



Case Study: The **SMART** Hospital Project (a pictorial)




Implementing Agency: Pan American Health Organization (PAHO)

Project Advisor: Dr. Dana van Alphen, Regional Advisor


Funding Partner: United Kingdom Agency for International Development (UKAID)





No.	Activity	Actions Performed	Evidence of Completed Works (photos, graphics, etc.)
1.	Establishment of Project Steering Committee	<p>The Project Steering Committee was formed to help guide the implementation of the project activities. The Committee members included:</p> <ul style="list-style-type: none"> Roger Bellers, DFID Simone Bannister, DFID Sally Edwards PAHO SDE Nicole Wynter PAHO PED Sharleen DaBreo, Director, DDM BVI Dr. Dana van Alphen, Project Advisor PAHO PED 	
2.	Selection of Project Consultant for Demonstration Component	<p>A TOR was established and circulated throughout the region to determine availability of persons with sufficient skills to serve as Project Consultant/Principal Consultant. Mr. Ronnie Lettsome, Architect from the BVI, was chosen based on his experience in dealing with retrofitting projects involving DRR and his skill in green applications.</p>	
3.	Application of BAT in St. Vincent and the Grenadines	<p>Meetings were held with PAHO focal point Ms. Anneke Wilson, Health Planner and other MOH officials, representatives of the National Emergency Management Organization (NEMO), the Energy Unit and Building, Roads and General Services Authority (BRAGSA). Staff at the facilities inspected were also consulted. The BAT was applied to both facilities offered by MOH, Chateaubelair and Georgetown Hospitals.</p>	



No.	Activity	Actions Performed	Evidence of Completed Works (photos, graphics, etc.)
4.	Selection of Consultant for Preparation of Toolkit	A TOR was established and circulated throughout the region to determine availability of persons with sufficient skills to assist in the development of a comprehensive Toolkit that can be used as a guide by countries in the adaptation of the tools developed. Ms. Marissa Da Breo was chosen based on her being a LEED AP (Accredited Professional) and experience in environmental management and sustainability.	
5.	1 st Steering Committee Meeting in Barbados	Representatives from SKN and SVG were invited to join steering committee. PS MOH in SKN, Mr Andrew Skerrit and the Health Planner in SVG, Mr David Latchman, were nominated. At this meeting a decision was made to include a formal Cost Benefit Analysis (CBA) for both demonstration components of the project. The committee also agreed that the safe vs green components should be properly documented in Annex. Compliance with building codes in the demonstration countries was considered an important criteria.	



No.	Activity	Actions Performed	Evidence of Completed Works (photos, graphics, etc.)
6.	Submission of Inception Report for Demonstration Project	The Project Consultant/Principal Consultant developed a Baseline Assessment Tool with Criteria for selection of facilities.. The Methodology for facility assessments, tendering and works was also clearly defined and these were included in the Inception Report along with the finding from the assessment of all facilities. All technical components to support the tender process were also developed as a detailed scope of works with specifications of works to be carried out by the chosen consultant.	
7.	Application of BAT in St. Kitts and Nevis	Meetings were held with the PAHO Focal Point, Dr. Patrice Lawrence and officials from the Ministry of Health. The Selection Criteria was applied to 5 facilities in SKN; however, only two fit the criteria; Mary Charles and Pogson Hospitals. Staff at both hospitals were consulted and the BAT was applied. It was decided that the Pogson hospital would be selected for retrofit.	


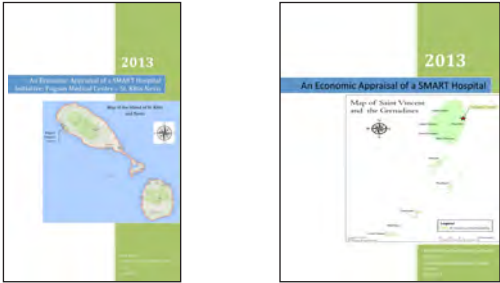


No.	Activity	Actions Performed	Evidence of Completed Works (photos, graphics, etc.)
8.	Tender launched for works at Georgetown Hospital	Expression of Interest (EOI) published in local newspapers. 8 responses were received; three (3) were short listed.	
9.	Tender documents for Georgetown Hospital presented	Tender documents inclusive of Scope of Works (Request for Proposal-RFP) were prepared for SVG and issued to 2 of 3 short-listed contractors who were asked to submit best and final offers	
10.	Contractor selected for Georgetown Hospital	Williams Electronics/Mornix Construction were selected as contractors for works at Georgetown Hospital. Contract preparation began with meeting between the Project Consultant/Principal Consultant, the Contractor and the Hospital Staff to establish a work plan and to examine the scope of works.	



No.	Activity	Actions Performed	Evidence of Completed Works (photos, graphics, etc.)
11.	DiMAG Meeting	<p>The tools developed for inclusion in the Toolkit were shared and discussed. In addition, a presentation was made by the Project Consultant detailing the process involved in the selection of the Demonstration Sites and the works proposed for each facility. The Group also reviewed the draft Sustainable Building Annex and offered comments. It was agreed that a Peer review Group would be established from the DiMAG membership to review of the Toolkit Version 6 and Engineering components of the Annex. It was also recommended that Architectural components be included in the Annex and reviewed by members once completed.</p>	
12.	Finalized Inception Report submitted for preparation of Toolkit	<p>The Consultant included methodology that will be used for literature review/research, preparing the proposed checklists an outline of the content of the Toolkit.</p>	



No.	Activity	Actions Performed	Evidence of Completed Works (photos, graphics, etc.)
13.	Selection of Consultant for Preparation of Annex	Mr. Tony Gibbs, Engineer was selected to undertake these works based on his previous work with PAHO, engineering experience in the region and knowledge of regional hazards and sustainability issues.	
14.	Selection of Consultant for Preparation of Cost Benefit Analysis	A TOR was established and circulated throughout the region to identify a suitable Economist to carry out this analysis. Dr. Mark Bynoe was chosen based on his experience performing economic analyses and his work with the Caribbean Community Climate Change Centre (CCCCC).	
15.	Inception Report submitted for preparation of CBA	The inception report included the proposed methodology and outlined the data needs. The Consultant identified the need for a survey of communities surrounding both facilities. The survey instrument was prepared and submitted for application.	





No.	Activity	Actions Performed	Evidence of Completed Works (photos, graphics, etc.)
16.	Survey Instrument finalized	A detailed questionnaire was issued to community members in St. Vincent and St. Kitts as part of CBA process. PAHO staff, consultant and steering committee members assisted in the administration of the questionnaires.	
17.	Selection of Consultant for Public Relations Campaign	A TOR was established and circulated throughout the region to determine availability of persons with sufficient skills to serve as Public Relations expert. Ms. Tara Wilkinson was selected based on experience with PR/communications in the region. Unfortunately contract ended due to a lack of understanding of the requirements. An agreement was reached with BVI DDM to support the design and development of the PR components and Dawlin Designs was hired to graphically format these and produce the required quantities.	



No.	Activity	Actions Performed	Evidence of Completed Works (photos, graphics, etc.)														
18.	PR products produced	A logo and banner was developed. Brochures displaying the proposed works at Georgetown and Pogson Hospitals were prepared and distributed along with flyers, t-shirts, radio and television ads/promos and billboard displays in each island.															
19.	Ceremony/Town hall meeting to launch works at Georgetown Hospital	It was agreed that a formal Town Hall Meeting would be held to inform community members of what will be occurring at the hospital, some of the changes envisioned and what is hoped to be achieved by the project. Dignitaries, consultant, contractor, members of the community and media were present.															
20.	Survey administered as part of CBA process for the Georgetown Hospital	Surveys undertaken to determine community's view of hospital and willingness to pay for services were administered by PAHO staff and steering committee members. Service area surveys included Georgetown and Sandy Bay. 450 questionnaires were administered.	<table border="1"> <caption>How often does the household visit the Physician per year</caption> <thead> <tr> <th>Visits Per Year</th> <th>Percent</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>50.2</td> </tr> <tr> <td>2</td> <td>14.5</td> </tr> <tr> <td>3</td> <td>7.3</td> </tr> <tr> <td>4</td> <td>18.2</td> </tr> <tr> <td>12</td> <td>1.0</td> </tr> <tr> <td>Total</td> <td>100.0</td> </tr> </tbody> </table>	Visits Per Year	Percent	1	50.2	2	14.5	3	7.3	4	18.2	12	1.0	Total	100.0
Visits Per Year	Percent																
1	50.2																
2	14.5																
3	7.3																
4	18.2																
12	1.0																
Total	100.0																

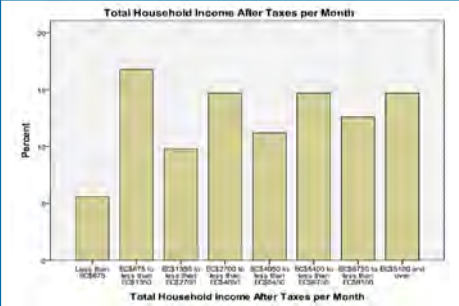



No.	Activity	Actions Performed	Evidence of Completed Works (photos, graphics, etc.)
21.	Editing of Toolkit	Patricia Bittner was contracted to perform technical proofreading of the Toolkit to facilitate publishing to the web.	
22.	Draft Toolkit published to PAHO's website	The Draft Toolkit was reviewed/ revised by core team members, members of DiMAG, regional health officials and professionals from outside the region. The Toolkit was then updated and formatted for web publication by PAHO staff.	<p>http://www.paho.org/disasters/index.php?option=com_content&task=view&id=1742&Itemid=911</p> 
23.	Works start at the Georgetown Hospital, St. Vincent and the Grenadines	Retrofit works commenced at the Georgetown Hospital including: reconfiguration and strengthening of roof; installation of a PV system; installation of new light fixtures and faucets; replacement of windows and doors; reconfiguration of the ambulance bay; inclusion of handicapped accessible ramps; expansion of water storage capacity.	



No.	Activity	Actions Performed	Evidence of Completed Works (photos, graphics, etc.)
24.	2 nd Steering Committee Meeting in Saint Vincent and the Grenadines	Updates were provided on the development of the Annex, Toolkit and Policy and progress of work in SVG was presented and discussed. A site visit to the Hospital was completed to see firsthand the progress of the works and to meet with hospital staff, community members and MOH personnel.	
25.	Training delivered	A Safer Building course at H. Lavity Stoutt Community College was offered for regional participants. One module included an overview of the Smart Hospital Project. A presentation was made by the Project Consultant to define the connection between safe and green building techniques/methods, to present the project overview and the components of the Green checklist.	
26.	Selection of Consultant for Preparation of Smart Healthcare Policy	A TOR was established and circulated throughout the region to determine availability of persons with sufficient skills to serve as Consultant. Dr. Vasantha Chase was chosen based on her experience with policy development in the region.	



No.	Activity	Actions Performed	Evidence of Completed Works (photos, graphics, etc.)
27.	Survey re-administered in area of Georgetown Hospital	Surveys originally included in the BAT were re-administered (40) to determine the level of satisfaction in the community with the retrofitting works and to identify lessons learned from the demonstration component of the project. The results were included in the final report prepared for the Georgetown Hospital.	 <p>The bar chart displays the percentage of households with different income levels after taxes for each month from January to December. The Y-axis represents the percentage, ranging from 0 to 20. The X-axis lists the months. The bars show the following approximate percentages: JAN (10%), FEB (17%), MAR (14%), APR (16%), MAY (12%), JUN (14%), JUL (13%), AUG (14%), SEP (12%), OCT (14%), NOV (13%), and DEC (14%).</p>
28.	Official ceremony to mark re-opening of Georgetown Hospital	All works were completed as scheduled. The Prime Minister, ministers of government, health officials, representatives from PAHO, contractor, media and community members attended the ceremony and toured the facility. Members of the Friends of the Hospital Group were also present. They and others from the community were a significant help in the execution of additional works needed to the facility including securing a washing machine, refurbishing the hospital beds, and provision of catering services for the Opening Ceremony. A commitment has been made by the Group to secure an ambulance and other critical supplies and equipment for the facility.	 <p>The evidence consists of four photographs: 1) A large group of people seated at tables under a tent during the opening ceremony. 2) A group of people in blue shirts standing together for a group photo. 3) A group of people cutting a red ribbon. 4) A view of hospital beds in a ward.</p>






No.	Activity	Actions Performed	Evidence of Completed Works (photos, graphics, etc.)
29.	Surveys administered in St. Kitts	PAHO Staff administered 260 households in St. Kitts as part of CBA development.	
30.	Tender for Works at Pogson Hospital launched	EOI published in local newspapers. 2 responses received.	
31.	Tender documents presented	Tender documents inclusive of Scope of Works (Request for Proposal-RFP) were prepared for SKN and issued to the 2 contractors who were asked to submit best and final offers.	



No.	Activity	Actions Performed	Evidence of Completed Works (photos, graphics, etc.)
32.	Works start at the Pogson Hospital St. Kitts and Nevis	The Contract was awarded to Williams Electronics. Retrofit works undertaken including: overhaul of electrical system; repair of backup generator; installation of spill containment system; replacement of exit doors, installation of compatible fires hose connections & fire extinguishers; installation of exits sign; repair of fire alarm system; upgrade of entry system to include swipe card access; installation of a rainwater capture system; repair of waste water treatment system.	
33.	Works at Pogson Hospital Completed	Works completed as per Scope and in keeping with work schedule. Final inspection by Project Consultant/Principal Consultant was completed on 6th March, 2014. The retention period extends until later part of March 2014.	



No.	Activity	Actions Performed	Evidence of Completed Works (photos, graphics, etc.)
34.	Training Delivered	<p>The Project overview was presented to all participants during a workshop held in the BVI. Participants were introduced to all tools developed as part of the project including Sustainable building Annex, BAT, Toolkit and Green checklist, Smart Hospital Policy, CBAs. Exercises were undertaken to demonstrate the use of the tools. 2 field trips were included as part of the workshop to highlighting the application of safe and green technologies. These included a visit to the newly constructed Peebles Hospital and to Cooper Island where the latest Solar Panel System is used to provide more than 70% of power needs for the resort. Participants also viewed a number of sustainable measures applied throughout the facility.</p>	
35.	Preparation of Final Report	<p>Final overall draft project report was prepared for submission to DFID. Log frame was updated to show all components of the project that have been completed.</p>	
36.	Close of Project	<p>All works at Pogson Hospital were verified; all elements of the Toolkit upload to PAHO's website. Energy data received from the Georgetown Hospital for the past 5 months indicated a 60% reduction in energy usage at the facility.</p>	

Annex 1 – Decrease of electrical consumption at Georgetown Hospital

Mar 11, 2014 10:23:30 AM BOT

Edit Commands List Help

ARD PUBLIC SECTOR
NavLine

Customer/Location Consumption History Inquiry

Customer ID: 46281 HOSPITAL
Location ID: 41924 CHILLI 01

Cycle/route: 12 07 Amount due: 18,349.11
Initiation date: 4/28/84 Pending: .00
Termination date: 0/00/00 Customer/location status: A
Customer status:

Service Code	Reading Type	Reading Date	Actual Consumption	Actual Demand	Days	Meter Number	Estimate Code	Comment Code
EL	REG	2/19/14	1473.00	.00	30	4117		
EL	REG	1/20/14	1622.00	.00	33	4117		
EL	REG	12/18/13	2231.00	.00	28	4117		
EL	REG	11/20/13	2716.00	.00	30	4117		
EL	REG	10/21/13	2304.00	.00	31	4117		
EL	REG	9/20/13	1166.00	.00	30	4117		
EL	REG	8/21/13	2945.00	.00	30	4117		
EL	REG	7/22/13	3460.00	.00	32	4117		

OK
Exit
Cancel
Print history
Meter invent...
Meter servic...
Pending / his...
Budget trans...
Change view
Graph history
Customer/lo...
Reading actl...

Mar 11, 2014 10:24:53 AM BOT

Edit Commands List Help

ARD PUBLIC SECTOR
NavLine

Customer/Location Consumption History Inquiry

Customer ID: 46281 HOSPITAL
Location ID: 41924 CHILLI 01

Cycle/route: 12 07 Amount due: 18,349.11
Initiation date: 4/28/84 Pending: .00
Termination date: 0/00/00 Customer/location status: A
Customer status:

Service Code	Reading Type	Reading Date	Actual Consumption	Actual Demand	Days	Meter Number	Estimate Code	Comment Code
EL	REG	6/20/13	3570.00	.00	29	4117		
EL	REG	5/22/13	2751.00	.00	34	4117		
EL	REG	4/18/13	2887.00	.00	28	4117		
EL	REG	3/21/13	2664.00	.00	30	4117		
EL	REG	2/19/13	2836.00	.00	32	4117		
EL	REG	1/18/13	2663.00	.00	29	4117		
EL	REG	12/20/12	3013.00	.00	30	4117		
EL	REG	11/20/12	3462.00	.00	33	4117		

OK
EXIT
Cancel
Print history
Meter invent...
Meter servic...
Pending / his...
Budget trans...
Change view
Graph history
Customer/lo...
Reading actl...

Annex 2 – SMART Hospital Demonstration Project – Georgetown Hospital, St. Vincent and the Grenadines




Pan American Health Organization
World Health Organization
 Office of Caribbean Program Coordination
 P.O. Box 508 Bridgetown
 Dayrells Road and Navy Gardens
 Christ Church, Barbados
 Tel: (246) 5200 / 436-6448
 Fax: (246) 436-6447 / 436-9779
 Email: disaster@paho.org
 Website: www.paho.org/disasters/caribbean







SMART Hospitals





SMART Hospitals

In the last decade, natural disasters have caused more than 45,000 deaths in the region, left 40 million injured or in need of assistance, and carried a price tag—in direct damage alone—of more than US\$20 billion¹. Governments are often challenged with the significant task of financing recovery efforts after a disaster. The health sector has proven impacted by climate change in the particularly vulnerable to the coming decades and are least able to adapt to climate change impacts. Healthcare facilities, in general, have large carbon footprints and high utility costs. The resources used to pay for energy consumption could be used in improving health services.

According to the United Nations Economic Commission for Latin America and the Caribbean (ECLAC), accumulated losses due to disasters in the health sector reached US\$3.12 billion. With the advent of climate change it is estimated that more intense hurricanes, droughts, floods and rising sea-level should be expected. Although, the Caribbean nations contribute less than 1% to global greenhouse gas (GHG) emissions, yet these countries are expected to be among the earliest and most impacted.

In this context, the construction of health facilities must be revised and reoriented towards disaster mitigation, adapting to climate change and reducing the environmental footprint. The ultimate goal is not only of protecting the lives, but also of ensuring that such facilities can continue to operate at the moment when they are most needed. A further development of the **Safe Hospital Initiative** is a model policy on **SMART Healthcare Facilities**, currently being prepared by the Pan American Health Organization, which is within the CARICOM regional framework for Climate Compatible Development. The policy will provide guidance for improved safety and climate change mitigation to reduce the vulnerability of healthcare facilities and include green measures through efficient use of natural resources and sustainability.

SMART Hospital Demonstration Project
Georgetown Hospital
St. Vincent & the Grenadines



- Provision of emergency back-up power
- Enhanced access to facility with use of appropriate protective covering
- Installation of energy efficiency devices—Photo Voltaic System & Solar Water Heaters
- Replacement of Windows and Doors to improve resilience and energy conservation
- Introducing natural lighting
- Strengthening and repairing of the roof
- Installation of signage and evacuation plans
- Improved fire safety with installation of fire alarm system, egress and upgrade to handicap accessibility
- Establishment of water harvesting



