

Vanuatu PACC Finalizes Project Scope on Epi using P3D model

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Students assembling cardboards to construct a 3-D model of Epi (assisted by the VPACC team)

High School Students contribute to PACC project

Senior students of Epi High School felt privileged when they were chosen to construct the model of Epi island using a modeling technique known as Participatory 3 Dimension Modelling (P3-D), as part of a key community consultation process by the Pacific Adaptation to Climate Change (PACC) project on the island of Epi

P3DM has been in existence since the 1800s but it was only recently that Giacomo Rambaldi further developed the technique to become a powerful community consultation tool that is now widely used by a lot of countries. The PACC Vanuatu P3-DM construction process is a first for the whole country. All 39 students, teachers and ancillary staff participating in the construction initially had no idea, of the purpose nor how the model was going to be applied.

DESCRIBE method

Using a 2-dimension Topographic map of Epi printed at a scale of 1 is to 20,000, the team attached carbon papers to the underside of the map.

The map is then placed upon large cardboards of the size 2m40 x 1m20 where each contour on the map is traced onto the cardboard.

Once each contour is traced, the trace is then cut-out, commencing with the first contour being the coastline. Each cut-out contour is then glued on top of each other, with the coastline contour being the base of the model. Once pasting is completed, toilet paper is then glued over the edge of each cardboard layer, giving the model a smooth descend from the highest point on the island to the coastline.

Finally the 3-D model is painted, with each individual features on the island painted with a different color to allow public understanding of the true features of the island.

DESCRIBE Tools used

A 3-Dimensional model construction is completed using stacks of cardboard, carbon papers, fine-point pencil, sharp cutting tools. Glue completes a tough model, with toilet paper as the finish to smooth the contour edges.

The final touch of the model is paint, with a skillful painter outlining each every important feature of the island such as primary and secondary forests, farms, roads and rivers.



School Council Chairlady looks on as students cut-out traced contours on

RESULTS

These students, 25 of whom studied Geography while the remainder of 14 are Arts students, did not have the slightest idea of what is a 3-Dimensional Model. Yet it took them 5 days to construct with the assistance of two project facilitators. The first day of their participation was basically watching the first tracing, cuttings and assembly done.

Naomi George who is a year 11 Arts students, barely responded when asked what she knew nor learnt mid-way through the first day of the model construction. "I don't know" was Naomi's response.

The facilitators made sure all these students, even those too shy to participate, at least contributed to the construction in a way or another.

Another Arts student, Reggie Eric admitted he has no idea what benefit the 3-D model of the island will be to the community. "No I don't have any idea what is a 3-D model. I think I learnt a bit today on cutting out contour lines on a cardboard. No I don't know how this model will be used during the project consultation with the community."

At the end of Day One, students and teacher alike began to discuss the semi-complete layers of contour cardboards being glued together from the days activity.

School Principal, YonsenYona is proud that his school was chosen to construct a 3-D model of Epi as part of the PACC project.

But even the school principal never saw such a model being constructed nor understands how it would benefit a community consultation.

"I am proud that my school is chosen yet again by PACC to carry out this important activity towards the project" he said. "I know that this activity will benefit the project's objectives in addressing climate change on Epi".

The model is partly constructed with 4 layers of contours assembled at the end of the first day. Though incomplete, it had reasons to encourage students to actively participate from day two onwards. And shyness is no longer a challenge while more and more students are willing to skip lunch breaks and stay up late into the evenings to get the job done.

Model facilitator, Ian Iercet who is also the assistant coordinator of the project in Vanuatu said, "Students are even willing to use their evening study hour to complete what they are doing on the model island"

The fourth day of construction saw all contour layers assembled and students as well as teachers are confident to express themselves, as they began to understand the dimension of height of their island.

Art Student Marcie Eric said "I used to think my village is up high on a mountain but from this model, it's not as high. The model has helped me understand better the position of my village, roads and to note the highest point on the island, even though I have never been to that mountain."

The model construction work was done inside the school library with little or limited space for both the project team constructing the model and the other classes that needed to use the library for their studies.

The Library is also host to the school's Computer Class program, and the attention drawn by the model itself as it took shape, is disturbing as students and teachers themselves continue to remind each one to keep the noise down.

While it was seen fit by the school to choose and restrict participation only to students who studied Arts and Geography to construct the P3D-model of Epi, a teacher believed that students pursuing other relevant courses should also benefit from the exercise.

Judith Waan who is a Biology & Chemistry teacher shared similar views that the activity in itself is of great benefit to students involved in the model construction. However Ms Waan said "I disagree that arts and geography students were chosen for the 3-D model construction. I regret that science students were left out because science is the major subject in Climate Change, and even the 3-D model itself."

1 Geography Student Robinson Dickson said, "the model construction has helped me a lot to understand the Geography of Epi. Personally I learnt a new and important aspect of mapping, which is 3-D modeling. And I believe I speak on behalf of all of my colleagues who took part in this activity. I'm sure it will be helpful to the community of Epi"

Good Practices

The 3-D model was constructed and completed in time for its purpose. Facilitators of the model construction Mr. Rodson Aru, a Map Specialist with the Lands Department and Mr. Ian Iercet, an Architect with the Public Works department, were both satisfied the construction went as planned and that students, teachers and even ancillary staff of the school spent more time with the model than in class to question and scrutinize the features of the model.

Rodson Aru said this is a first ever 3-D model to be constructed locally. "The students involved in the model construction are lucky to be part of history in the making, when it comes to Climate Change"

According to Ian Iercet, "we decided to use students who studied either arts or geography as it would help the project to achieve its goal in constructing an accurate model. It also helps students of both subject as it is an important element of their studies." "Seeing these students interact and discuss the 3-D model after its completion, it gives me confidence they gained a lot. And I hope they will pursue these subjects further in their studies"

Lessons Learnt

The model looks complete however, the dimensions of the marine ecosystem was not constructed. It is a shortfall for both the project and the community because as much as the project talks about the importance of the marine ecosystem, it's connection through 'ridge to reef' processes and the depletion of marine resources, the community remains in the 'dark' as to state of the marine ecosystem of Epi and what needs to be done to address challenges.

Choosing Students to construct the 3-D model is a wise decision. As the 3-D model took shape within the five days of its construction, it is visibly evident that the model draws vast interest, even among other class of students.

The views of Judith Vire are important because Climate Change is all about Science. Special attention is given to which class or group of students to choose from in future, when it comes to P3DM construction.

This group whom part of their subject covers ecosystems could also benefit from the modelling exercise as they create the model, they will understand the link between the terrestrial and marine ecosystems by hands on and visual observation. In other words the basic concepts of ridge to reef can already be discussed as the model take shape.



Students pasting toilet paper over the layers of contours to form a smooth finish surface of the model island

Students sharing their knowledge of lessons learnt during construction through confident interviews and the ability to explain in detail what the model projects and how it helped in their studies only depicts the vitality of making the right choice on when and how to mainstream climate change and other related information to rural communities.

A 3-D model of an island is by far a robust tool to use in educating a community understand the topography of their island. It gives the community a better understanding of the availability of land, type of available forest, if there is a need to construct infrastructure that would ease the way of live., Even before the model was brought before the community for scrutiny, it already drew wider criticism and concerns among students and teachers on existing planning and decision-making on the island.



Students putting final touches of the 3-D model of Epi Island by painting different colors to represent various features of the island.



Students proudly pose in front of the first 3-D model of Epi Island. Standing center in black shirt is VPACC national coordinator Dennis Alvos, and to his left is School principal Yonson Yona

Epi Community commend P3-D tool for better planning

"If there was any better process in encouraging community members actively involve in decision-making, 'Participatory 3-dimensional modeling' would certainly fit the equation."

Kolika Maki, a Technology tutor at Epi High School uttered these words to sum up the outcome of the 3 days community consultation conducted on Epi by the Pacific Adaptation to Climate Change project team in March 2013.

The PACC project team is on the island Epi to conduct its final consultation with the community, on the importance of partnership and consent

DESCRIBE method

Following its completion, the 3-dimensional map of Epi is then introduced to the community at a 3-days public consultation conducted by the PACC project team.

Representatives of each community throughout the island is present at the consultation, and was allowed to map out important features on the island, which includes roads, airports, wharfs, farms as well as rivers and existing villages and settlement.

Community observation of the model map of Epi shows that most flat lands along the coastline is basically where village settlements are located including airport infrastructure. And with current evidence of climate change impact visible along coast lines and roads, the community 'jumped to conclusion' by mapping out possible sites to relocate villages, airport and roads.

DESCRIBE Tools used

With the help of students, each community members were able to use tagging pins and colored paper strips to label current physical features on the island as well as map out future developments recommended by each area councils.

Land boundary is a critical challenge in Vanuatu. On Epi alone, such project implementation requires acquisition of land prior to any physical work being carried out.

The use of Participatory 3-D modeling had its effect on these land issue by way of seeing each land owners and area council representative agree to give 'for free' their land and resources for PACC project implementation on Epi



Model map of Epi showing various adaptation options indicated by the community



Elders of the community mapping out physical features of their villages on the 3-D model of Epi

RESULTS

A chief representative of Nikaura village on North Epi, Chief Kora stood up in front of the consultation process and announced his communities' acceptance of providing resources at no cost. Following his announcement, he handed over a letter which carries signatures of chief from his area council, consenting to giving resources such as quarry material for free.

A representative of South Epi, Esbel Frank told the consultation, she brought with her a message from her chiefs. "Though the PACC project will not address roads on South Epi, yet they are willing to 'give-for free' its resources and to support the project implementation on the island

During the mapping process, each community mapped out new roads which are concentrated in the center of the island rather than along coastal areas.

Principal of Epi High School, Yonson Yona said "while climate change impacts are evident along coastlines, there is cause to relocate roads inland as it will also affect communities to relocate and it will be an advantage to farmers who currently grow their crop gardens inland'

Good Practices

The 3-D model style consultation gave the community a strong sense of ownership thus resulting in swift decisions that supports the project's designs and goals.

Participation saw the input of elders, men, women, students, village youths and even children were able to comment on each features as it is being mapped out.

Arguments and discussions by villagers on the exact location of each physical features gives a sense of belonging and portrays readiness to support development, such as that of the Coastal Infrastructure project of the Pacific Adaptation to Climate Change on Epi.

Lessons Learnt

While much data needed by the project team was collected during the 3-days community consultation, time constraint affected both parties in drawing more detailed data for long term planning purpose.

VPACC Coordinator Dennis Alvos said more time was needed to address specific area of concerns such as considering economical adaptation options before placing it in the map.

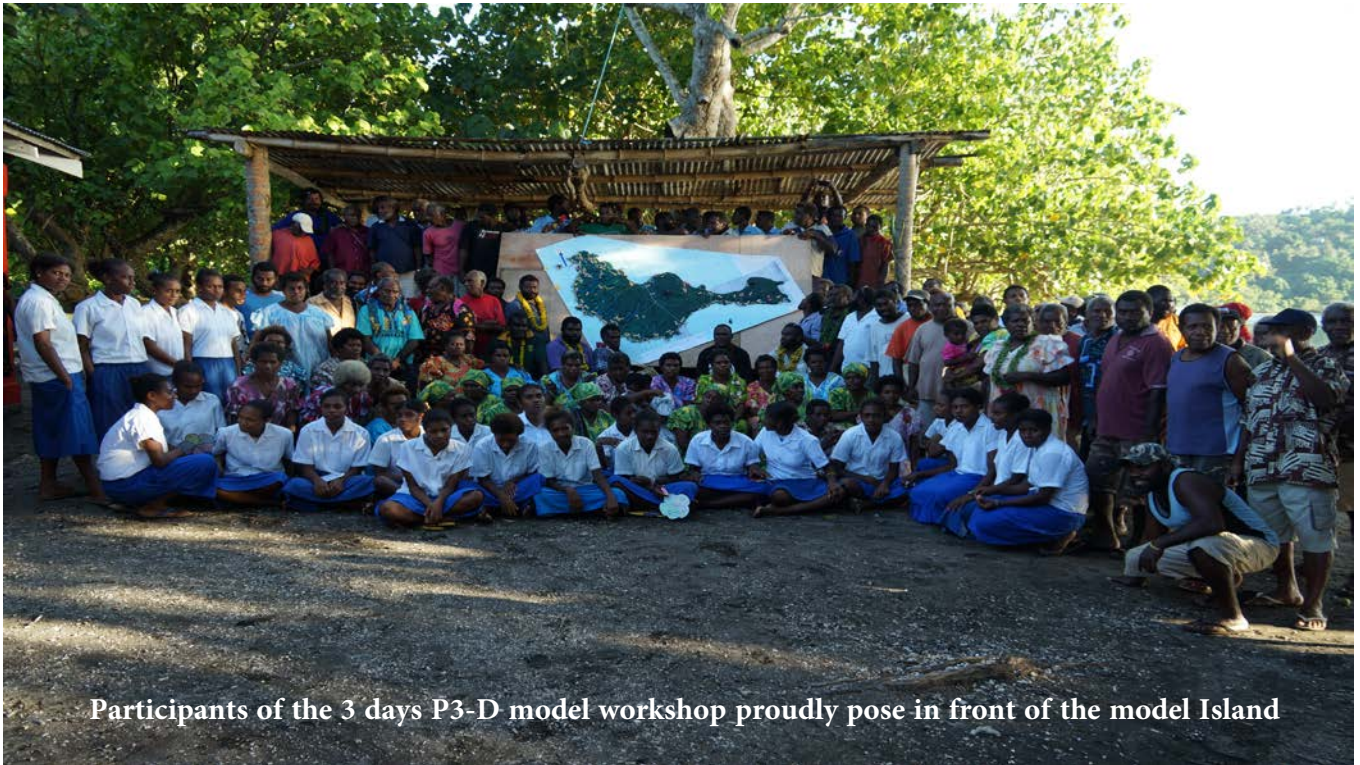
Limited time did not permit the team to move the model between the four area councils as it would have allowed thorough scrutiny of the model and better capture of information and knowledge.

Time constraint was also an issue for Government sector experts, as there was not enough time explain in detail the significance of each watershed boundaries in the four different area councils. Following the final consultation, the communities have yet to fully understand the relationship between ecosystems to assist them draw-up by-laws that would help to govern these ecosystems, an example is that of forest management or marine protected area management.

The "Ridge to Reef" approach needs more education and awareness on this relationship



Workshop participants learning from professional's presentations



Participants of the 3 days P3-D model workshop proudly pose in front of the model Island

"P3-D modeling, a cost effective tool for assessment and planning purposes"

A forestry specialist working closely with the PACC Vanuatu, Mr. Philimon Ala says P3-D tool saves a lot of money when it comes to assessment and recommendation of possible development sites on an island

Mr Ala is one of 6 sectoral experts representing government departments that are working with the Vanuatu PACC project to address coastal infrastructure on the island of Epi.

Each expert representing Fisheries Department, Environment, Geology, Lands, Agriculture and Public Works department have a role to play in the P3D consultation process

DESCRIBE method

The P3-D model introduced by the project at its final community consultation on Epi March 2013 is a first for the country thus a first for any local professional in the land and marine base sector, in reference to planning purposes.

DESCRIBE Tools used

On the 3-D model, important land and marine resources were mapped out using colored papers and tagging pins. River systems, primary and secondary forests, marine protected areas and mangrove ecosystems were either painted with different colors or labeled, giving respective professionals represented at the consultation, vast knowledge of locations and topographies, and can plan out strategies to assess these sites.

Even the model map itself is constructed to scale thus allowing these officers to calculate the approximate area affected by a system

RESULTS

As community members continue to map out the natural features of their island, each professional would interrupt with questions as to whether the right color has been used and what sort of physical evidence is observed on the site. For example, dead coral reefs are evident on Lamén Bay as a result of sedimentation during rainy days.



Stakeholders Participation

Environment officer Ridley Tari says “the 3-D model of the island has helped a lot to point out important features that needed attention by my department. It means I do not need to be physical on site to provide a general assessment if required. And it saves time and money to produce an assessment report for any development on the island”

Philimon Ala added, “I can collect a lot of data from the 3-D map itself. With the community participation it allows me to cross-reference these details. It saves time as well during site inspection and I think Vanuatu should begin to use this tool for future planning ”.

Good Practices

It was initially expected that the P3-D tool would yield positive results from the community. No one looked at the tool from the view of a professional until it raised eyebrows during the community consultation itself.

The exchange of handshakes between the project officers and the project coordinator confirms satisfaction by officers who benefited the model by way of collecting as much data needed, as well as learning a new method of participatory decision making in a country where men usually dominate decision-making.

Fisheries Officer, Andrew William commended the model though it did not cover the marine ecosystem. He said ‘the model gave a better understanding of locations and I felt it helped the community to draw better decisions’

Lessons Learnt

Allowing the community to participate fully in making decisions and plans for Epi can be termed as democracy at its best.

And for government officers to commend the results yielded from the mapping or population exercise draws attention to the rhetorical question of whether there is a much better method of ensuring full community participation in decision-making processes.

To see government officers interacting openly with members of the community during the consultation, with each questions and answers addressing one particular physical feature or development at a time, gives a sense of addressing challenges and solutions through the correct process such as using a P3-D model.

Officer's comments shows that even though they are not physically on the project site or the resource site, the 3-D tool can help them collect valuable data.

Locating sites out from the map means the officer knows exactly where the starting and finishing point of a site is located. This saves time and money for officers to produce assessment reports. It also eliminates the challenges of land issues and overall, the decision taken is usually scrutinized by community that whatever decision is derived, the community at large is satisfied that the project being implemented is for the betterment of life on Epi.

P3-D tool style consultation may be a new technique introduced in Vanuatu. It definitely had its own effect on community members thus the project team witnessed swift decisions taken. Such as that of area councils and chiefs producing letters of consent to allow their resources for free to be used by PACC during the implementation stage.



Vanuatu PACC conducts first reconnaissance survey on proposed site for road relocation

The VARSU area council on North Epi is the first community to physically map out a new 10km road in the interior of the island, with the objective of having climate proof roads that will not be washed away at the coast, and to have better and safe access to markets.

Under the PACC project where the thematic area is Coastal Infrastructure, the road relocation project is aimed at building resilience and improving access for the people to the main service and commercial center on the island.

The current 72km road from South through West to the North of Epi is located along the coast. A physical feature evident along this road is the continuous erosion of the road due to either heavy downpour resulting in landslides along road sides, , running water drenching the road surface making it difficult to travel on, and ocean waves impact on the road sides, washing away the roads.

Following the successful outcome of the Participatory 3-D model consultation, the PACC team selected VARSU area to commence the road relocation project. A fortnight later physical work to map out the new road took place on Apr 16th 2013

DESCRIBE method

The PACC team briefly met with the VARSU area council members at Nikaura village nakamal (traditional meeting house). The VARSU council comprised of villages of Nuvi, Nikaura, Nivenue , Moriu all located along the coast and inland villages of Ngevin, Pinky and Niku.

Following the meeting, the area council members gave their blessing for the mapping exercise to go ahead.

13 strong men representing tribes from the seven villages were chosen to lead the PACC surveyors along a path of the new road which stretched from Nuvi down the coast, goes uphill inland then along the flat plains on top of the mountains and heads Westward to Niku village, where the Vaemali hospital is located.

The Vanuatu PACC national coordinator Dennis Alvos led the expedition team. The expedition commenced at 12pm with the first GPS readings taken at exactly 12.30pm while the final reading was taken just after 5pm, as nightfall was not helpful. The team ended the expedition at 7pm at Ngevin village having collected GPS points for approximately 7km.

Surveyor with the Lands Department Rodson Aru and Architect Ian Iercet led the way in collecting GPS data while Dennis Alvos inspected the topography and discussed with a chief who was part of the team, to look at possibilities of relocating again due to some physical features that may not be beneficial to road construction.



*A chief point the direction of the proposed road to VPACC
Coordinator, Dennis Alvos*

RESULTS

The tiring walk through the forest of Epi did pay off when the team completed the walk. The remainder of the 3km stretch was marked out the following day

Thirteen tribesmen who guided the walk were also at hand to point out traditional 'tabu' or sacred sites. Land boundaries were also given making it easier for the project team to point out village boundary marks as needed by the project.

There are narrow steps where road could barely be widened beyond 3 meters. However the tribesmen led the team to alternative routes where the topography is suitable for proper road infrastructure.

Good Practices

The tribesmen were at hand to explain their reasoning to choose various stretches, even though gardens and farms, they agreed to give that piece of land for the sake of good road and better life.

They pointed out possible resource sites including a quarry along the stretch, which were plotted by the project team for consideration of accessibility.

From the P3-D mapping, it took no time for the expedition team to arrive at starting point of the new road and commence GPS plotting. It needed half-a-day for the expedition team to walk through 10km of thick forest of north Epi to plot the new road.

As night fell at the last 3km of the stretch, the team used spot lights and mobile phone lights to walk the final stretch amidst rain and cold, to complete the walk as there is no way of turning back.

The interaction between the tribesmen and the project team throughout the expedition reflects willingness and commitment to achieve a higher goal. Even halfway through the rough and tough terrain, the members of the expedition were still smiling, cracking jokes and were looking forward to a positive result.

At the end of the walk, around 7.30pm under the coconut palms and over 800km above sea level, to the sound of the night buzz, the team prayed. A church elder who is with the team offered a thanks giving prayer, prayer for protection and sought a Higher blessing for the people of VARSU area.

"The community's willingness to 'give for free' is a result of good understanding of the project scope and a sense of ownership of the consultation process"

Lessons Learnt

Generally, "Community" is best referred to a settlement. In the context of the PACC project on Epi, community is a strong bond that binds people together. It has this ghostly code of ethics that protects the community from crumbling. The traditional norms of behavior governed by a village council and the area council exist to this day. The respect that is bestowed upon by all members of the village remained vigilant. For example, a woman does not stand up but sits at the back of the crowd, to speak inside the nakamal or traditional meetinghouse. This behavior may be seen as inequality while on the latter, it shows the simple traditional systems that exist in the village thus contribute to the overall strength of a community that is build upon respect.

This 'community' was reflected when all representatives of the 7 villages showed up for the morning briefing prior to the expedition.

At the briefing, there were issues raised on the new road distance, rough terrain, and sacred sites. Yet, the chiefs themselves calmly explained the situation and gave alternative options.

At the final meeting on April 18th to brief the community on the results of the road expedition, the meeting house was packed to the extent that people had to sit outside along the verandah, eager to hear "what next."

The eldest Chief in Nikaura village, Chief Timothy could only argue that in the past, chiefs and their people used knives, axes and digging tools to construct the coastal roads currently used by the people. Therefore his people are ready to yet again contribute to the construction of the new road with the expert advise of qualified engineers.

The community's willingness to 'give for free' is a result of good understanding of the project scope and a sense of ownership of the consultation process. It reflects the need to use the right tool to conduct community awareness to achieve results that is beneficial to the project but most importantly, to achieve milestone decisions that will improve resilience and livelihoods in rural remote communities such as Epi island



VARSU Tribesmen & the PACC survey team half-way through