

**SANDWATCH CURRICULUM WORKSHOP,
KIRIBATI
15-17 September 2010**

REPORT

Prepared by Gillian Cambers, Director, Sandwatch Foundation



Introduction

In February 2010, the Sandwatch Foundation received an expression of interest from the Kiribati Project Coordinating Committee for the Environmentally Safe Aggregates Tarawa (ESAT) Project about starting a Sandwatch programme in Kiribati.

About the Environmentally Safe Aggregates Tarawa (ESAT) Project: The goal of this European Union-funded project, implemented by the Pacific Islands Applied Geoscience Commission (SOPAC) for the Kiribati Ministry of Fisheries and Marine Resource Development is to support the community of Kiribati to combat coastal erosion on its most densely populated atoll, Tarawa. The atoll currently faces severe coastal erosion problems which result in the loss of land, wave overtopping and the flooding of businesses and houses and critical infrastructure such as the local hospital. This is an especially urgent issue in the face of climate change and potential rising sea levels. The local practice of mining the beaches for sand, gravel, rocks and shells (aggregate) greatly exacerbates this coastal erosion problem and is in fact one of the main underlying causes. The project aims to protect the vulnerable beaches of South Tarawa from damage caused by aggregate mining and provide an alternative supply of material through environmentally safe lagoon dredging which will be operated by a State Owned Enterprise that will be responsible for implementing a distribution system that ensures that all sectors of the population on South Tarawa have access to aggregates, in an environmentally safe manner.

About Sandwatch: Sandwatch provides the framework for children, youth and adults, with the help of teachers and local communities, to monitor their beaches so as to critically evaluate the problems and conflicts facing their beach environments and to develop sustainable approaches to address these issues, whilst at the same time helping beaches become more resilient to climate change. The Sandwatch methodology consists of *Monitoring, Analysing, Sharing, and Taking action* (MAST). An activities-orientated approach is used to cover monitoring methods and data analysis, including observation and recording, erosion and accretion, beach composition, human activities, beach debris, water quality, waves, longshore currents, plants and animals. The activities are related to (a) sustainable development issues including: beach ownership; mining beaches for construction material; conflict resolution between different beach users; pollution; conservation of endangered species and (b) climate change adaptation issues: sea level rise, rising temperatures, ocean acidification and increased extreme events. Sharing the Sandwatch findings with schools, groups and communities is an important component that is used to design, plan and implement Sandwatch projects that fulfil one or all of the following criteria: (a) addresses a particular beach-related issue; (b) enhances the beach; and (c) promotes climate change adaptation.

The ESAT project has a substantial Community Participation Programme and the adoption of Sandwatch is seen by the Project Coordinating Committee here as a good approach to making young people aware of their beaches and how they work. The Manager of the ESAT project had discussions with the Curriculum Development and Resource Centre (CDRC) about including Sandwatch as part of the curriculum for schools in South Tarawa. The Ministry of Youth, Education and Sport (MYES) expressed interest in Sandwatch particularly due to its mathematics, science and English content. (The (then) director of the CDRC had attended the UNESCO Climate Change Education Seminar in Paris, July 2009, and had heard a presentation about Sandwatch). A review of the school curriculum is planned for 2011 and MYES felt it would be helpful to hold a preliminary Sandwatch Training Workshop in 2010.

The Sandwatch Foundation had discussions with the UNESCO Cluster Office for the Pacific States who were also supportive of the initiative.

As a result a 3-day workshop, 15-17 September 2010, was held at the CDRC in Tarawa, Kiribati, entitled Sandwatch Curriculum Workshop. The workshop involved xx teachers, staff from CDRC, MFRD and ESAT project. The workshop was supported by the ESAT Project, MFRD, MYES, Sandwatch Foundation and UNESCO.

Workshop Programme

The workshop programme is presented at Annex 1. After presentations on Sandwatch and the ESAT Project, participants were introduced to the Sandwatch monitoring techniques on the first day and were given the opportunity to practise the techniques at a nearby beach. On the second day, after further presentations on monitoring followed by field practice, presentations were given on Sandwatch networking and project design, followed by group discussions. On the third day there was a presentation on climate change science and the rest of the day was devoted to group discussions of the way forward for Sandwatch in Kiribati. Following the workshop evaluation, there was a closing ceremony.

Workshop Participants

The list of participants is presented at Annex 2. There were a total of 26 participants, 19 teachers from junior secondary and high schools, 5 participants from the CDRC and 2 participants from MFRD.

Workshop Results

The workshop was opened by Mr. Ribanataake Awira, Secretary MFRD. He emphasised the importance of land resources in Kiribati and that the island was under threat from erosion that was being exacerbated by destructive sand and aggregate mining. He emphasised the importance of creating awareness about these issues among young people, particularly with the threat of climate change, and that a person was never too young or too old to learn about the environment.

Ms Nei Teburantaake Kaei, Director the CDRC, welcomed the participants and noted that the teachers are the key people to transmit information about Sandwatch to the students. She mentioned that the CDRC was pleased to have the Sandwatch workshop take place before the curriculum review. Prior to this Sandwatch workshop there had been a 2-day workshop to discuss education for sustainable development (ESD) as a policy, and it was now useful to be learning about Sandwatch, which can be viewed as a tool to put ESD into action.

Ms Titeem Auatabu, MFRD, gave an introduction to a coastal mining DVD, produced by SOPAC, discussing the sand mining problem in South Tarawa. Mr. Nick Harding, Project Manager, ESAT Project, described the project's background. The project will purchase a custom-made clamshell dredge with a specially designed crane to dredge aggregate from the lagoon for construction use in South Tarawa. The dredge will be owned and operated by a state owned company. It is hoped that the dredge will be in place by the end of 2011.

Gillian Cambers gave an overview of the Sandwatch approach: Monitoring, Analysing, Sharing, Taking action (MAST) and also described how Sandwatch was a tool for ESD and contributed to climate change adaptation by making beaches more resilient to climate change.

This was followed by an outline of Sandwatch monitoring methods: observing the beach, measuring erosion and accretion, waves, currents and sediment size. Participants then went out on the beach to practise the methods and analyse the results. A similar approach was adopted on the second day for measuring water quality, beach debris, human activities and beach ecology.



Measuring the longshore current



Measuring the coliform bacteria from the seawater sample

Based on the monitoring and analysis four major issues were identified at the practice beach:

- Poor sanitation practices
- Beach erosion
- Sand mining
- Garbage disposal

	Salinity ‰	Temp °C	(Silicon Dioxide mg/litres)	Nitrate (ppm)	Phosphate (ppm)	pH	Dissolved Oxygen (ppm)	Saturation
Group1	0	28	>20	5ppm	2ppm	8	4ppm	42%
Group2	0	35?	>20	5ppm	1ppm	8	4ppm	44%?
Group3	0	28	>20	0ppm	1ppm	9	4ppm	42%
Ranking	4 Excellent		1 Poor	2 Fair	4 Excellent			1 Poor

WATER QUALITY IN KIRIBATI

Results of the water quality monitoring

Different methods to communicate Sandwatch results, ranging from simple meetings to the preparation of videos to post on Youtube were outlined. Participants worked in small groups to prepare and present articles for the Sandwatch newsletter, see Annex 3.

Following a presentation on Sandwatch project design, participants worked in small groups to design possible Sandwatch projects in Kiribati. The four sample projects addressed the four main issues listed above. The projects covered:

- Keeping the beaches free from human waste
- Addressing erosion through revegetation (see example presented in Annex 4)
- Ways to address sand mining
- Stopping the dumping of garbage

The third day started with a presentation and discussion on climate change. After this participants divided into four groups comprising:

- Geography teachers
- Social science teachers
- Science teachers
- Curriculum Development Officers.

Each group worked on discussing and preparing next steps for Sandwatch along the following questions:

- What are the next steps?
- Who will take action?
- When will they be implemented?
- Resources needed

Next Steps: Geography Teachers

These teachers proposed to work with classes 4 and 5 of the secondary schools to keep the beaches by their schools clean. They proposed including this in the geography syllabus work so that some of the work would be undertaken during geography classes starting in the first term of 2011. Activities included:

- Introducing the topic and taking photographs
- Consulting the School Principal and parents
- Recording and itemizing the debris and cleaning the beach
- Repeating this activity 2 weeks later
- Evaluating the results: strengths, weaknesses and lessons learnt
- Sharing the results with the whole school

Next Steps: Social Science Teachers

This group plan to prepare a proposal to CDRC on how Sandwatch can be integrated into the syllabus for Form 1. This could inform the curriculum review. They identified four topics: erosion, sand mining, sanitation and practical.

Next Steps: Science Teachers

This group planned to form a committee: Tarawa Science Teachers. They planned to meet in the week starting 20 September 2010. Their first step is to ask the School Principals for time to inform the students and other teachers about Sandwatch. The plan is to include students from Form 1 and to plan and execute a Sandwatch project. One possible example was to train students in the proper methods of waste disposal around the school. They planned to involve the Island Councils and the Sanitation Departments. The project would involve education on waste disposal, conducting debris surveys, placing litter bins, appointing litter monitors and evaluating the results.

Next Steps: CDRC Officers

They proposed to consider Sandwatch in the curriculum review and to establish a Sandwatch Steering Committee that would include one representative from each of the schools present at the workshop. The goal of the Steering Committee is to support and coordinate Sandwatch activities in the schools before the curriculum review takes place. The Committee would also include other Ministries, e.g. Ministry of Environment and representatives of other organisations. The first meeting was set for the week starting 20 September 2010.

Workshop Evaluation

At the end of the workshop participants were asked to identify two aspects of Sandwatch they particularly liked and also to indicate how such workshops could be improved in the future. The results of the evaluation are presented at Annex 5. A selection of the comments follows:

I did enjoy doing practical work and was able to see and understand what has happened to my beach, what caused this to happen and most of all how to help maintain its size and health through Sandwatch

Sandwatch taught me to be more concerned and responsible to teach and share important issues with our students and our community people

Sandwatch helps in learning to identify several issues that need to be addressed concerning the beach and raises awareness on ways this should be done, especially including it in a school syllabus as it might change the behaviour of future generations and that will surely help our beach

Training is effective, knowledge and skills were well taught and very practical whereby each one has a chance to get involved in the activities

A technical and practical way to teach science to students

Provides me with better knowledge on what is going on in climate change and its effect on our country. Beautifying a beach helps not only sustain the beauty of our country but also looking after our corals

Putting hands together makes Sandwatch popular and practical in our lives

Closing Remarks

The workshop was extremely successful in bringing together teachers from different disciplines and curriculum development officers to learn about Sandwatch and its potential in Kiribati. The workshop also brought together two different government ministries: MFRD and MYES, as well as the ESAT Project, Sandwatch Foundation and UNESCO. With the date of the first Kiribati Sandwatch Committee meeting set, and the continued help and support of the Sandwatch Foundation and the ESAT Project, it is hoped that Sandwatch will become a vibrant activity in South Tarawa and eventually all Kiribati.



Group of teachers presenting their Sandwatch poem to be published in The Sandwatcher

**SANDWATCH
CURRICULUM WORKSHOP KIRIBATI
15-17 September 2010**

Day 1, September 15, 2010

- 9.00-9.10 **Workshop Opening**, Mr. Ribanataake Awira, Secretary MFRD
- 9.10-9.30 Morning tea
- 9.30-10.30 **Introduction to Sandwatch**, Gillian Cambers
Discussion
- 10.30-11.00 Tea break
- 11.00-11.45 **Beach issues in Kiribati**, Nei Titeem Auatabu, MFRD, and Nick Harding, ESAT
Project
- 11.45-12.30 **Sandwatch Monitoring and Analysis 1**, Presentation, Gillian Cambers
Background information on Sandwatch methods: Observation and
recording, making a sketch map, erosion and accretion, waves and
currents, beach composition.
- 12.30-1.30 Lunch
- 1.30-4.30 **Sandwatch Monitoring and Analysis Beach Practice**
Field session on the beach to carry out observation and recording,
measuring erosion and accretion, waves and currents, beach composition
Followed by office work, data analysis and group presentations

Day 2, September 16, 2010

- 0900 - 1230 **Sandwatch Monitoring and Analysis 2**, Presentation, Gillian Cambers
Background information on Sandwatch methods: human use of the beach,
beach debris, water quality, plants and animals
Field session on beach
Data analysis and group presentations
- 12.30-1.30 Lunch
- 1.30 – 3.00 **Sandwatch Networking**, Gillian Cambers, presentation and group work
Creating a network, creating a newsletter, holding community meetings, using the
website, social networking, media interaction, video conferencing

3.00-4.30 **Addressing beach issues through Sandwatch: Designing Sandwatch projects,**
Small group discussion sessions

Day 3, September 17, 2010

09.00-10.00 **Sandwatch and climate change:** Presentation, Gillian Cambers
Discussion

10.00-10.30 **Review of Sandwatch in other islands,** Gillian Cambers

10.30-11.00 Tea break

11.00-1.30 **Small group sessions to discuss next steps for Sandwatch in Kiribati.**

1.30-1.45 **Workshop evaluation**

2.00-3.00 **Closing Ceremony**

3.00-4.00 Afternoon lunch

Annex 2 Workshop Participants

List of teacher participants

<i>Name</i>	<i>Surname</i>	<i>Sch rep</i>
Tangaroa	Arobati	St.Louis High Sch
Sentima	Letia. Nabatiku	St. Patrick
Beniana	Atantaake	KGV& EBS
Lisa	Tibou	St.Louis High Sch
Neteri	Titana	WGMC
Roote	Taitirenga	JSS TUC 1
Tekaeto		BTC JSS
Meliatiana	Ati	Animarao JSS
Bwaraniko	Paul	SHHS
Ruuta	Tekeraoi	KGV& EBS
Tiritaake	Banimone	MHS
Taatai	Tokanikai	Animarao
Karawa	Areieta	
Tatoa	Tataua	JSS TUC 1
Mele	Francis Ngalu	
Karurua	Teruruai	BTC JSS
Bibiana	Bureimoa	CDRC
Tiorika	Toromon	MHS
Ahling	Onorio	KAP 11

There were also five participants from the Curriculum Development Research Centre of the Ministry of Youth, Education and Sports, including the Director, Nei Teburantaake, and two persons from the Ministry of Fisheries and Resource Development.

M.A.S.T M.A.S.T M.A.S.T

HOW MUCH DO YOU KNOW ABOUT YOUR BEACH?

MAST YOUR BEACH

KARAWA

AND STOP SAND AND GRAVEL

BENIANA

MAST YOUR BEACH

KARAWA

AND SEAWALL CONSTRUCTIONING

TEAOTO

MAST YOUR BEACH

KARAWA

TO REPLANT COASTAL TREES

MELI

MAST YOUR BEACH

KARAWA

TO KEEP IT CLEAN AND TIDY

TAATOA

MAST YOUR BEACH

KARAWA

TO MAINTAIN ITS BEAUTY

BENIANA

THEREFORE TO MAKE IT HAPPEN LETS HOLD HANDS TOGETHER TO TAKE

ACTION..... **FIRE**MERONGA

Theme: “Living to care for our environment is make our beach a healthy one”

Sandwatchers on the Move!

By Mele, Karurua, Neteri, Baraniko, Ioretan

Beach how wonderful you are without being disturbed
You are Mother Nature’s gift
You protect our land from being eroded.
You create a wonderful ecosystem for every living creature on our land.
You’re so fruitful to the whole society.
Oh BEACH! How sad am I to look at you as your beauty fades by the work of human beings
You’ve been polluted; you’ve become the home for solid wastes, human wastes.
You are eroded as a result of human development
How terrible you are for you are no longer wonderful and beautiful
You look like someone I never knew
But do not worry Oh BEACH!
For Sandwatchers are on the move
They come with new ideas to bring you back your beauty
For Sandwatchers are a community, they are soldiers, ready to stand for you
Applaud the Sandwatchers, Bravo to the Sandwatchers!

Time & Tide wait for no man

Time & Tide wait for no man
Why Wait? Act now on
Sandwatch processes and methods
Sustain your future
Keep OUR beach healthy
Through Sandwatch
On our island of paradise.
Kiribati te boboto

Boys! Girls! Man and wife!
Dump no more on your beaches
Cut no more of your trees
Along our shore
To keep our beach healthy
Through Sandwatch
On our island of paradise
Kiribati te boboto.

Teachers! Educators!
Why Wait? Act now!
Educate your people
On impacts of climate change
Teachers! Educators!
Build a sustainable future
Through your people
Through Sandwatch
On our island of paradise.
Kiribati te boboto

Sandwatch are the means of Te mauri, (Health), Teraoi (Peace), Tabomoa, (Prosperity)

GROUP FOUR

GROUP 4 MEMBERS

- Tangaroa. Arobati
- Tiorika. Toromon
- Ruuta. Tekeraoi
- Ritia. Tioera
- Tiritaake. Banimone
- Sentima. Nabatiku

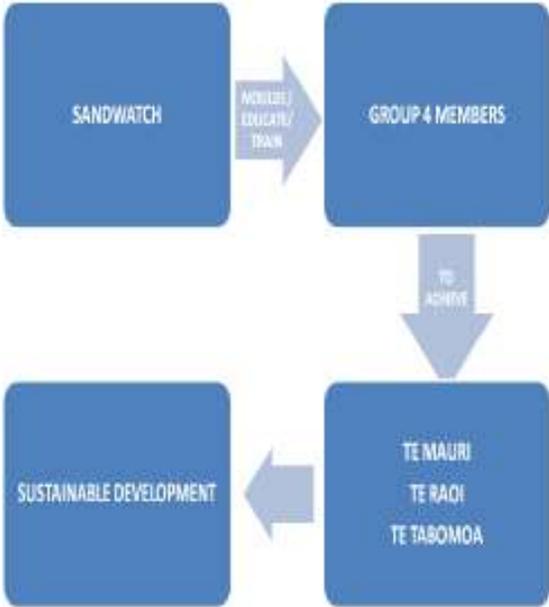
Inside this issue:

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Te mauri, (Health),
Te raoi, (Peace), Te Tabomoa (Prosperity), are the three Kiribati words of wisdom that are originated from our ancestors. These three words before has nothing to do with sandwatch or climate change.

However, the sandwatch workshop has enable us to realize that these are currently dependent on each other. With climate change the Kiribati words of wisdom is a dream.

Sandwatch has helped us to put the Kiribati words of wisdom into reality. It encourage us to safeguard our beaches and to use it in a sustainable manner. It challenges us to be active and responsible citizens to involve our communities, and schools in the enhancement and wise management of their beach environment.



Annex 4 Example of a Possible Sandwatch Project in Kiribati

Title: Ananau causeway beach restoration project

Objective: *To plant 2000 mangrove plant along the Ananau causeway to help minimise coastal erosion*

Area of Interest: Ananau Causeway

Duration: 4 months and 1 week (1 term)

Problem: Ananau Causeway is experiencing serious erosion problems. It is critical that this asset is looked after as it links the people of South Tarawa to the airport and to the other villages from Bonriki onwards.

Existing resources: Already on Sandwatch network

Teachers involved: Lisa, Tangaroa, Baraniko, Bomaa, Beniana, Tion

Plan of Action: *To plant 2000 mangroves along the Ananau causeway to help minimise coastal erosion*

Action	Time schedule	Persons involved	Activities and resources needed	Expected outcomes
A. Permission letter to parents/guardians. b. Site visit	1 week	Form 2 students and teachers concerned Parents	Visit to area conduct assessment Bus hire, books, pencils, digital camera	Sketch map and photos of beach showing where the planting needs to be and whether the area is suitable for planting mangroves. Identify the critical areas that need to be covered Approval and extensive support from parents and guardians
Consult Ministry of Environment to obtain permission to plant mangroves along Ananau causeway Seek the assistance of Agriculture staff to conduct workshop on how to plant mangrove plants Obtain mangrove plants from Agriculture department	3 weeks	MELAD staff (ECD and Agriculture)	Write letter to MELAD (Agriculture and ECD)	Approval from Ministry to conduct planting exercise Received mangrove plants to plant Students have the skills to plant mangroves
3. Collection of mangrove plants and planting	1 week	Students and teachers	Planting of mangrove plants Bus hire,	At least 2,000 mangrove plants have been planted Added protection to Ananau

Action	Time schedule	Persons involved	Activities and resources needed	Expected outcomes
			shovels (4), wheel barrows (2), drinking water, hats, first aid kit, digital camera, pens and pencils, exercise books	causeway
<p>4.Sandwatch students asses the growth and health of the mangrove plants</p> <p>Reporting to local authorities (such as MELAD).</p> <p>Post results on Sandwatch website etc.</p>	3 months	Students and teachers	<p>Fortnightly visit to site to assess the growth and health of the mangrove plants and to assess erosion along the Ananau causeway</p> <p>Materials: Tape measures, Sandwatch manual, drinking water, hats, first aid kit, digital camera, pens and pencils, exercise books</p>	<p>Evaluation of the project: To be able to assess problems and successes encountered (what we did wrong or what could have been done to make the project work better)</p> <p>Lessons learnt: Attained skills to plant mangroves</p> <p>Learn to respect nature and the environment through the realization that mangroves are important to coast</p> <p>Data on the rate of growth of mangroves in relation to the coastal erosion problem along Ananau causeway</p> <p>Sandwatch is recognized at a local (community) and national level</p> <p>IT skills gained through web based contributions etc.</p>

Annex 5 Workshop Evaluation

1) Aspects you like about Sandwatch:

- Very real, practical, informative, exciting, suitable
- Collecting seawater and testing it, measuring beach width and other beach work
- Knowing and understanding what is Sandwatch
- Seawater testing
- Project planning
- Testing water quality
- Sharing ideas in groups and then presenting them to the bigger group
- Manual well presented, Gillian's presentation – clear, simple and loud, scientific materials provided excellent
- Observing and measuring, collecting beach debris; this is very practical and has been a learning experience; it has helped me respect and care for the beach
- Enjoyable to do practical work outside
- Interesting to be part of the school curriculum and eager to put it in
- Makes me understand the importance of the beach
- I can also understand it is our defence during storms and concerning climate change
- It shows the importance and respect needed for the beach site
- Sandwatch taught me to be more concerned and responsible to teach and share important issues with our students and our community people
- It brings home that Kiribati has to start with Sandwatch right now as its situation is already bad
- Trainer carries out training very well. Very well prepared and knows how to involve participants in very real practical situations
- It encourages me to look after my beach to become a healthy one
- It helps me to see that our water has been contaminated by human activities and to assist us with ways to minimise these problems
- This workshop is very interesting and important to us teachers especially in the field of geography
- It is making me realise that a teacher is the right person to carry out this project in school and also in the community
- Gives more understanding concerning the importance of the beach and encourages us to focus on beach issues
- Helps in learning to identify several issues that need to be addressed concerning the beach and raises awareness on ways this should be done, especially including it in a school syllabus as it might change the behaviour of future generations and that will surely help our beach
- Training is effective, practical knowledge and skills were well taught and very practical whereby each one has a chance to get involved in the activities
- Interaction among participants and trainer is very good, all are able to get along well with each other and participate and contribute effectively to produce a quality outcome
- Shows important new ideas on maintaining beach tidiness and therefore contribute to the beach ecosystem
- Sandwatch workshop has enabled me to learn the basic steps in beach monitoring especially the practical parts of the workshop
- It gives me a sense of responsibility as a community member in school and in my home town

- I really like this Sandwatch workshop because it helps me to expand my perception of the importance of education our students, people and the community to look after the beach and the environment.
- I like the activities we have done for the past 3 days because they gave me an impression on how I observed the results from the experiments.
- Helped improve my science skills, since the skills are easy to follow
- Provides me with better knowledge on what is going on in climate change and its effect on our country. Beautifying a beach helps not only sustain the beauty of our country but also looking after our corals
- A very motivating workshop, very interesting beach trips
- A technical and practical way to teach science to students
- Had heard about climate change through the media but was not so sure. Now it is true and we need action to stabilize our land as climate changes.
- I did enjoy doing practical work and was able to see and understand what has happened to my beach, what caused this to happen and most of all how to help maintain its size and health through Sandwatch
- It encourages me to talk and share the methods with my students and the whole community
- Putting hands together makes Sandwatch popular and practical in our lives

2) Ways to improve such workshops:

- Nationalise Sandwatch and include communities
- Teachers need to start the programme the sooner the better
- Provide a special fund for the newly established Sandwatch Committee so that they can implement Sandwatch as soon as possible; most of the workshop was very interesting
- Involve representatives from different communities: primary school teachers, FTC, KTC, KIT, non-government organisations such as KIRICAN, KANGO
- Need more time, 3 days for the workshop is too short, I suggest 4 days
- Involve others besides educators, perhaps do Sandwatch workshops for different sectors or villages
- Facilitator should explain/present at a slower speed
- Presentation topics should be provided for each participant beforehand
- By holding hands together and taking action
- Include one or two representatives from the local communities
- Involve primary school teachers
- Put in practical in all the schools in South Tarawa as soon as possible
- Need longer to actually do the practical fieldwork in a school
- The workshop should be carried out in each secondary school so that more people will learn how to carry Sandwatch to their students in their different subjects
- Involve the local community since they are the main users of the beach
- We need to set up the committee and carry out the activities right away
- Ask participants to come on time – remind them at the end of each day to come early the following day