

## Chapter 1 : Manual on participatory 3-dimensional modeling for natural resource management.

*Preparatory Work for Participatory Three-Dimensional Modelling 3 Selection of area, participants and materials 3 Scale and size of the map 4.*

These changes are opportunities to harness the existing approaches. There is an evolving policy framework for legal framework for change into community-based plan- community participation in the natural resource management and participation in natural resource management. The programme is navigating the importance of local collaboration in forest protection measures, navigating the complex State administrative structure to magnify its effects. Despite supportive legislation and wider macro- site-based results into wider-scale policy and planning at economic decentralisation policies, the on-the-ground provincial, regional, and up to national levels. However, in Quang Nam province, Introduction political willpower has allowed for a coherent attempt at In Vietnam environmental problems are mounting as the 1 Decree No. With a high at the local level. It stipulates increased consultation and participation of citizens proportion of the rural-based population dependent on in Local Government issues. This is in part due to recent national circulars highlighting forest protection as a key factor in reducing the impacts of flooding, to which Quang Nam is particularly prone. The last catastrophic inundation, in , cost hundreds of lives and millions of dollars. Le Van Lanh Vietnam. However, open-access resource worked with all stakeholders to prioritise forest units for regimes are rapidly depleting local forests, with the indigenous concerted conservation effort in order to mitigate and offset our communities powerless against outsiders, despite current and potential threats, and act on the varied opportunities provincial plans to accelerate the allocation of forestland to localities. The terrain is steep, inaccessible, and cut by many rivers and streams. Natural forest cover is high, apart from the inhabited valleys and swidden agricultural plots. Tabhing Commune is partly included based planning. For twenty-one prioritised Communes, liaising with the Tabhing, a draft action plan was compiled based on detailed participatory research, with twenty key activities to be initiated. 3 The MOSAIC concept was developed by the primary and third authors, based on experience over a six-month period. Participatory three-dimensional modelling was one of the primary tools to be used in response to the Quang Nam provincial call for assistance in strategic planning for natural resource management. It was developed to match the WWF Indochina employed, primarily to facilitate forestland allocation and support for landscape-level conservation in the Central Truong Son area Baltzer et al. resolve tenure conflicts. The action plan was then taken to al. Broad decentralised legislative powers within Committees the overall national policy and legal framework. Legislative power within an Committees allocated budget and provincial policy and legal framework. Degree of decentralised powers depends on the particular situation, and especially on individual leadership. The commune has Committees legislative power at the local level, but all decisions must be approved by a relevant department at the district. However, often de facto leadership such as village elders lies outside the state institutions with limited reach and no legal recognition. A series of 20m contours was used. Each item on the After a preparatory day, students and teachers from Tabhing action plan was presented for questioning by local villagers, secondary school were invited to attend, over two days, to using the discussion forum and also a household response help manufacture the blank model, before preparing to sheet. The aim of the action plan was to clarify local land-use invite the local Ka Tu people to take the stage. The final action plan for the villages in Tabhing, and two from neighbouring Ca Dy Commune was approved at the district level, where all stakeholders Commune were invited, in two groups, to transfer local holders had a chance to review the plan. Budgets and time- knowledge onto the model. In total, villagers actively frames were linked to milestones and indicators, and the participated in producing the model, with orientation plan was officially recognised by the District Government. Villagers selected the features they would depict on the Participatory three-dimensional modelling model, using coloured paint, yarns, and pins provided by One particular element of the methodology is the use of the facilitators. In this way, intellectual ownership of the participatory

three-dimensional modelling P3DM, building output was ensured and an insight into the relative local on experiences gained in Pu Mat National Park Rambaldi et al. value of land features was gained. For example, the rivers and streams were marked very prominently, before forest manufacture of accurate 3-D models of a chosen area, areas, roads, or mountaintops were identified. These Nam provincial authorities in an orientation seminar, with included paths, streams, households, traditional meeting participants from all relevant departments. Reserve in Tabhing, where the P3DM exercise was carried out between May. The area covered by the minor conflicts, such as village boundaries, were resolved model totals km<sup>2</sup>. A base map at 1: Other issues, such as illegal gold mining, were identified and discussed. Special emphasis on 3-D modelling as a form of participatory mapping. P3DM exercise covering the Tabhing area 30, ha and involving representatives from local communities. The event has also served as a hands-on training ground for a wider audience and lay the ground for adoption of the P3DM method elsewhere. Linkage to district and provincial plans Direct linkage to district development plans and to provincial strategy for conservation and sustainable use of natural resources. It is also a pilot for the provincial forestland allocation programme, which will be replicated across 60 upland Communes in Quang Nam, allocating nearly ,ha of forest land to local management regimes. Implementation of the community plans Identified responsibilities and finances are clearly outlined. Much of the support is for the community itself to carry out and monitor activities. Monitoring will be based on a set of mutually defined indicators, with many data collated at the household level. It was instantly clear that planning it conflicted with local agricultural and forest resource use. Feedback from the participants, both trainees and local The villagers from both groups challenged this boundary, people, allowed for an initial stock-take of lessons from the and after discussion, demarked a preferred boundary, to whole planning exercise. Seven common themes emerged: The model was a powerful tool to use as the basis for icant breakthrough. The model, including the legend identifying which data boundary. However, the boundary issue is community participants, accurately reflecting the values also under discussion at national level for a separate issue, local people attach to landscape features and resources, gold mining. The model has shown clear conflicts between and giving them confidence. The model has 3. Local people are capable resource persons, with a good allowed MOSAIC to raise these topics directly with the rele- knowledge of the lay-of-the land, and are well capable vant authorities, following local community identification of making models and using spatial representation. Reproducing the landscape on a relief model has a strong recognised planning activity. Show me, I remember. Ka Tu girls tracing contour lines during Involve me, I understand. Elderly people, women and youngsters provided valuable in transgression of a series of agreed terms on local forest contributions to depicting data on the model and to the protection. This provides sufficient power to enable violators discussions. It is important to listen to the local interpretation and patrol zones, based on markers placed on the 3-D model. Women and Boundary reassessment: It is important that authority representatives are present Forestland allocation programme: The resulting information has been used to draft thematic maps to be used in a consultative process Initial follow-up in Tabhing meant to support forestland allocation. The teams were granted powers of arrest to Rambaldi et al. A series Heritage Site, in north-central Vietnam. The cost of completing a 1: Compared to alternative data gath- ering methods, P3DM is cost effective. When looking at P3DM as a method for efficiently supporting learning, planning and community empowerment, investing in it has additional non- monetary benefits. Affecting Biodiversity Conservation Efforts: Center for Livable Communities. Communist Journal, Vol 6. Partici- patory 3-Dimensional Modelling: Guiding Prin- ciples and Applications.

## Chapter 2 : Participatory 3 Dimensional Modelling: a quick overview on Vimeo

*Participatory 3D modelling (P3DM) is a community-based mapping method which integrates local spatial knowledge with data on elevation of the land and depth of the sea to produce stand-alone, scaled and geo-referenced relief models.*

Map of Epi Area Councils. Sourcing of data and preparation of the base map The base map was prepared by the Vanuatu Department of Land and Surveys. It took approximately three weeks to complete the task. The terrestrial contour interval was 20 m starting from 0 m elevation corresponding to the mean high water mark. Contours were colour-coded, to help with later tasks. Choosing the mapping scales The island of Epi, including the land, lakes and surrounding coral reefs, measures 18 km by 20 km. The scales chosen were 1: The scales chosen allowed the model to be a manageable size so that it could be moved, but also ensured it was big enough to facilitate group working around it. A larger vertical scale was chosen taking into consideration the need to enhance the perception of slope and to accommodate the board thickness 3 mm. Procurement of workshop materials The success of the exercise depended on effective planning and procurement of materials. The cardboards were purchased in Australia through a Vanuatu-based company called Earthquip Ltd, while the rest of the materials were purchased locally at stationery and hardware shops. All materials were shipped to Epi Island one month before the first workshop commenced. Logistics Consultations and arrangements were made with the appropriate authorities before engaging the students of Epi High School to build the model. For Workshop 2, logistics included arranging transport land and sea , accommodation, and meals for the participants, who attended from the four area councils of Epi. Arrangements were also made with the following government departments for professionals to attend and share their expertise in their respective fields in regards to climate change adaptation: The Year 11 Geography class and Year 12 Arts class were chosen to participate in the mapping and model construction. Thirty students participated, along with their teachers. The school handyman was engaged fulltime, and the school librarian also voluntarily participated in this interesting learning exercise as the model took shape. The library windows were always crowded by other classes during breaks and after school, as everyone was interested to follow the construction development. They explained to the students and teachers their roles in the exercise. An educational video on P3DM was shown to assist participants in understanding the process and their forthcoming tasks. He emphasised the importance of the model construction and how it will contribute to development and planning for Epi Island. He described the workshop, planned activities and the expected roles of the participants during the process. Mr Rodson Aru explained to the students about the different types of maps, explaining the different components, and the symbols and their meanings. He briefed on the grids, i. He provided a technical introduction to building the model of Epi, and the different steps in executing the construction of a model using P3DM. Constructing the model base and preparing the base map A base for the model was made by joining two plywood sheets together. This allowed for the model to be easily transported or moved around for accessibility and public viewing. Then the base map was placed on top of the model base, and the latitude and longitude were marked onto the model base. The facilitators and students then prepared the base map for tracing. A large carbon paper was created to the same size of the base map by combining many A4 size pieces of carbon papers. The carbon paper was then taped to the bottom of the reference base map topographic , with the marking side facing out Figure 5. The carbon paper is taped onto the plywood base, ready for tracing the contour lines. Constructing the model After the introduction and a question and answer session, the students were divided into three working groups, each with a supervisor. The groups were assigned to three main construction stages of the model building process: Map construction then proceeded with the following steps: Corrugated cardboard sheets were prepared, the exact same size as the reference base map. On each sheet of cardboard, a single contour was traced using the base map with carbon paper underneath as a reference Figure 6. Sheets were labelled with the contour elevation and a north-pointing arrow, for correct orientation. Contours were cut from the cardboard sheets Figure 7. Contour sheets were superimposed on one another in the correct order and the precise orientation, and then glued together Figure 8. Once dry and secure, the model was covered with thin paper which was secured using acrylic white or

translucent glue Figure 9. This helped to smooth out the contour layers and create terrain continuity. The model was then painted by the students, adding features such as roads, rivers, streams, airstrips, public buildings and telecommunication towers by painting or using pins with tags Figure The model was completed in 5 days Figure This was a unique learning opportunity for the students, who broadened their knowledge in map reading, scaling, terrain information and model construction. It was agreed that, after the second workshop, the model would be kept in the school library and used as a teaching aid in the future. The model can also be used as a basis for community adaptation planning, and by government departments to aid assessments and awareness raising on different issues affecting the island. The model taking shape. Covering the model with paper. The objective of the workshop was to assess vulnerabilities to climate change, identify current coping strategies, and identify adaptation options for the people of Epi. A total of people attended: The venue for the workshop was Lamén Bay market house. The venue can accommodate about people inside and has a large open area with big trees that provide shade and can accommodate another persons. The building was prepared by the market house committee. A public address system was set in place and electricity was connected to power the equipment. The Church Elder in Lamén Bay offered an opening prayer, and other formalities were completed. A second video that captured the community consultation workshop was also screened. That workshop aimed to raise awareness on climate change and identify the climate change problems and issues faced by the people of Epi, and clarify how the PACC project can address some of these problems. The screenings were followed by a short question and answer session. Introducing the ridge to reef approach Mr Reedly Tari from the Environment Department, Mr Philemon Ala from the Forestry Department and Mr Andrew William from the Fisheries Department explained to the participants the natural relationships between the terrestrial ecosystem and the marine ecosystem. The presentations emphasised the direct link between these ecosystems inside a particular watershed boundary, and the 3D model of Epi helped the participants to visualise and understand this complex issue. The Fisheries officer gave an example by explaining the life cycle of freshwater prawns. They live upstream inland, but when they are ready to spawn, they have to make their way down to the sea. After spawning the larvae remain in the sea for 21 days and then make their way back to the estuaries and up the streams or rivers. The Environment and the Forestry officers explained how improper land use can upset the whole ecology of the island. Uncontrolled farming methods and illegal cutting down of trees and clearing vegetation on steep slopes can lead to soil erosion and landslides along the ridges. Soil is washed down and transported through the waterways, causing excessive sedimentation which damages or destroys coastal ecosystems such as coral reefs. The important lesson imparted to the resource owners and managers was that sustainable resource management has to be holistic, that is, following a ridge to reef approach. If we want to protect our marine resources, we have to also consider how we use our land in that particular watershed boundary. The community consultation The participants split into four groups, by residence in the four area councils of Epi. Each group included men and women, and the facilitator stressed the importance of ensuring equal participation by both gender groups. The objective of the first exercise was for the groups to identify the climate change problems and issues they are facing Figure They were asked to write these down on butcher paper and note the locations, bearing in mind that this record would be used later to populate the 3D model. The problem areas were limited to villages and areas used for subsistence and commercial activities. The groups were then asked to identify some of their current coping strategies to address the problems and issues they are facing. However, this raised some difficulties. Because climate change happens over a long period of time, coping strategies have also evolved over time, and people often do not realise that a change in behaviour has occurred and is a coping strategy. After this exercise, the PACC team revisited this issue in order to identify all of the coping strategies adopted by the communities. The facilitator then asked the groups to present their findings, and this was followed by a question and answer session. This allowed aligning of understanding between the PACC team and communities, and ensured that the entire group is moving forward together. The four area council groups then placed their problems and issues, and their coping strategies onto the 3D model using pins with tags and following the legend created earlier Figure Map detail, with problems and issues added by the participants. Results Through the workshop, and using the 3D map, the participants identified, recorded and mapped out the climate change problems and

issues that they are facing in the different areas in Epi. The results are presented in table form in Annex 1. The workshop participants identified, recorded and mapped out adaptation interventions that address the climate change problems and issues that they are facing in the different areas in Epi. Due to time constraints the workshop was forced to pick up data by area council instead of village by village case. At the same time it provided an excellent opportunity to verify the local information collected, through discussion with other community members present. The tool enhanced the community consultation, by providing a visualisation of the land and resources under discussion. Members of the community who were not trained to interpret 2D maps and found these difficult, found the 3D model easy to understand. This improved understanding of geography, locations of natural resources, and linked ecosystems helps decision makers make more informed decisions on activities involving these resources and ecosystems. The workshop and the 3D model also facilitated sharing of information on natural resources among the different island communities. A lack of shared knowledge and understanding is often a limitation in planning for sustainable resources use, and this tool can therefore help overcome this problem. Having the students build the model proved successful. It was cost- and time-effective, and also provided a valuable learning experience for the students. While the scale 1: This would result in a larger model, and features and land use could be more easily shown. Guiding Principles and Applications. CTA, Netherlands, Download at <http://>

### Chapter 3 : Participatory 3D modelling - Wikipedia

*This resource book describes in detail an innovative community-based communication, research and planning tool as it employs new technologies to address environmental and social concerns.*

### Chapter 4 : Using Participatory Three-Dimensional Modelling (P3DM) - Sprep - [blog.quintoapp.com](http://blog.quintoapp.com)

*Participatory 3-Dimensional Modelling of an Environmentally Sensitive Area in Trinidad and Tobago, Esri User Conference--Presentation, Esri User Conference.*

### Chapter 5 : Participatory 3-D Model Mapping – Partners with Melanesians

*Disclaimer. All content on this website, including dictionary, thesaurus, literature, geography, and other reference data is for informational purposes only.*

### Chapter 6 : Manual on participatory 3-dimensional modeling | Participatory Methods

*Participatory 3-Dimensional Modelling Workshop 6 to 12 November Kinabalu Park Compiled by Agnes Lee Agama and James Wong This workshop is part of the Darwin Initiative projects in Ulu Papar.*

### Chapter 7 : Participatory three-dimensional modeling (P3DM) | PANORAMA

*This is "Participatory 3 Dimensional Modelling: a quick overview" by CTA on Vimeo, the home for high quality videos and the people who love them.*

### Chapter 8 : Participatory 3-dimensional modelling: guiding principles and applications | Participatory Methods

*P3DM integrates local peoples' spatial knowledge with elevation data (land and sea) to produce stand-alone, scaled and geo-referenced relief models to inform, for example, marine protected area planning.*

### Chapter 9 : Participatory 3-dimensional modelling : guiding principles and applications | IUCN Library System

## DOWNLOAD PDF PARTICIPATORY 3-DIMENSIONAL MODELLING

*This paper highlights the potential of participatory 3-dimensional modelling (P3DM) to address conflicts in participatory natural resource use by reconciling competing interests in a mutually acceptable way and engaging communities in participatory resource planning and management.*