Adaptation of the SMART concept:

The Virgin Islands Experience

April 2016
Executive Summary

The Caribbean region, including the British Virgin Islands, are prone to multiple natural hazards like earthquakes, volcanic eruptions, tsunamis, tropical storms and hurricanes. Climate change is expected to bring with it additional burdens such as rising sea levels and may exacerbate droughts and increase the frequency of heavy rainfalls, coastal erosion and flooding. It is also predicted that temperature shifts will encourage the spread of certain infectious diseases etc.

Critical public sectors such as health and education in Caribbean have both felt the direct and indirect impact of natural disasters.

Damage to facilities causes disruption of services and limits their ability to treat the sick and injured or provide shelter. Their infrastructure is vulnerable since often located in areas of high disaster risk or they have weaknesses in structure or non-structural issues e.g. potential roof and window damage, loss of water and power supplies, poor disaster planning, etc. Many facilities in these sectors also use copious amount of water, have specialized pieces of equipment that use tremendous amounts of energy, use a large amount of natural resources and generate significant amounts of waste.

The healthcare and education sectors are therefore ideal for implementing improved safety measures as well as climate adaptation and mitigation measures along with efforts to improve sustainability and environmental stewardship.

The Pan American Health Organization (PAHO) has developed an initiative, with the financial assistance of UK aid from the Department for International Development (DFID), to undertake the 'smarting' of healthcare facilities (i.e. safer and greener) in the Caribbean. The benefits of the projects include:

- Improved delivery of healthcare to communities in emergencies
- Improved disaster safety and accessibility;
- Improved water and energy security as well as operational savings
- Reduced greenhouse gas emissions, economic losses and overall environmental impact;
- Improved indoor air quality and staff, patient and visitor satisfaction, and
- Improved national awareness of disaster risk reduction, climate change adaptation and mitigation and environmental sustainability issues.

This innovative 2-1 integrated approach is the first of its kind in the Caribbean region and the world. As part of the project, a comprehensive ‘smart’ toolkit has been developed to support health administrators, planners, engineers, facility and maintenance personnel and developers/architects to undertake and replicate the project in their respective islands. The Toolkit refers users to the Hospital Safety Index (HSI), which was developed by PAHO several years ago, a Smart Hospital Baseline Assessment Tool (BAT), a ‘Green Checklist’, a building code annex and a comprehensive Cost Benefit Analysis (CBA) methodology. The toolkit can be applied to other sectors. One of the main outputs of the project is to determine the extent to which multi-sectoral and inter-country linkages can be established with stakeholders to promote Smart measures.

In the Virgin Islands we have taken the lead on this. The Ministry of Education and Culture has a direct working relationship with the Health Sector and the Department of Disaster Management. This relationship has allowed for the adaptation of the SMART Health Care Facilities concept in the Education Sector to create a SMART Schools Programme. It aims at using sustainable mitigation, adaptation and resilient techniques to ensure that all schools are safe, healthy and applying green measures.

The approach taken by the Ministry of Education and Culture is also in keeping with the United Nations Office for Disaster Risk Reduction (UNISDR) and the Global Alliance for Disaster Risk Reduction and Resilience in the Education Sector (GAD3RES) to promote coherent and coordinated action on school safety globally. This initiative builds on the Comprehensive School Safety Framework and defines a safe school as a school combining all of the following elements:

- Safe Learning Facilities (disaster-resilient infrastructure);
- School Disaster Management;
- Disaster Risk Reduction and Resilience Education.

Since starting the SMART Schools Initiative, the Virgin Islands has further advanced their programme to incorporate a Health and Safety Policy, Assessment Tools, Demonstration Models as well as a green school checklist which links directly to the national Green Pledge Programme. More recently legislative changes have been introduced to accommodate planning requirements in the Education Sector.

Messages from the Ministry of Education and Culture

Honourable Myron V. Walwyn, Minister for Education and Culture

As part of the Ministry’s efforts to enhance the resilience of the education sector through a participatory and multi sector approach, we have been working with the health sector and the Department of Disaster Management for many years now. We have made great achievements over the years by integrating disaster risk reduction, environmental protection and conservation into the school curriculum. Our efforts also included building a culture of safety, promoting healthy schools, reducing risks through mitigation and adaptation techniques, building an effective response mechanism, and promoting continuity of operations planning throughout the sector. All of these initiatives have brought us to a point where we now see the opportunity to synchronise local efforts with those taking place regionally and internationally. The adaptation of the PAHO SMART Concept is seen as the right way to combine safe, healthy and green initiatives within the education sector.

Dr. Marcia Potter, Permanent Secretary, Ministry of Education and Culture

Certification, Licensing and Accreditation are important processes in The Virgin Islands’ Education Sector. Certifying SMART schools is an acceptable process of publicly attesting that specific standards have been achieved or exceeded. In the case of our SMART Schools programme, we are certifying schools as being safe, healthy and green. Licensing and accreditation are an indication that a degree of competency is required among our teachers. This is especially important to maintain higher quality and to ensure that health, safety and welfare are maintained and protected within our educational institutions. A few of our schools are working towards accreditation; this is an indication that they are meeting desired qualifications and standards, and are gaining public recognition for their efforts.

Jillian Douglas-Phillip, Ag. Chief Education Officer

The Case Study

The Virgin Islands Smart School Programme was adapted from the PAHO Smart Health Care Facilities in the Caribbean Initiative as a means of giving students a safe, natural and holistic student-centered education in a resilient environment that can withstand the impact of hazards and climate change while keeping operational costs to a minimum.

This case study is designed to capture the steps taken in adapting the smart concepts used by PAHO in making health care facilities safe and green to making schools safe, healthy and green. We invite you to review this document and find out more about how The Virgin Islands was able to adapt the smart concepts in one of the most critical sectors. It is hoped that this information will stimulate similar effort in other key sectors such as agriculture, finance, tourism, planning.

It is believed that for these adaptation processes to be effective there is need for strong political commitment and engagement. The champion for promoting this adaptation in The Virgin Islands was identified in the Minister of Education and Culture who is passionate about offering all children “from early childhood years to adulthood an opportunity to reach their full potential to be successful in life, at work and in the community”.

The Government of the Virgin Islands understands the need to ensure that its schools are safe, healthy and green. We have an ambitious target to meet by 2018 and we are well on our way to success with the development of a School Health and Safety Policy and assessment tools that allow us to offer certification and licences for all schools and teachers. We aim to develop programmes in our schools which focus on disaster risk reduction, environmental sustainability, sound nutrition, waste minimisation, energy and water conservation, litter reduction and recycling. We certified the first two SMART Schools in the Territory in 2016 and a number of the others are already using the SMART approach to gain international accreditation.

We believe that the SMART way is the RIGHT way to build resiliency within the education sector!

Jillian Douglas-Phillip, Ag. Chief Education Officer
Adapting SMART Health Care Concepts in the Education Sector in The Virgin Islands

**SAFE + HEALTHY + GREEN = SMART**

---

**Natural and Man-made Hazards**

- Can cause loss of lives, damage to infrastructure and compromise access to educational facilities

---

**Climate Change**

- Contributes to sea level rise, coastal erosion, inland flooding, salt water intrusion
- Increases risk of some diseases, diminishes air quality
- Disrupts water supply
- Worsens sanitary conditions due to drought or contamination

---

**THROUGH**

- Design and construction of new facilities
- Retrofitting of existing facilities
- Training
- Awareness
- Maintenance
- Inspections
- Licensing
- Accreditation
- Community Support
- Drills

---

**Health and Literacy**

- 28.8% of population are school aged (2013-2014 school year)
- Number of educational facilities in the Virgin Islands (2013-2014)
  a) Early Childhood Centres = 32
  b) Primary Schools = 27
  c) Secondary Schools = 8
  d) Tertiary Institutions = 1
- Number of children that are injured at school
- Average school aged child spends between 14-28% of the day at school
- Number of children and adolescents with special health care needs or chronic illnesses is increasing
- School illnesses increasing
- Healthy schools = Low absenteeism

---

**School Operational Costs and Environment**

- 17.82% of national budget goes towards education (2014)
- Schools can save 30-40% on utility costs which can go towards teaching supplies, maintaining and upgrading school plants
Emphasis on Hazard Safety in structural, non-structural and functional aspects
- Conserving resources, cutting costs, increasing efficiency in operations and reducing carbon emissions
- Promoting advocacy, partnerships, tools, capacity building, knowledge management and resource mobilization
- Encouraging maintenance actions
- SAFE + GREEN = SMART in Healthcare Facilities

The Information Technology (IT) era has brought with it many positive things which allowed health care facilities to adopt its approach towards satisfying the needs of patients, clinicians and staff and to even make some predictions about the future. Flexibility has been integrated into the IT infrastructure to make it lasting and efficient in its use and to allow it to easily incorporate new technologies that are constantly being developed. This approach allows for continuity of IT operations as well as effective and improved quality of care.

Opportunities are now emerging for other critical sectors to adopt the SMART approach not only to satisfy their IT needs but to build resilience within their operations. The SMART approach has created a single integrated platform that connects disaster risk reduction, climate change, environment, energy and health programmes thereby making better use of resources and promoting measurable transparency and sustainability.

The SMART approach is now being used by PAHO to develop safe and green health care facilities in the Caribbean. The approach calls for an examination of structural, non-structural components as well as the incorporation of techniques that will allow the facilities to adapt to and mitigate the effects of climate change. As the sector evolves it will continue to be faced with challenges of maintaining facilities that must serve the immediate and ongoing medical needs of the population and respond to new and emerging threats and hazards, all of which must take place through cost effective operations. The Smart approach is emerging as a comprehensive means for addressing these critical areas.
Worldwide Initiative for Safe Hospitals and Schools

Monitoring and Evaluation

Licensing and Accreditation

Legislation Review

Gap Analysis

International

Regional

National

The Virgin Islands Education Sector
SAFE + HEALTHY + GREEN = SMART SCHOOLS
Using a Sustained Mitigation, Adaptation and Resilient Technique for disaster resilience in schools

Multi-Year School Safety Project
Focusing on Capacity Building and Safety Equipment

6-Step Pathway to Integration
(Hybrid Approach)

SAFE School Certification
Health and Safety School Policy and Assessment Tools

Green Pledge
Commitment to Climate Change Policy and Energy Policy

Green Tools
(Assessing Actions)

Smart School Certification
Piloted at 3 educational levels in one community

International Initiatives

Regional Focus

National Priorities
Adaptation of the SMART concept: The Virgin Islands experience

SAFE + Healthy + Green = SMART

1998
School Preparedness Assessment
- Evaluated how prepared the educational institutions were to respond to and how quickly they could recover from a hazard impact
- Many schools were without disaster contingency plans
- Staff were unable to handle basic emergencies
- Evacuation procedures and routes were not defined

2000
School Disaster Planning and Capacity Building
- Training teachers and plan development

2000-2004
Disaster Risk Reduction (DRR) Curricula Reform
- Developed a suite of DRR teaching materials and workbooks for schools
- Disaster Management Certificate and Associate Degree programmes developed and taught at tertiary level with articulation agreement for Bachelor and Masters at Arkansas Technical University

2008
DRR Awareness for Youth
- Emergency Communications training
- Hazard Safety activities
- Geological field trips

2004-2006
SAFE School Programme – Phase 1
- Fire Safety Inspections
- Capacity building in Fire Suppression, Contingency Planning and Exercising, Basic First Aid/CPR
- Distribution of Safety Equipment
- Expansion of tertiary education to include Safer Building
- Development of multi-level Model Contingency Planning Template
- Regular testing of School Disaster Plans

2011-2012
SAFE School Programme – Phase 2
- Developed School Health and Safety Policy
- Health and Safety Assessment Toolkit, Certification Criteria and Database
- Formalization of School Disaster Liaison Focal Points

2010
School Early Warning
- Installation of Radio Data System (RDS) Radios in educational facilities

2004-2006
SAFE School Programme – Phase 1
- Developed School Health and Safety Policy
- Health and Safety Assessment Toolkit, Certification Criteria and Database
- Formalization of School Disaster Liaison Focal Points

2013
Certification of the first 10 SAFE Schools in the BVI
- Undertaken by the BVI Education Sector to ensure that safety, hazard resilience and environmental protection elements are incorporated in all aspects of the school environment
- Equipment and technologies were installed

2013-2015
SMART School Programme
Safe + Healthy + Green
A Sustained, Mitigation, Adaptation and Resilient Technique (modeled from SMART Health Facilities) and used by the BVI Education Sector to ensure that safety, hazard resilience and environmental protection elements are incorporated in all aspects of the school environment
- 2013 – Expansion of SAFE School programme to include Healthy and Green elements (SMART School)
- 2014 – Piloting of the Green Checklist at selected pre-primary, primary and secondary schools
- 2015 – Energy and water audits, health and safety fairs, campus CERT for teachers and parents
- 2015 - Mandatory Annual Curriculum Analysis, Mandatory Annual Evacuation Drills, Adoption of Green Pledge, installation of LED lighting

2013
Teen CERT Pilot Programme at all secondary schools
- Undertaken to increase the preparedness and resilience of schools

2013
Teen CERT Pilot Programme at all secondary schools
- Undertaken to increase the preparedness and resilience of schools

2013-2015
SMART School Programme
Safe + Healthy + Green
- Undertaken to increase the preparedness and resilience of schools
- Equipment and technologies were installed

2013
Certification of the first 2 SMART Schools in the BVI
- Undertaken by the BVI Education Sector to ensure that safety, hazard resilience and environmental protection elements are incorporated in all aspects of the school environment
- Equipment and technologies were installed

2015-2016
- Certification of first 2 SMART Schools in the BVI
- Enhancement of Minimum Service Standards for Schools
- Multi-sectoral inspection linked to revised legislation, licensure and accreditation

1998
School Preparedness Assessment
- Evaluated how prepared the educational institutions were to respond to and how quickly they could recover from a hazard impact
- Many schools were without disaster contingency plans
- Staff were unable to handle basic emergencies
- Evacuation procedures and routes were not defined

2000
School Disaster Planning and Capacity Building
- Training teachers and plan development

2000-2004
Disaster Risk Reduction (DRR) Curricula Reform
- Developed a suite of DRR teaching materials and workbooks for schools
- Disaster Management Certificate and Associate Degree programmes developed and taught at tertiary level with articulation agreement for Bachelor and Masters at Arkansas Technical University

2008
DRR Awareness for Youth
- Emergency Communications training
- Hazard Safety activities
- Geological field trips

2004-2006
SAFE School Programme – Phase 1
- Fire Safety Inspections
- Capacity building in Fire Suppression, Contingency Planning and Exercising, Basic First Aid/CPR
- Distribution of Safety Equipment
- Expansion of tertiary education to include Safer Building
- Development of multi-level Model Contingency Planning Template
- Regular testing of School Disaster Plans

2011-2012
SAFE School Programme – Phase 2
- Developed School Health and Safety Policy
- Health and Safety Assessment Toolkit, Certification Criteria and Database
- Formalization of School Disaster Liaison Focal Points

2010
School Early Warning
- Installation of Radio Data System (RDS) Radios in educational facilities

2013
Certification of the first 10 SAFE Schools in the BVI
- Undertaken by the BVI Education Sector to ensure that safety, hazard resilience and environmental protection elements are incorporated in all aspects of the school environment
- Equipment and technologies were installed

2013-2015
SMART School Programme
Safe + Healthy + Green
A Sustained, Mitigation, Adaptation and Resilient Technique (modeled from SMART Health Facilities) and used by the BVI Education Sector to ensure that safety, hazard resilience and environmental protection elements are incorporated in all aspects of the school environment
- 2013 – Expansion of SAFE School programme to include Healthy and Green elements (SMART School)
- 2014 – Piloting of the Green Checklist at selected pre-primary, primary and secondary schools
- 2015 – Energy and water audits, health and safety fairs, campus CERT for teachers and parents
- 2015 - Mandatory Annual Curriculum Analysis, Mandatory Annual Evacuation Drills, Adoption of Green Pledge, installation of LED lighting

2013
Teen CERT Pilot Programme at all secondary schools
- Undertaken to increase the preparedness and resilience of schools

2013
Certification of the first 2 SMART Schools in the BVI
- Undertaken by the BVI Education Sector to ensure that safety, hazard resilience and environmental protection elements are incorporated in all aspects of the school environment
- Equipment and technologies were installed

2015-2016
- Certification of first 2 SMART Schools in the BVI
- Enhancement of Minimum Service Standards for Schools
- Multi-sectoral inspection linked to revised legislation, licensure and accreditation

"Certifying SMART schools is an acceptable process of publicly attesting that specific standards have been achieved or exceeded".

Jillian Douglas-Phillip, Ag. Chief Education Officer

"The adaptation of the PAHO Smart Concept is seen as the right way to combine safe, healthy and green initiatives within the education sector."

Dr. Marcia Poer, Permanent Secretary, Ministry of Education and Culture