Research

Widening the Scope of Scenario Planning in Small Communities: a Case Study Use of an Alternative Method

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ABSTRACT. Scenario planning can be invaluable for empowerment and learning in resource dependent communities. Pre-existing scenario planning methods call for collaboration between community members, but when cultural norms prevented men, women, and youth from coming together in the community of Ukupseni in Panama, the authors and community sought to devise an alternative method. The research objectives were twofold. First, to develop an alternative scenario planning method that would facilitate learning among decision makers about community needs and perspectives, and second, to explore ways to direct desired futures. Instead of forecasting through community-wide collaboration and backcasting with the creation of one vision through consensus, forecasting used individual interviews to create scenarios and backcasting was conducted separately with each of the six community groups (older women, young women with children, young women without children, young men, older men including fishermen and lobster-catchers, and individuals with formal education) resulting in several visions. To unify the results, we created an organizational matrix that allowed the visions of different community groups to be compared. The organizational matrix allowed decision makers to observe that women and youth, the most marginalized members of the community, had convergent visions that were very different from men whose perspectives and knowledge are more often included in decision making.

Key Words: *backcasting; collaboration; forecasting; Kuna Yala; scenario planning*

INTRODUCTION

Working with the indigenous nongovernmental organization Fundación Dobbo Yala, we, the authors, were invited to the community of Ukupseni, Panama. In January 2007, Dobbo Yala and community leaders in Ukupseni wanted to undertake a community-based collaborative research project that explored the future of the community in the face of social and ecological changes through the eyes of community members. The leaders wanted to explore how their decision making could incorporate the knowledge, needs, and perspectives of community members to create a positive future for their community. In particular, they wanted to find a way to include the voice of women and youth who are not often consulted in decision making. Evans et al. (2006) describe that scenario planning can be invaluable in such circumstances where community members have

difficulty describing their perspectives, knowledge, and needs to decision makers. We were intrigued by the promises of scenario planning for Ukupseni.

Scenario planning promises opportunity for communities to explore the future. Most often framed as collaborative workshop-based activities to understand uncertainty and complexity (Schoemaker 1991, Meitzer and Reger 2005), scenario planning brings together community members with diverse interests to "anticipate, envision and plan for the future" (Evans et al. 2008:99). Creating and discussing scenarios not only provides a window into possible futures, it can also be used to "develop shared perceptions of different possible futures and create platforms for joint learning and negotiation" (Stewart and Scott 1995, as cited in Wollenberg et al. 2000:69) and facilitate learning by decision makers (Wollenberg et al. 2000). The promises of scenario planning to

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explore the future and for learning among decision makers and community members closely matched the needs of the leaders in Ukupseni.

Although enthusiastic at the opportunities of scenario planning, community and Dobbo Yala leaders found that without changes to the methods, Ukupseni would not be able to utilize them. Because of the fact that scenario planning calls for participation in a community-wide discussion of knowledge, perspectives, and intuition to reach consensus (Evans et al. 2006, 2008, Biggs et al. 2007, Fabricius et al. 2007), cultural norms that allowed neither women and men nor elders and youth in Ukupseni to meet and discuss together in public would prevent its use. Furthermore, when brainstorming with community and Dobbo Yala leaders, even if collaboration was attempted in a community-wide workshop as prescribed in pre-existing methods, they were certain that most participants would not be able to honestly present their knowledge, perspectives, and needs as would be desired. Thus, collaboration would be challenging in a scenario planning process for Ukupseni. This concern, however, is not unique to Ukupseni and has been previously acknowledged. Some studies have shown that collaboration and consensus does not achieve equitable representation (Caroll and Ratner 1994, Escobar 1997) and often one voice or one group will dominate the discussion, reducing the diversity of viewpoints expressed. Kok et al. (2006) described from their work that not all participants were equally represented in their workshop process. Wollenberg et al. (2000) also describe possible limitations in having different community members and stakeholder groups participating in open discussion together because of community power relations. Collectively we needed to pursue an alternative route to collaboration that would support social learning for community decision makers.

The social learning desired by community leaders is achieved from scenario planning by way of different community members being able to discuss their mental models. Mental models consist of the knowledge and perspectives that govern the way that each person perceives the social and environmental world around them. They also direct how a person might perceive the future and in such are important to scenario planning (Wack 1985*a*, Schwartz 1991). Collaboration is considered essential to learning from mental models because participants can observe different ways of seeing,

thinking, and doing. In the face of difficulty with collaboration because of community social norms, this research needed to explore an alternative way to share the mental models of community members that would support the social learning of decision makers in scenario planning.

The needs of the community of Ukupseni were the priority of this research, yet we believe that the lessons and implications of this research are pertinent to a broader community of scenario planners and decision makers. First, our research demonstrates that pre-existing scenario planning methods may have important practical limitations that unintentionally circumscribe the number of communities that can use them. As in Ukupseni, other communities may face limitations to collaboration for cultural, geographical, or logistical reasons. These limitations could prevent the use of scenario planning in such communities. Second, we highlight that the process of community-wide collaboration and consensus called for in scenario planning may not always be the optimal way to include all community perspectives. Perhaps most importantly, when scenario planning is being used to foster community social-ecological resilience, this research draws attention to questions such as resilience for whom, and furthermore, resilience representing whom? We propose a method that can help when dealing with such questions by highlighting the voices of individual community groups to be implicated in decision making and planning.

The community of Ukupseni, Kuna Yala

The community of Ukupseni, also known as Playón Chico, is in the indigenous territory (comarca) of the Kuna. The comarca Kuna Yala is a semiautonomous territory located on the Caribbean coast of Panama. It comprises both terrestrial and marine ecosystems with 364 small islands of varying size, and a coastal landmass. According to the national census at the time of scenario planning in Ukupseni, approximately 32,500 Kuna reside in the comarca in 49 island communities (Ventocilla et al. 1995, CNPV 2000). Ukupseni is one of these island communities (Fig. 1).

Comarca Kuna Yala's semiautonomous status, with respect to Panama's federal government, ensures Kuna have full decision making power in the management of natural resources, culture, and

Fig. 1. Map of comarca Kuna Yala and the island of Ukupseni.
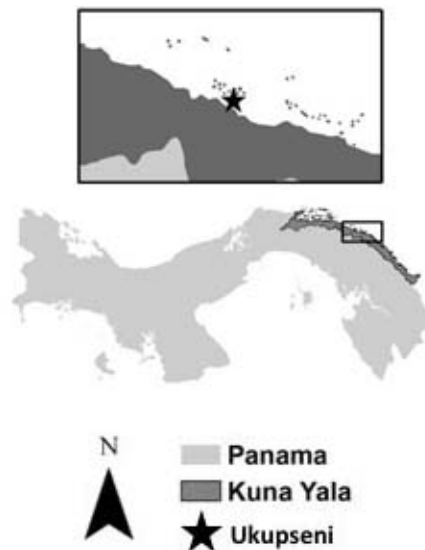
economy. Howe (1986) describes Kuna Yala as having strong social and political unity. Leadership in Kuna Yala is organized with three elder male leaders (sailas) who meet with men and women biweekly in separate groups to discuss community affairs. This same structure exists in each community in Kuna Yala. Regularly the sailas from one community travel to meetings with other sailas from across the comarca. These meetings are an opportunity for discussion and learning between community sailas and to inform the decision making of the head sailas responsible for the entire comarca. This decision making control and consultative leadership lends itself to the process of scenario planning, where this research aims to support the learning of decision makers within a pre-existing leadership structure.

Community members in Ukupseni describe that they have witnessed significant social and ecological changes in the last 50 years. The number of people living in Ukupseni has doubled over this time to nearly 2000 people (E. Ramirez, *personal communication*). At the same time, communities across the comarca have become a part of the global economy by selling two main natural resource

products, coconuts and lobster, to Colombian and Panamanian merchants. Although the sales of coconut have decreased from what they were in the past, lobster is sold to dealers in Panama City and is the main source of income in the comarca. This trade began in the 1970s when lobster stocks were plentiful (Castillo and Lessios 2001). At present, however, the comarca is experiencing a dramatic decline in lobster stocks (Castillo and Lessios 2001) and it is believed that marine resource stress is significant and approaching critical levels (Alvarado 1995). Exploring what community members see as possible alternatives to the economic dependency of lobster was one motivation of leaders to explore the future through scenario planning.

Kuna Yala is further integrated in the global economy through international tourism and trade with Colombian merchants. Tourism brings visitors from across the world providing important income to the comarca (Ventocilla et al. 1995). Ukupseni is a particular tourist destination because of two hotels on islands near the community that welcome visitors. Tourists and international dealers can purchase traditional tapestries called mola that

women sew (Tice 1995). Trade with Colombian merchants brings food, alcohol, and other supplies to Kuna communities. The livelihoods and subsistence of community members is closely tied to local and global trade.

One reason that Ukupseni leaders were interested in scenario planning was to better understand the knowledge, perspectives, and experience of youth in the community. Along with community elders in Ukupseni, Chapin (1994) and Tice (1995) describe how the globalization of Kuna Yala communities is provoking a social and economic transition in the comarca away from subsistence livelihoods. Leaders recognized that youth provide a key window into the future of their community, and although there is an apparent disconnect between generations and a transition in Kuna identity (Chapin 1994), there is also a remarkable opportunity for discussion, learning, and community planning with youth. They suggested that scenario planning could make a valuable contribution to learning among different community groups, and across gender, education, livelihood, and generations.

METHODOLOGY AND METHODS

Scenario planning

A scenario is a snapshot of the future that can either be a reflection of how the future could be or how it is desired to be. The building of scenarios is used to direct planning, policy, and decision making in both the corporate world (Becker 1983, Wack 1985*a,b*, Mietzner and Reger 2005) and in resource management since the 1970s. Over the last decade, small resource dependent communities worldwide, like Ukupseni, have explored scenario planning.

Scenario planning has its foundations in structural functionalism (Schwartz 1991). Also referred to as systems theory, a structural functionalist perspective observes and maps the social world as a system of organized entities that contribute to the functioning of the whole (Parsons 1951, Babbie and Benaquisto 2002). Scenario planning relies both on this visual representation of the social and ecological system as a tool for discussion, planning, and learning (Peterson et al. 2003, Evans et al. 2006, Fabricius et al. 2007) and this theoretical assumption that society is an observable system.

In the context of resource dependent communities, scenario planning has its methodological foundations in community-based collaborative research (CBCR). The process and goals of scenario planning in fostering participation, learning, empowerment, and collaboration with a community (Wollenberg et al. 2000, Evans et al. 2006, 2008) is parallel to those of CBCR (see Israel et al. 1998, Strand 2003). Israel et al. (1998:78) outline some of the pillars of community-based collaborative research as: "1. Recognizing community as a unit of identity; 2. Building on strengths and resources within the community; 3. Facilitating collaborative partnerships in all phases of the research; 4. Integrating knowledge and action for mutual benefit of all partners; 5. Promoting a co-learning and empowering process that attends to social inequalities; 6. Involving a cyclical and iterative process; 7. Observing a topic from both positivist and ecological paradigms; and 8. Disseminating findings and knowledge gained to all partners." The connection of scenario planning to CBCR highlights collaboration and accountability in the research process.

In light of the numerous approaches to scenario planning, Wollenberg et al. (2000) review the scenario planning literature and summarize the common process of scenario planning methods. They further engage this summary as a methodological basis for scenario planning with small resource dependent communities. This process occurs in four stages: "1. Definition of the purpose of the scenarios. 2. Information about a system's structure and major drivers of change. 3. Generation of the scenarios. 4. Implications of the scenarios and use by decision makers" (Wollenberg et al. 2000:68). We borrow this summary in developing an alternative method with Ukupseni.

Two complementary processes, forecasting and backcasting, are used to explore the future with resource dependent communities (Evans et al. 2006). Both processes create scenarios; forecasting describes a possible future and backcasting describes a desired scenario either in written or narrative form, or both. Forecasting starts from the present to outline plausible and possible futures and backcasting, or visioning, starts from an ideal future point and works backward to the present (Robinson 1990, van Notten et al. 2003, Evans et al. 2006, Kok et al. 2006). The strength of forecasting is that it gives community members an opportunity to visualize how their community might be in a set

time period considering different changes, whereas the strength of backcasting is that it gives community members the opportunity to identify how they would like to see the future, and from this to plan pathways for achieving it (Biggs et al. 2007). We will combine forecasting and backcasting in Ukupseni as a way for the community to explore how it could be in the future, as influenced by different changes, and to represent how different community groups wish to see the future when the representation of those wishes might have otherwise been silenced.

Although a collaborative and collective community-wide workshop approach is called for with resource dependent communities, there is a breadth of scenario methods. Scenarios can be generated in a group context with stakeholders, or they can be expert led and constructed based on data collected in either group or individual interviews by someone not from the community (Ratcliffe 2002). Qualitative and participatory methods for scenario planning are often most appropriate and accessible to small resource-dependent communities (Wollenberg et al. 2000) such as in Ukupseni, Kuna Yala.

Methods: scenario planning in Ukupseni, Kuna Yala

In Ukupseni, we weave together the scenario planning methods of resource dependent communities and combine forecasting and backcasting (see Wollenberg et al. 2000, Evans et al. 2006, Kok et al. 2006, Enfors et al. 2008). The first step in research planning is to outline the objectives of the scenario research (Wollenberg et al. 2000). Our objectives, as decided by Dobbo Yala and community leaders, were twofold. First, the objective was to develop an alternative scenario planning method that would support decision makers learning about community needs and perspectives, and second, to explore ways to direct desired futures. The leaders suggested that in place of community-wide collaboration for scenario planning, we meet separately with different community groups. Together, we outlined these groups to be: older women (over 25 years old); young women (15-25 years old) with children; young women (15-25 years old) without children; young men (18-25 years old); older men, fishermen and lobster-catchers (26-65 years old); individuals having received advanced formal education (IAFE)

such as Kuna doctors, nongovernmental organization workers, and teachers.

The second stage presented by Wollenberg et al. (2000) is to collect information about a system's structure and identify major drivers of change. We did this by conducting individual semistructured interviews with participants across community demographics. A community translator was employed to translate interviews from Kuna to Spanish. All material was textually transcribed in Spanish and later translated into English. The qualitative data were then coded (Riessman 1994) to identify drivers and uncertainty themes. In our research a theme was labeled uncertain based on Enfors et al. (2008) "either if many participants were uncertain about how it would develop, or if they disagreed about how it would develop". To illustrate the identification of the uncertainty theme 'education system' from the data, some older women participants described that the ability of young people to support themselves and their families was drastically limited because of their attendance at government controlled schools and was reducing the capacity of Kuna to retain their traditions. Conversely, some young women participants said that education was a vital part of creating opportunity for future generations. From both cases, it was evident that education had a part to play in the future of the community, although its precise role was uncertain. To illustrate the identification of the 'community orientation' driver of change from the data, some older women who were interviewed asserted that when the community started thinking about life beyond their community and the comarca, the quality of life of people went down. Likewise, when community members started trading, the influences from the outside started weakening the presence of their traditional culture, they said. Conversely, men interviewed who fished and caught lobster described how the well-being of the community depended on social and economic interaction with the wider world. Despite their opposite opinions, it was evident that the orientation of the community either inwardly or outwardly to the wider world would change the future of the community and thus was identified as a driver. We only explored drivers that could be controlled by decision makers in order to serve the objective of community leaders exercising their agency.

The third step to the scenario planning process summarized by Wollenberg et al. (2000) is to

generate scenarios. We, the authors, created these scenarios from themes that were identified from interview data in order for the scenarios to be consistent and comparable (Lebel et al. 2005). While using storylines from community-generated scenarios in research with a small resource dependent community, Enfors et al. (2008:49) "broke down and restructured the scenarios according to [identified] themes...[so that] defining characteristics were amplified to sharpen the contrasts between them". This analysis and organization of themes in scenarios was foundational to our process as well, although we created the storylines in our research from interview data. We organized the drivers and uncertainty themes in what we have called the Vision Scenario Matrix (VSM). This type of matrix has been used in other circumstances to create scaffolding for the development of scenarios (Schwartz 1991, Carpenter et al. 2005).

It was at this point of the process that we combined forecasting and backcasting methods and explored an alternative to community-wide collaboration. Evans et al. (2006), Kok et al. (2006), and Patel et al. (2007) outline backcasting, or visioning, as bringing community members together to discuss their hopes and dreams for the future and collectively formulate through consensus one desired future scenario, or vision, in a workshop. Instead of using consensus to form one vision in one community-wide workshop, we facilitated different community groups in separate workshops to each form a vision, thus resulting in several visions, or one from each community group. We first established 25 years as the time frame of the desired future, and then participants discussed how they would like to see their future in that time frame. Each workshop took place over the course of one morning or afternoon. Most participants were unable to attend a longer workshop period, so a single half-day workshop was considered the most appropriate format. In each workshop, participants discussed and narrated one ideal future that they would wish for their community. As workshop facilitators, we posed such questions as: "How would you like to see the future of Ukupseni, considering land use, ocean use, culture, education, and economy?" We guided the discussion so that all of the uncertainty themes from the scenarios would be covered and the visions would be comparable.

During the workshops, we also presented and discussed the forecasting scenarios that had been created to receive feedback. Suggestions were incorporated into future iterations of the scenarios. Next, the forecasting scenarios were laid in the scaffolding of the scenario matrix wherein they were described based on their formational drivers and uncertainty themes. At the same time, the visions were coded into and analyzed based on the uncertainty themes of the scenarios. These uncertainty themes formed the point of linkage between scenarios and visions. The purpose of this stage was so that community leaders could consider what possible futures Ukupseni could face, how the visions of different community groups compared to each other, and what possible scenarios each vision mostly closely represented. Through this process, community leaders could consider which drivers might support the realization of the visions of each community group.

The final stage of the Wollenberg et al. (2000) summary is applying the scenarios in decision making. We submitted the preliminary scenarios and visions to the community in the form of narratives with the first workshop participants in a second round of workshops and in two community-wide meetings. The visions, scenarios, and the linkages between them were discussed and amended as recommended by community members in the workshops. After these revision sessions, we presented the final results and lessons in two community-wide meetings. As Enfors et al. (2008) did at this stage, we gave both an oral version and a paper copy of the final report to community leaders and Kuna nongovernmental organizations active in Ukupseni. These reports included both the methodology and the results to hopefully support the future use and development of scenario planning in the community.

RESULTS

We labeled the drivers 'management strategy' and 'community orientation.' They respectively were divided into being proactive or reactive and inward or outward. The five uncertainty themes were: cultural continuity, education system, land use, ocean use, and local economy (Table 1). The structured organization of this information in the VSM produced four scenarios. These scenarios are labeled: 'return to the past,' 'local sustenance,' 'trading with the known,' and 'global Kuna' (Fig. 2). 'Return to the past' has reactive management strategy and inward community orientation drivers. 'Local sustenance' has proactive management

strategy and inward community orientation drivers. 'Trading with the known' has reactive management strategy and outward community orientation drivers. 'Global Kuna' has proactive management strategy and outward community orientation drivers.

Visions

The vision of older women focuses on community and cultural organization, cooperation, and conservation. In this translated quote, one female elder described:

In the past, money didn't interest us, we didn't buy sugar. Women went to the fields with the men. Today tourism brings in money and it goes back out quickly. There needs to be education on the mountain. If things go on this way, without education in the field, the future will be negative. Before, our grandfathers spent three days on the mountain and two days in the ocean. Today there is no lunch, the whole comarca is hungry. I want us to spend more time on the mountain and in the ocean, with the children, so that the children can know the taste of lobster. (Anonymous female elder, 2007)

In the vision of older women, traditional culture and language (Dulegaya) is strong and without significant global influences. This vision includes informal education that is controlled by elders, focusing on traditional land use. The older women see traditional knowledge as managing ecosystems sustainably, and there is only a local economy.

The vision of young men focuses on both Kuna and global values and culture, and accessible formal education from the government that includes traditional knowledge, providing opportunity and choice. They want people to be able to support themselves and their families in the community while they continue to cultivate the land traditionally. There is high global trade of natural resources and tourism.

The vision of young women with children conserves Kuna culture and the environment with proactive and responsive decision making, and sees youth as having local and global opportunity. As described

by Carolina Morales, the leader of the Ukupseni women's organization:

My children have not tasted lobster or sea turtle. The company buys those. I would like the small airplane [that comes to the community every week to buy lobster and some other marine species] to be banned, so that the youth start fishing and working the fields. Now they don't work the fields and there is nothing to eat. The youth get used to the city when they go there to go to school. They forget the fields, and that food is not only something that you buy, but something you can produce. (Carolina Morales, 2007)

In the vision of young women with children, education focuses on Kuna and global culture with an accessible Kuna university in the comarca that enables local research, knowledge, and collaboration with outside researchers. A mosaic of resource use reduces resource stress and diversifies the products available.

The vision of young women without children focuses on strong global trade without cultural planning where education is controlled by the Panamanian government and the community depends on marine resources. Land use decreases because they do not feel that anyone would want to work the land and that it is not important to the community.

Older men, fishermen, and lobster-catchers want to increase marine resource use, and export is the central feature in their vision. Roberto Herrera describes:

I want my children to study but then come back to take over my finca [plot of land], *so we can work together on it. There used to be houses with several men to work the same finca, now we do it alone and it is hard to make enough money. Lobster and mir [a type of fish, called sábalo in Spanish, shad in English] bring in a lot of money, so it is important that my children learn to fish. It is good that we have the veda [3 month moratorium every year] to conserve the lobster. I want my children to study to understand this and when they are 12-15 years old they will come back and learn to fish and farm.* (Roberto Herrera, 2007).

Table 1. Description and explanation of the uncertainty themes that were analyzed from data collected in stage one with semistructured interviews.

Uncertainty Themes	Description of Theme	Explanation of Uncertainty
Cultural continuity	The ability for the Kuna culture to remain strong and adapt to social changes, recognizing that continuity does not necessarily imply adherence to specific traditional norms.	Influences from other cultures as well as people leaving the Comarca and sometimes returning with different cultural influences, community members described as changing how and how many Kuna are engaging their traditional culture. This is particularly strong with youth.
Education system	The presence and structure of a system of formal education in the community.	Since the Panamanian Government implemented the Education System, community members described changes to their culture and community.
Land use	How land is used and to what extent, for example, in farming and hunting.	Community members described different ways and intensities for the community to use the land.
Ocean use	How the sea is used and to what extent, for example, in lobster fishing and coral extraction.	Community members described different ways and intensities for the community to use the ocean and its resources.
Local economy	Local economic organization, as well as the manner and degree to which the community chooses to interact with the external market economy.	Community members described the economy of their community to have changed a lot in the last 25 years from being focused internally to export, which in turn has greatly changed their community.

In the vision of older men, fishermen, and lobster-catchers, the Panamanian government is responsible for education, and it is accessible only through paying fees. This group saw marine resource use and land cultivation being the way of life for all Kuna. In this vision, Kuna enjoy the benefits of global influences on their traditional culture.

The vision of IAFE is that of an educated community that proactively manages culture and environment. Culture focuses on Kuna values and language while incorporating outside influences. Education is organized and managed in the community and a Kuna university supports community capacity, communication, and networking. Fishing is greatly decreased and land is increasingly cultivated. Nacio Herrera, the local director of a marine resource management organization explained:

> *Everyone wants business, good business. [Question: "Business with foreigners?"] Yes, exporting. That way we would have investment. Investment for better equipment and better education. The NGOs have the knowledge to advise on how to harvest lobster and fish without causing harm. They should have more consultations with fishermen.* (Nacio Herrera, 2007)

In this vision advanced by the IAFE group, community members cooperatively manage and profit from these resources. Trade is local and global and local traders organize into cooperatives.

The representation and summary of each vision through uncertainty themes is outlined in Figure 3 and their linkage to scenarios in Figure 4. Most visions, those of the IAFE, young women with children, and young men were closely tied to the scenario 'global Kuna'. Two visions, those of the older men, fishermen and lobster catchers, and young women without children linked with 'trading with the known'. The vision of older women linked to the scenario 'local sustenance'. No visions linked to the 'return to the past' scenario.

Fig. 2. The Vision Scenario Matrix structure with scenarios.

DISCUSSION

The results suggest that perhaps collaboration and consensus are not always the optimal strategy to represent heterogeneous voices. The alternative method that we present facilitates the expression of the needs, perspectives, and wishes of each community group, including those less assertive or more marginalized. It also creates an opportunity to have more people voice their opinions comfortably. The alternative method provides information for decision making and research that recognizes the heterogeneity of communities rather than risking misrepresentation by focusing on achieving a supposed consensus.

Although we have focused on the limitations to community-wide collaboration, there may be benefits that outweigh these limitations. There is the risk, as outlined in the beginning of this paper, that collaboration may not allow for some community voices to be heard. However, Wollenberg et al. (2000) and Evans et al. (2008) suggest that this barrier should be overcome, because collaboration can lead to breakthroughs in communication and community cohesion. The process of understanding other members' mental models could be vital for the social growth of a community.

Although this alternative method can represent the visions of community members in an organized

Fig. 3. The coding of visions in a Vision Comparison Table with uncertainty themes to later be linked to scenarios. IAFE = individuals with an advanced formal education.

		Uncertainty Themes				
		Cultural continuity	Education system	Ocean use	Land use	Local economy
Community Group Visions	Older women	Conservative	Informal education. Kuna focus.	Reduced fishing	Increased land use	Only internal trade
	Young men	Focus on Kuna & external values	Organized with both external & Kuna focus	Reduced fishing	Present land use	High external trade
	Young women with children	Focus on Kuna & external values	Organized system & high attendance	Reduced fishing	Increased land use	Only internal trade
	Young women without children	Increase external incorporation	Informal education. Kuna focus.	Increased fishing	Decreased land use	High external trade
	Older men, fishermen & lobster-catchers	Increased external incorporation	Externally controlled	Increased fishing	Decreased land use	High external trade
	IAFE	Focus on Kuna & external values	Formal. Kuna, external & env. focus.	Reduced fishing	Increased use of land	Cooperative internal & external trade

format, it does not directly support social learning between community members as is called for in scenario planning (Wollenberg et al. 2000, Evans et al. 2006, 2008, Biggs et al. 2007). We did not focus workshop discussions on the visions with other groups to perhaps encourage learning, understanding, empathy, and communication between groups. Less focused community member learning is thus a limitation to this alternative. Although the objective was to support the learning of community leaders, an additional step could be included in future uses of this alternative method to support community member learning, one where community groups would discuss the different

scenarios in greater depth and the visions of different community groups to foster greater understanding throughout the community of wishes, needs, and mental models.

In reflection, we recognize that scenarios can never capture all aspects of the future whether they are expert-generated or through community consensus. For example, in this research, where we as authors identified uncertainties and discussed them with community members, we only indirectly touched on the themes of tourism and population in the scenarios by way of the uncertainty theme "local economy." These could have been stand-alone

Fig. 4. Visions linked to scenarios arranged in the Vision Scenario Matrix structure. IAFE = individuals with an advanced formal education.

uncertainty themes, which demonstrates a limitation in creating scenarios in this way and potentially missing important contributions.

There is room for growth from this work, and we feel that it could provide further insights into scenario planning to combine pre-existing collaborative methods with our presented alternative forecasting and backcasting method. Such research could compare similarities and differences between participants' willingness to express their desired futures as well as their knowledge and intuition in community-wide collaboration vs. more intimate community group discussion. Although we did not try this comparison in Ukupseni because the community and Dobbo Yala leaders advised us not to, we wonder if a pre-existing collaborative method and the proposed alternative method in a community such as Ukupseni would show the same results, i.e., the same most popular vision and consensus vision. Our experience and results suggest that the different methods would probably not have shown the same result in Ukupseni. This is because it was the voices of the least directly influential community groups,

youth and women, that united to describe remarkably similar visions. In a collaborative process, we feel that it would have been much less likely their voices would be heard.

The CBCR that was conducted in Ukupseni was planned as research with a fixed start and end point. In the time since the research was conducted, we do not know to what extent the community carried forward the work that we did together. Community members and local Kuna nongovernmental organization workers had expressed firm intentions and enthusiasm to put the work to use in resource management planning. However, we, the authors, have been unable to return to Ukupseni to follow up on the project and see what, if any, use the community members and Dobbo Yala leaders have made of this work. The challenge of ensuring full implementation of results beyond the limited research time frame is common to CBCR, and addressing it remains an issue for all future research that is collaborative and community-based (Minkler 2005). Redirecting research to have the logistical, motivational, and financial resources to put the work into action will be crucial to all CBCR. Although

we cannot report on the long-term effectiveness of this research, it is our hope that sharing the learning experiences from this project will inspire those working with scenario planning in general, and community leaders in Kuna Yala and Panama in particular, to be creative, persistent, and attentive to the needs of participants in scenario planning and decision making.

CONCLUSIONS

Building upon previous research, we explored scenario planning as an important learning experience for resource dependent communities. When a community could not participate in the community-wide collaboration called for in scenario planning, we presented an alternative method that could represent the needs and wishes of diverse community groups. This paper considered the assumption in scenario planning that consensus and collaboration is the best route from which to plan for the future and suggested otherwise. We explored the possibility that representation can also be achieved through highlighting differences of opinion, wishes, needs, and knowledge. We suggest that our proposed alternative need not be a stand-alone method, but rather one to be used to complement other ways of exploring the future. We hope that it makes the tool of scenario planning accessible to a wider breadth of circumstances and helps to facilitate the development of creative discussion and solutions in the face of uncertain futures.

Responses to this article can be read online at:
http://www.ecologyandsociety.org/vol16/iss1/art11/
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