Sandwatch – A Global 'Citizen Science' Observatory of Changing Environments in SIDS

Geographical scope/benefitting country(ies):	Small Island Developing States (SIDS) and Island Territories, principally in the AIMS[1], Caribbean, and Pacific Oceans
Duration (in months):	36 months
Name and unit of project officer	Douglas Nakashima, Chief, SC/PCB/SII; Khalissa Ikhlef, SC/PCB/SII
Partner(s) institutions:	Sandwatch Foundation, Ministries of Education, Ministries of Environment, National Commissions, ASPnet Schools, primary and secondary schools, teachers and curriculum developers, students, coastal communities, local governments.
Total estimated budget inclusive of Programme Support costs	US$ 1,450,000

Rationale and background

The International Year for SIDS-2014 provides a critical moment for reviewing sustainable development priorities for SIDS, particularly in light of the Third International Conference on SIDS that will take place in Samoa, from 1-4 September 2014.

The Sandwatch initiative promotes environmental stewardship amongst youth, enhances scientific observations of environmental change, and encourages pro-active environmental action.
It is open-access, and already underway in primary and secondary schools in 30 countries worldwide. Through Sandwatch, children, youth, teachers and community members, principally in SIDS, work together to scientifically monitor, critically evaluate and practically address the environmental and social challenges facing coastal environments

The stage is now set for expanding the existing Sandwatch initiative into a Global Observatory of Changing Environments in SIDS based on citizen science.

In 2013, an online International Sandwatch Database was launched. It provides a platform where students and teachers can enter, analyse and share their Sandwatch monitoring data,

[1] The AIMS region includes SIDS from the Atlantic and Indian Oceans, the Mediterranean and the South China Sea.

photographs, maps and other findings. It is also the first step in developing detailed time-series data that allow for year-after-year monitoring of specific coastal locations. Over time, such information can be of considerable scientific interest. For innumerable beaches and coastlines across the world's surface, Sandwatch data is the only on-the-ground data available.

The new phase, called SANDWATCH-ph2 (tentative title), will include the following:

(i) Encouraging, demonstrating and training teachers, students and citizen groups in the upload of their monitoring information to the Sandwatch International Database and further developing the Database to enhance its scope and relevance to user needs. This will involve widespread training and awareness and the development of online training modules supported by competitions and other incentives and promotions.

(ii) The strength of the existing Sandwatch initiative lies in the network and the interactions between individuals, schools, countries and regions. This new initiative will strengthen the networking utilising technology such as mobile phone applications to share findings, issues and solutions and among youth and adults. Efforts will also be focused on an often forgotten group – elders and senior citizens – and the sharing of their knowledge and experiences relating to coastal changes through interaction with children and utilising audio and video media.

(iii) Making a difference by supporting small-scale beach improvement or enhancement activities has been a goal of Sandwatch since its inception. This is one of the most tangible outcomes of the initiative, but requires small scale funding which is often not available in small islands, e.g. transportation to the beach, erecting a billboard, or purchase of coastal tree seedlings and compost. The development of a small grants facility will support such activities and will also provide training for youth in proposal preparation, implementation, reporting and accounting.

Sandwatch is a joint effort of UNESCO's Natural Science and Education sectors, in partnership with the Sandwatch Foundation and Sandwatch's founding scientific expert, Dr Gillian Cambers.

The Sandwatch project can be launched at the Samoa Conference, where it might be profiled as a contribution to the Multi-stakeholder Partnership Dialogue. It can also contribute to the follow-up to Samoa Conference outcomes and feature in UNESCO's Action Plan for SIDS.

Why UNESCO ?

UNESCO's mandate in Science and Education, experience and networks provide an ideal bridge between the scientific research and education communities at the global, regional and national level. With demonstrated capacity to support the implementation of community-level, on-the-ground activities as well as to serve as a convener at the international level national and regional authorities, UNESCO is ideally placed to support the proposed programme.

The integration of Sandwatch components into the formal curriculum confers upon the programme a different level of permanence and visibility at the national level. UNESCO, within its mandate, provides continued assistance and information to assist interested member states in taking steps towards working with curricula developers to integrate Sandwatch as a part of the formal curriculum.

In implementing Sandwatch for more than 10 years, UNESCO has developed a close collaboration and combined efforts with a large global volunteer network as well as a number

of partner organizations. Among these, the Sandwatch Foundation – established in 2008 by the principal authors of the Sandwatch manual, Gillian Cambers and Paul Diamond – is a crucial one. The partnership between UNESCO and the Sandwatch Foundation has been exemplary, with the two organizations playing complementary roles towards the shared objective of advancing the global engagement with Sandwatch.

Overall Goal/Objective

Coasts and beaches are highly dynamic environments of critical importance to the economic, socio-cultural and bio-physical integrity of SIDS. During recent decades, these environments have been subjected to an increasing rate of change due to urbanisation and expanding coastal development, as well as climate change and climate variability. These changes are impacting, often adversely, the lifestyles and livelihoods of islanders living in coastal towns and villages, and beyond that, resource-based and tourism-based economies from local to national levels.

The key objectives of the proposal are to build on the popularity and success of Sandwatch to:

1. expand and enhance the Sandwatch International Database to become a community-based observatory of changing coastal environments in SIDS and to serve as a global archive of coastal and beach changes that is also a baseline for measuring impacts of climate change and variability.
2. using new technologies to expand existing networking between islanders and islands to share information and solutions relating to coastal issues and to involve all age groups from children to elders.
3. promote Sandwatch as a citizen science initiative that makes a tangible difference on the ground by providing a small grants facility to support small scale tangible beach enhancement and improvement activities.

Main expected results

Expected Result 1

Sandwatch monitoring introduced to new schools in participating SIDS; and into new SIDS across all world regions

Expected Result 2

Climate change and climate variability programs/curricula reinforced in SIDS education system, based on Sandwatch

Expected Result 3

Sandwatch database used effectively by Sandwatch groups and scientific rigour of data collection consolidated

Expected Result 4

Sandwatch Citizen Science network established to build awareness and share lessons learned

Expected Result 5

Small grants facility established for community-based action

Activities and outputs/deliverables relating to the achievement of expected results

Activity 1 – expected result 1 : Hold regional Sandwatch training workshops in SIDS in AIMS, Caribbean and Pacific.
Output/deliverable 1.1 Three regional Sandwatch training workshops held in each SIDS region: AIMS, Caribbean and Pacific.
Activity 2 – expected result 2 Monitor and evaluate existing and ongoing efforts to introduce climate change and variability into educational programmes and curricula based on Sandwatch
Output/deliverable 2.1 Three regional workshops with SIDS curriculum professionals
Activity 3 – expected result 3 National training workshops on using the Sandwatch Global Database
Output/deliverable 3.1 Ten national training workshops on using the Sandwatch Global Database and improving the scientific rigour of monitoring protocols
Activity 4 - expected result 4 Establish an internet forum (mobile phone app) for the exchange of experiences about changes in coastal communities
Output/deliverable 4.1 Internet forum/mobile phone application on change in coastal communities
Activity 5 - expected result 4 Recording change through the eyes of elders documented through video interviews and stored on dedicated YouTube channels
Output/deliverable 5.1 Audio and video interviews documenting change through the eyes of elders
Activity 6 - expected result 4 Developing a Policy Brief on mobilizing community-based monitoring to reinforce scientific observation of climate change impacts in SIDS, and promote local action as a response.
Output/deliverable 6.1 One Policy Brief
Activity 7 - expected result 5 Coastal communities undertake small projects to respond to (adverse) changes in their beach or coastal environment through small grants facility
Output/deliverable 7.1 Small grants facility in place and grants provided

After many years of piloting and improving Sandwatch - its manuals (in four languages), coastal monitoring protocols, global database, training videos, website, and networks in all SIDS regions, it is now opportune for UNESCO to scale-up this flagship project in response

to rapidly growing demand from SIDS world-wide. The high vulnerability of SIDS in the face of global climate change has made them acutely aware of the need to build awareness amongst their citizens, including in particular youth, about this emerging threat to their livelihoods, natural and cultural heritage and in some cases, their very existence. But beyond education, SIDS citizens also seek the opportunity to act: to contribute to global understanding of the changes underway and to counter where possible negative impacts. Sandwatch offers this dual opportunity to learn and to act. In this International Year for SIDS, with the 20-year review of the Barbados Programme of Action forthcoming in Samoa, the expansion of Sandwatch across schools in SIDS, and across SIDS regions, is a dynamic and positive message of increased understanding, action and hope.

As a collaborative effort involving the Natural Science and Education sectors, key activities include regional training workshops to introduce Sandwatch monitoring to new schools in participating SIDS, and into new SIDS across the AIMS, Caribbean and Pacific regions. Furthermore, Sandwatch will also provide the opportunity to introduce information on climate variability and change into education programs and curricula in SIDS. Furthermore, students and teachers will be trained to enter the data recorded from their coastal monitoring into the global Sandwatch database which (i) stores their data in a secure place; (ii) provides tools to analyse observed changes; and (iii) serves as a vehicle to share and compare data across years and from location to location. In step with the growing popularity of citizen science, SIDS students from around the world will actively contribute their observations to a global data set that enhances scientific understandings of environmental variability and trends from local to global scales. Finally, ICTs will be mobilized to build global connections amongst youth in SIDS to share and compare their Sandwatch monitoring efforts, and small grants will be provided to support local community-based actions that respond to adverse changes to their coastal homes. Finally, a Policy Brief will be developed on how community-based monitoring can be mobilized to reinforce scientific observation of climate change impacts in SIDS and action can be taken at the local level.

Beneficiaries and stakeholders

Children and youth, both at school and at the community level, are the key audience for expanding climate change awareness through hands-on learning. The project will also seek the involvement of local experts from government, NGOs, tertiary colleges and relevant community members. It will network youth, community members and local experts from SIDS world-wide, promoting SIDS-SIDS networks and sharing of expertise.

Implementation strategy

Teachers, students and community members in more than 30 countries around the world regularly conduct Sandwatch observations and collect data on their changing coastal environments. These trained ‘Sandwatchers’ serve as a cadre of SIDS-SIDS trainers who can train new groups and respond to requests to introduce Sandwatch into new SIDS countries. A subset of these individuals has been trained to input data from field-based observations into the recently-launched global Sandwatch database. An important work component will include further teacher and student training to maximize the rigour of collected data, and scientific assessments of the strengths and limits of data sets collected by students in training.

Sustainability and exit strategy

Sandwatch has been a viable and expanding UNESCO programme for more than a decade. Groups all over the world have designed and implemented innovative local projects that demonstrate how the programme can enhance coastal environments and build island resilience to climate change and climate variability. Ministries of Education in SIDS are

adopting and adapting Sandwatch to their national education curricula. Once an expanded core of SIDS-SIDS trainers are in place for both Sandwatch monitoring protocols and the global database, the programme is expected to have sufficient global support and momentum to continue on its own without direct UNESCO support.