million visitors a year; engages partnerships with other organizations; provides 2000 secure bicycle racks; and is seen as part of the vision for the future of the City http://www.holland.com/press/story_ideas/sustainableholland/sustainable.jsp http://www.arup.nl/ http://www.mab.com/en/news/Pages/SustainabilityAward2008fortheAmsterdamPublicLibrary.aspx?archieft=true

Case Study Two: Daniel Ruiz Public Library, Austin, Texas
Lars Stanley FAIA, LEED AP <http://www.larsstanley.com/>



Clearstory design for added light.
Photos provided by Lars Stanley



Native landscape

Mr. Stanley has won numerous awards and competitive commissions for his work, which focus on integrating craft, the touch of the hand, into architecture. In the January 2011 issue of Architect magazine he was praised as an example of an architect who has excelled by extending his practice beyond the domain of delivering buildings. His diverse portfolio reflects his interest in understanding how human energy is embodied through the process of making, and how materials and elements of the built environment are sometimes able to reflect the essence of being human. He is also a celebrated artisan of metallurgy and has built the Lars Stanley Metalworks into a successful venture, turning out award-winning gates, sculpture, furniture, architectural details and lighting fixtures. Some examples of his clients include the City of Austin, the National Wildflower Research Center, actor Richard Gere, and director Steven Spielberg.

On most comprehensive sustainable city lists, you will find Austin, Texas included as one of the greenest towns in the United States. Eco-oriented building codes allow for unconventional, but proven earth-friendly buildings inside city limits. Austin even treats and reuses its sewer sludge selling it back to the public in the form of Dillo Dirt, approved for use in gardens. It also boasts the World's First LEED Platinum Hospital, the Mueller Children's Hospital, incorporating 47,000 tons of the old airport runways into its design. The hospital

generates all of its own energy on site, harvests rainwater, and is fitted out with solar interior lighting.

For many in this Southwestern city, sustainability is not an option but a lifestyle. This is true of Lars Stanley, a man of Austin, and a believer in the importance of sustainability. He and his wife and architectural partner Lauren, live in a growing urban homestead on two acres, with a food garden courtyard at its heart. Their super-insulated home is built out of wheat-straw Structural Insulated Panels and powered by a photovoltaic array. It stays cool thanks to the local prairie grasses that grows on the roof, and age-old Texas cooling techniques such as paddle fans, salvaged operable windows, and a thermal chimney. The Stanley's capture rainwater, reuse gray water in the landscape, and irrigate the living roof with air-conditioner condensate. The Stanley's envision becoming "a link in a chain of productive urban green spaces that demonstrate new paradigms for survival."

In 2004 the Best Building in Austin, as voted by the Austin Chronicle, was the Daniel E. Ruiz public branch library, which was designed by Mr. Stanley. Sitting in Iron Works, a local landmark and former historic blacksmith shop, having a Texas dinner, Lars explained some of the features of the Ruiz library and important aspects of sustainability.

"First, the key to any structure is the building envelope, which partly controls energy consumption and air quality, the balance, keeping the heat out or in depending on the time of the year, and, in the southwest of the United States where we are, also keeping coolness in. It is an air tight system, but with the proper air flow to keep the building fresh and healthy."

"Ruiz Library has an efficient water system, with on-site runoff control and retention. The building includes many reuse features, such as: 100% recycled carpet, recycled steel joists and beams, 75% recycled acoustic ceiling tiles, native stone, water efficient plumbing fixtures, recycled molded hardwood tiling, small point-of-use hot water heaters, etc. The landscape preserves existing trees and vegetation buffers, and used native plants to further landscape. The outside space is enhanced by integrating Public Art into it, thus extending the reach of the building. At Daniel Ruiz Library the design strived for the integration of elements both inside and outside of the building"

"Another key feature is the orientation of the building, which recognizes solar control and southern exposure, with window shades on South and West exposures. It was a goal of the library to use the bountiful sun that shines in Austin." Lars Stanley created clearstory space in the central part of the building that provided illumination over the main stacks and patron work areas.

He pointed out, "If no lights are on in the building during the day because of this design of natural lighting, not only is electricity saved, but the city youth and the other patrons clearly get the concept and its usefulness. The library wanted us to let sunlight in so people would be aware of it, to show that there is something going on outside to the benefit of inside. It was a clear example to the community, consciously applied by the library in the design."

One question we posed was, now that the building had functioned for 7 years:

Did the building show savings? Lars answered, "Yes, it had, but savings in green buildings are contingent on an important aspect that sometimes is neglected, the strict adherence to the maintenance schedule" (emphasizing the point that Jack Poling and Sean Wagner's made earlier), "You can have all the fancy systems in line in a building but if they are not running successfully and following proper schedules, you will not accrue the energy benefits and ROI (return on investment). In the case of Ruiz Library the ROI was slowed somewhat." Lars estimated that it took about 4 -5 years to achieve their ROI, as there was

staff turnover, which had to be trained and then retrained to manage the schedules. It is running smoothly now, and Mr. Stanley estimated that Ruiz now enjoys about 10-20% of the cost of energy costs saved due to the design and systems. This is significant in these times of rising energy costs.

What is the great advantage of designing for a green or sustainable library?

“It is less obvious initially, but evident later”, offered Mr. Stanley. He said “we saw it clearly only after it was built, that the library, by creating a sustainable, transparent approach was serving the function of a true learning institution, modeling for the community the value and benefit of sustainable components. It translated into people pointing it out to their friends and to their families; getting an idea of what this sustainability issue is really all about. Illustrating how the library supported the values that Austin and its municipal government projected.”

“The notion of what Austin tried to put in their library is the sense of community; the Ruiz Library has community spaces; it is a gathering place. This is also a key feature of sustainability. Libraries must serve their community. There are so few truly public spaces. The Ruiz Library is a model for community values, a center to gather at, a learning space for all.”

Since the Ruiz library was built, energy costs have gone up significantly in the U.S.A., and around the world and the need for communities to work together has become even more apparent. Like in Japan, when suddenly crisis hits and supplies are low, the community has to pull together. Many of us marveled at the discipline and patience that the Japanese people showed. If the habit and example of working together is already in practice, the process of sustaining through difficult emergencies by community effort is an added benefit. A community can be better prepared by having done it before and accepting common values. Learning how to be a community, through one of its' components, the library, can be very important. The library can become one the liveliest places in the community, a key part of it; a neighborhood town hall; a learning commons in its most generic form, and a model for appropriate actions. As Mr. Stanley suggests, “Sustainability can become a tool to build community.”

Daniel Ruiz Library: Sustainability Features

- HVAC Commissioning - programmable to occupancy
- Pre-design coordination among consultants
- Basic building orientation recognizes solar control, southern exposure
- Advanced building control system
- Zoned low-maintenance HVAC systems
- 100% recycled carpets
- Porous paving for Fire Lane to reduce impervious cover
- Extensive natural day-lighting to reduce lighting loads
- 20% post-consumer/40% post-industrial recycled reengineered steel joists & steel beams
- 75% recycled acoustic ceiling tiles
- Low/no VOC finishes
- Low-E insulated glazing
- Window shades on south and west exposures
- Native stone
- Water efficient plumbing fixtures
- Rock wool building insulation

Locally produces steel/concrete

High efficiency HVAC, lighting, plumbing fixtures – meeting or exceeding City of Austin Sustainability Guidelines and specifications

Use of small point of use water heaters

Recycled molded hardwood tiling

Recycled areas incorporated throughout building

Building fenestration oriented primarily to the south for control

On-site runoff control and retention on-site

Preservation of existing trees and vegetation buffers

Creation of extensive outdoor spaces, integrated with public art

Air tight building envelope to reduce infiltration and maximize efficiency

SECTION TWO: Sustaining Services, Sustaining Human Potential

There are essential truths about the state of the resources of the planet, the importance of utilizing these resources in ways that will prolong their availability, and methods and approaches to utilize resources in efficient and appropriate manner. In developing Green buildings, planners and architects try to put these truths and methods into practice. Part of the nature & purpose of libraries has to do with supporting human beings, and building human potential. Most would agree that libraries should be places to nurture human possibilities and aspiration. In the coming decades, libraries and hybrid services and learning organizations will become more essential to sustaining human potential, yet they will be challenged by economic, social, and political pressures.

How will libraries meet these challenges? It will require libraries to be innovative, creative, technological, and also to partner with like-minded organizations. It may be useful to view how organizations that are striving to support human potential are utilizing these tools and approaches in today's world. Perhaps their example can be both instructive and

On the Front Lines of Climate Change

Arid Lands Information Network (ALIN) is an International NGO that facilitates information and knowledge exchange to and between extension workers or “infomediaries” and the arid lands communities in Kenya, Uganda and Tanzania. These communities are experiencing threats to their way of life on a variety of levels, threats that can be balanced with new methods, techniques, and vital information.



Maarifa Knowledge Center

ALIN provides information exchange activities focused on small-scale, sustainable agriculture, climate change adaptation, natural resources management and other livelihood issues. They have recognized the critical need of their clients in rural and remote farming areas to have access to information on climate change, new farming techniques, and information on possible markets in ways that have never before been possible. Without these services, the communities and the individuals themselves are in jeopardy. To provide these services they have developed a plan and community-sustaining model that offers opportunities for growth and knowledge. Their vision is of a knowledge driven society and their mission is to improve the livelihoods of arid lands communities in East Africa through delivery of practical information using modern technologies. www.alin.or.ke/Who%20we%20

ALIN has a clear model. First it establishes a *Maarifa or Community Knowledge Center*, in some of the most remote areas of East Africa. These centers start with a facility fashioned out of a recycled, fabricated shipping container. (See picture above) Maarifa is the Swahili word for knowledge. These centers are established in isolated communities, and equipped with computers and Internet access.

With the support of field workers from ALIN, ICT training is provided to all community members who are interested, many of them young people, some who have graduated from

secondary schools as well as primary school pupils, many later form information clubs. Over time the Maarifa Center become a rich information hub, as the individual skills build, with publications, newsletters, research reports and electronically stored information, audiovisual material and compendiums supplied by ALIN or found by community members. The Maarifa also serves as a gathering point for the community.

The ICT equipment enhances: information access via the Internet, content creation, and skills development among these rural communities. The centers also act as information access points for community development workers who provide agricultural and related extension services in the region. They use the centers to acquire free (online) development information and to send weekly reports to their ministries or organizations, but also benefit from basic office services such as typing, photocopying, and free Internet access. Everyone's capacities are improved; relationships are built.

A typical Maarifa Center is managed by a selected advisory committee of about 5-8 members drawn from local community stakeholders. According to ALIN, the selection process ensures that the membership is gender-balanced, represents interests of special groups, and has diverse background. ALIN's volunteer program supports the running of the centers. The volunteers work at the center for one year and are supervised by local host partner organizations. The volunteers manage the center's activities, coordinating the collection of development-oriented local knowledge and experiences, and train local communities on the use of ICT tools. These individuals become community leaders as well as trainers. The Maarifa Centers by supporting the involvement of women enhance the capacity of women to play an active role in development initiatives and reverse the trend of insufficient inclusion, especially in the dry land areas..

http://www.connectaschool.org/en/community/ict/women/empowerment/Section4.1_access_info_training/

Ten Maarifa Centers now exist, including, eight in Kenya, one in Tanzania, and one in Uganda, with plans to open many more. Some of their accomplishments include: Easy access to information and knowledge resources, the capacity to develop local knowledge databases /reservoirs, engagement of youth in productive activities and access to IT skills, the ability to develop online marketing portals enabling communities to trade globally, improved agricultural techniques, the capacity to access government forms and information, saving difficult travel time, students applying to colleges, etc., all have given a new approach and hope to these rural areas.

http://www.nytimes.com/2009/02/02/technology/internet/02kenya.html?_r=2&ref=technology
(see article in the New York Times)

The community facilitators eventually become the managers of the centers and thus the centers are sustained by its' own community capacity. The Nguruman Maarifa centre located in the Magadi Division, about 160 Kilometers southwest of Kenya's capital Nairobi, was named as one of the 10 most remote parts of the world. Yet their community is now part of the global network. <http://crave.cnet.co.uk/gadgets/0,39029552,49303909,00.htm>

Thus with recycled shipping containers, installed technologies, through training and partnering with ALIN, who provide critical skills & information access, they create an environment by which individuals can improve their livelihood, and in the process build community leadership and possibilities for sustainability. Most importantly, Maarifa Centers support the potential for several communities to help themselves. There is much in this process that might be replicated.

Sustainable Services: Veria Greece

Veria Public Library, Northern Greece

Every library building, whether Green or not, serves a region or area, and must recognize the needs of the communities that they serve. Through the facility, and by means of the staff, resources, leadership, and services, a strategy can be developed for providing for the needs of the service area, and to enhance the life of their patrons. The next example illustrates a library that has used innovation, creativity, staff expertise, advocacy, marketing, and wise leadership to successfully serve its users through unique programs & collaboration. By marketing their accomplishments they have achieved significant recognition and added monetary support to the library.

Economic conditions are very difficult in many places across the globe. In Greece the economy has been particularly challenged. Veria Public Library located in Northern Greece, sits at a confluence of numerous ethnic identities that are moving into the region. Many places, faced with the same situation, have not embraced the complex issues that this kind of influx can bring to a community. Veria Public Library reacted to the situation by reaching out to immigrants, striving to make them feel welcome, and to help them assimilate into the community. One of its many programs is called *Untold Stories*, which offers immigrants from Albania, Russia, Ukraine, and Bulgaria access to computers to create visual narratives about their lives. These stories are then posted on YouTube, and on a dedicated project website. Immigrants are given a voice and platform, and the community at large can learn from their stories, hardships, and their accomplishments. Much is learned by this process.

This type of relevant program does not require vast resources, only an idea and some energy and expertise. For a moderate sized library, faced with a tight budget, Veria has not stopped growing or evolving, not allowed the situation to constrain it. Rather, it has used a variety of methods to create successful, sustainable strategies. While books are still important to Veria Public's service area of 50,000 residents, and 130,000 additional people in the surrounding region, it has built its reputation on a commitment to innovation and experimentation. Taking this approach it has made itself a model for libraries in Greece and throughout the world, especially since submitting and being awarded the 2010 Access to Learning Award from the *Bill and Melinda Gates Foundation*, amidst hundreds of other competing applicant organizations from around the world. This award has brought recognition with it, as well as a one million dollar prize for the benefit of its community. <http://www.gatesfoundation.org/atla/Pages/2010-atla-winner-veria-central-public-library-greece.aspx>

What are the principles that have pushed this organization forward? Ioannis Trohopoulos, the library's director, says, "We have built our name on the concept that we give you services to make your life easier and more enjoyable." .

It is a fairly simple and elegant concept that they strive for; take for instance their children's area. The Veria Public Library opened a new children's area called Magic Boxes. The idea was to create a space for children that would encourage their curiosity and show them that the library can be a place of surprise and excitement. The bold, bright colors of Magic Boxes created a joyous atmosphere for children and parents alike. An outdoor garden provides areas for climbing, playing, and exploring. And there are plenty of comfortable places for reading and listening to music and stories. There are computers with kids' software, video games, and regular activities and programs to keep young minds active and engaged. They put the emphasis in promoting reading, creativity, and especially digital literacy to children. To this end, they provide creative workshops in such subjects as: robotics, 3D gaming, storytelling, painting, sculpting, theatre and music.

Another crucial aspect of the Veria Library's services is its mobile library program, which brings books and computer access to thousands of people in the surrounding villages that otherwise would not have easy access to a library. Two years ago, the Veria Library had to stop the mobile library program because it could not get support from the state to retain their drivers. This situation has been true of many libraries, in many places. However, Veria was determined to find a way to keep serving the people who were counting on them. The staff went directly to the mayors of the villages, advocated for the service, and asked their help to supply the drivers, which it turns out, they gladly responded to. As Kostas Karelis, the mayor of -the Meliki Authority one of the communities served said, "I'm not exaggerating when I say that when the library visits these kinds of small places, where there's no library, or any kind of access to technology, in a way it changes their lives,". Veria advocated, promoted, and succeeded.

Most effective has been their approach to technology. The staff realized the power of technology early on. In 1992, the library's catalogue was already fully automated. In 1996, the library became the first in the nation of Greece to provide its users free access to computers and the Internet. In 1997; it was the first library to have its own website. The list of leadership steps that they have taken is extraordinary, the numerous international projects that they have collaborated in, is truly impressive, it includes:

(The following information is taken from the Veria Public Library website)

<http://blog.libver.gr/en/>

MOBILE (1993-1995): The first European project in which the Library participated. During that time the first Electronic Book Mobile was developed and investigated the use of electronic material in small remote areas.

PUBLICA (1997-1999): The first program, which started building a consortium of Public Libraries across Europe, aiming to support the position of Public Libraries in general. **ISTAR - Information Society Training and Awareness Raising Networks (1997-2000):** ISTAR provided a model for promoting awareness and extending network access to businesses, especially SME, individual teleworkers, open and distance learners in support of each region's key economic development drivers. Veria Public Library was the key partner from the Imathia region: among others from Thüringen in Germany, Essex County from UK, and Omagh area in Northern Ireland.

PULMAN & PULMAN XT: (2001-2003) The PULMAN Network of Excellence was launched within the European Commission's research program for a User-friendly Information Society. PULMAN-XT was established later with the goal of expanding the benefits of the PULMAN Network and initiating new activities. In both projects Veria Public Library was responsible for developing and managing the web site, **CALIMERA (2003-2005):** Calimera stands for Cultural Applications: Local Institutions Mediating Electronic Resource Access. Locally focused, Calimera has mobilized local cultural institutions for a new role in transforming innovating technologies into helpful services for ordinary citizens.

Light: Bring to Light the value of cultural heritage (2004-2006): a 26 month project funded by INTERREG IIIC East was a partnership of five libraries which promoted cultural heritage through a network of museums, archives and cultural sites. Veria Central Public Library was the coordinator of the operation and created an educational digital map of the city's cultural monuments, with multimedia links to content-some of which were created by children. Project web site: <http://www.light-culture.net>.

Any one of these projects could have been enough for some institutions. Veria Library has worked diligently to form partnerships with other libraries, programs, and institutions within Greece and beyond. Because it has been innovative, embraced the old and new components of its community, because it has marketed itself and used the tools of technology, it has been able to grow and thrive, and even in tough times, sustain itself.

Library director Ioannis Trohopoulos stresses that the most important thing for a library to do is listen to the needs of the people it serves. *“The key is you have to be relevant. If your organization manages to be relevant throughout its life, it can survive.”*

CONCLUSION:

In this brief paper we have tried to explore what it means to develop sustainable libraries in terms of the facility, its characteristics, what constitutes important features, how architects view sustainability, and we have toured some of the world’s Green Library buildings. We have also posited the idea that while developing a Green building is vital, it is only an essential first step to sustainability. To remain relevant to the community, and assure organizational sustainability, we must understand, listen to, and develop services that create a better life for our users, and the stakeholders who support our organizations.

As in East Africa and in Veria, Greece where climactic or economic conditions have threatened livelihood or quality of life, libraries must be conscious that business as usual may not be achievable without a sound strategic plan, a flexible building design, an acceptance that change is the norm not an anomaly, that the staff and leadership must be creative, innovative, and service oriented. It is also, as in the Daniel Ruiz Library example, possible to become a model to a community as a part of the educational mission of the library. In this way, as Lars Stanley suggested, “Sustainability can serve as a tool to build community.”

The next 20 years will be crucial for the planet in terms of climate change, concerns over water, the need for food production, economic stability; almost every area of planetary resources will be challenged. The cost of going Green is no longer a serious issue, ROI can be accomplished fairly rapidly; libraries have, and should continue to lead the way as creative and ethical examples to their communities. To do this, they should plan, market, and advocate the benefits of their libraries to their communities, stakeholders, and funders. It is our hope, that this paper will be of some assistance to libraries who seek to be positive agents of learning for the communities, and in the development of sustainable/ Green buildings and services.

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