Exploratory Scenario Planning: Lessons Learned in the Field

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Abstract

The Lincoln Institute of Land Policy, the Sonoran Institute, and the Consensus Building Institute jointly researched several exploratory scenario planning processes to identify and compile lessons learned. An initial internet-based search identified 26 projects that appeared to use exploratory scenario planning for land use and conservation decisions in a variety of formats: some encompassed several hundred square miles while others included only cities; some addressed a specific issue such as sea level rise while others aimed to look at a broad future encompassing 20 or more drivers; and some included small groups of expert participants while others included many participants of varied backgrounds and understanding of the issues. Nine projects were selected for further exploration through a series of phone interviews with 2–3 project convenors, facilitators, or participants from each project. Based on the interviews, four projects were selected and case studies were drafted to highlight the lessons learned from each case. Each of the four exploratory scenario planning cases includes the following characteristics: exploratory scenarios, public or stakeholder engagement, and a regional to local focus.

About the Author

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Introduction

While there are many types of scenario planning, the primary types used for planning in current common practice are descriptive, exploratory, or normative.

Descriptive scenario planning, the most commonly used kind, typically seeks to identify a set of plausible technical alternatives to address a problem (traffic, growth, water supply). Then, these alternatives are compared against a set of criteria like cost, effectiveness, efficiency, and so forth. This kind of scenario planning can best be thought of as alternatives analysis.

Normative scenarios describe a desired future, what an organization wants to happen or wants to be, and is concerned with developing strategies to achieve that desired or asserted future. This type of scenario can also be thought of as a goals or vision statement.

Since complex external forces beyond anyone's span of control drive the future, exploratory scenarios focus on what might occur. When exploratory scenarios are used in scenario planning, the first step is to imagine, through a rigorous process, what different futures might look like. After envisioning plausible futures, the process aims to generate strategies that will perform successfully regardless of which futures may occur. The objective is to develop plans that will be robust across a range of plausible futures.

Within the realm of exploratory scenario planning, there is a further distinction between expert-driven processes and multi-stakeholder processes. As suggested by its name, the expert-driven approach looks to people with expertise in specific disciplines, geographies or issue areas. These experts specify and clarify key determinants of change. They also assist with research into the critical uncertainties and indicators for the determinants, as well the nature of interrelationships among the determinants.

In multi-stakeholder scenario planning, representatives of all the stakeholders are assembled to participate in the scenario planning effort. In the multi-stakeholder setting, important results of scenario planning include social learning, development of a common language for discussing the focus issue, and achieving alignment with regard to the nature of the issue.

Lessons Learned

When contacting communities, we requested that they share with us lessons learned through the lens of hindsight—what worked well, what was challenging, and how might they do it again if given the opportunity. Compiled below is a set of lessons learned from the Middle Rio Grande Water Assembly's Futures Project, The Nature Conservancy's Rising Waters project, the Center of Houston's Future's Scenarios 2040 project, and the Great Valley Center's Valley Futures Project. Project overviews for each of these processes are located in Appendix A.

What Worked Well?

We asked interviewees to describe the aspects of the exploratory scenario planning process they felt worked well and produced positive outcomes. Some of the responses focused on the overall organization of the process, some emphasized the in-the-room dynamics that helped to push the process forward, and others noted the post-process community engagement to raise awareness of particular issues and potential scenarios.

Project Team Structure and Process Design

Several interviewees described effective project team structures and process design considerations that helped the processes flow smoothly. In the 18-month Rising Waters project, a steering committee worked with the lead facilitator to adaptively manage the process as it progressed. Steering committee members served as facilitators for small groups during the workshops, which provided them with in-depth understanding of each breakout groups' progress. Following each workshop, the steering committee convened to discuss overall progress, compose documents to describe progress made during the workshop, frame the developing scenarios, identify next steps, and provide process design guidance to the lead facilitator and technical consultants. The documents the steering committee created as a result of these sessions helped participants to focus on clear decision points at subsequent workshops.

In Scenarios 2040, a small team conducted interviews and focus group sessions to gather information on the current state of the region as well as the assumptions people held about the region's future. The team used the information these sessions yielded to frame the current and future critical issues. After framing these issues, a scenario building team reviewed the information and deliberated until they reached a shared understanding of the region's current state, the main drivers influencing it, and a rough outline of potential future scenarios. Interviewees said the convenor's background research reduced the amount of time necessary for the scenario building team to reach agreement on the current state and identification of the primary driving forces. Similarly, in the Middle Rio Grande Water Assembly project, the facilitators and convening party wisely made use of limited time with the stakeholder group by preparing the axes of critical uncertainties in advance of the workshop. Advanced preparation enabled the facilitator to focus the group's efforts on identifying additional factors that could prevent the realization of the future worlds participants envisioned during the workshop.

Stakeholder Selection and Engagement

Stakeholder selection and engagement occurred on a variety of different scales and at various stages during the selected projects. In some projects, over 100 participants were engaged in the development of the future scenarios. In others, scenarios were developed with a small group of experts and then vetted by a larger stakeholder group. In these types of cases, interviewees said that engagement with a wide range of stakeholders enabled a diverse range of interests, concerns, and perspectives to be heard, which ultimately helped to create more robust scenarios. Some interviewees also described how diverse engagement fostered dialogue between groups who were working on similar projects and helped to forge new or strengthen existing partnerships. In one particular instance, nomination of the stakeholders by elected officials rather then the

convener likely contributed to higher involvement and a greater sense of inclusion among the participants.

In several cases, project managers planned extensive stakeholder engagement with community members after creating the scenarios and narrative descriptions. In a couple of cases, presenting the scenarios through local and regional media outlets or giving multimedia presentations at outreach events contributed to increased project visibility and awareness among community members. According to one interviewee from the Valley Futures Project, low budget film and audio versions of the scenario narratives seemed to generate greater community discussion than the written narrative scenario descriptions.

Skilled Facilitation by a Neutral Party

Several interviewees noted the value of using skilled neutral facilitators to develop a shared understanding of the process and to help participants stay on track. Facilitators who understood how to implement exploratory scenario planning and who could use relevant examples to explain both what it is and is not were particularly useful in guiding participants through the processes. In some instances, interviewees reported that the neutrality of the facilitators fostered a greater level of acceptance of and involvement in the process. In the Valley Futures process, the facilitation team broadened the scope of group discussions by inviting a well-known journalist and author to interject ideas for the group to consider.

Participant Ground Rules

Facilitators established ground rules that govern group behaviour and created an environment where participants could openly and honestly share divergent opinions without fear of personal attack. In Scenarios 2040, where stakeholders viewed racial and socioeconomic components very differently, the behavioural rules held participants accountable and were critical in maintaining a welcoming and safe environment. One participant remarked that the stakeholders "learned to talk to each other better" because of the ground rules used during the process. In the Valley Futures Project, clear rules about confidentiality of statements empowered participants to freely brainstorm ideas.

Framing the Process and the Scenarios

Interviewees thought that the framing of the process and the scenarios helped set the tone of the process and convey a general sense of the project or the scenario, which enabled participants and other stakeholders to more easily understand the issues and scenarios. For example, the title *Rising Waters: Helping Hudson River Communities Adapt to Climate Change* painted a vivid image of what the project would address before participants knew the details of exploratory scenario planning. Similarly, scenario titles such as *Procrastination Blues* or *Give Rivers Room* describe the general theme of the scenario without necessarily requiring the reader to be aware of every detail. One interviewee suggested that it is important to create empowering titles that convey an understanding that the scenarios represent future possibilities that are influenced by choices made today.

Scenario Planning Tools and Resources

Interviewees were also asked to describe the tools that helped participants to better understand the process or make decisions and the tools they considered using. Interviewees described the following tools:

- *Axes of Critical Uncertainties* — Several interviewees from different cases reported that participants struggled to address the many variables that could influence a scenario. Many of the interviewees reported that the use of the X and Y axes for critical uncertainties simplified the decisions and helped participants make sense of the trade offs. It is not unusual for scenario teams to identify many uncertainties. The selection of uncertainties will create rich, challenging, and different future worlds and can sometimes require testing combinations of critical uncertainties until a 'good' set is found. Critical uncertainties can sometimes be broadly grouped together to reduce the number of uncertainties that must be tested. The axes of critical uncertainties for the Middle Rio Grande Water Assembly is included in Appendix B.

- *Scenario Wheel Indicator* — The Scenario Wheel Indicator is a tool designed to provide a visual reference for future research by the scenario teams and/or organization. It is used to encourage planning entities to monitor their external environment and remind them of the critical uncertainties and situations that should indicate when conditions are ripe for one of their future worlds to emerge. An example of the Scenario Wheel Indicator used for a set of National Security scenarios is included in Appendix C. At the center of the wheel is the future of the organization; on the inner spoke are topics that would have a direct impact on the organization; on the middle spoke are topics of national interest that could also impact the future; and on the outermost spoke are subjects that are international in scope that may also have an impact on the future. These visuals remind participants of what to monitor after the initial process is complete.

- *Vector Analysis Tool* — The Vector Analysis tool is used with the Scenario Wheel Indicator. Over a period of three or four months, researchers collect information on topics identified on the Scenario Wheel, as well as possible events that were identified along timelines in each of the futures. The researchers summarize that information and incorporate it into the description for each world. Finally, the research draws a vector into each future, the size and direction of which relates to the influence of those events. An example of the Vector Analysis Tool is shown in Appendix D.

Workshop Setting

The location and venue where the scenario planning process is held can influence the participants and the process outcomes. For example, interviewees from the Rising Waters project mentioned how the Garrison Institute's inspiring architecture and ambiance, remote nature, and lack of cell phone connectivity encouraged people to think creatively and focus on the topic at hand by providing a retreat from their daily work responsibilities. A mixture of structured discussion sessions and informal opportunities to discuss the issues while sharing meals also encouraged openness and fostered a sense of collaborative problem solving among participants.

What Challenges Were Encountered?

During the course of the interviews, interviewees were asked to describe the challenges or difficulties faced during the process they participated in and, if possible, explain how the process leaders or participants overcame them. These projects faced a variety of challenges including time, funding or other constraints on organizational capacity, incomplete stakeholder representation and declining participation rates, trouble developing a shared understanding of the process, and difficulty achieving the overall project goals.

Capacity of the Convening Organization

A variety of challenges can stem from an organization's capacity, or lack of capacity, to convene and implement the processes. In one case, staff members who were working simultaneously on several other projects were limited by the amount of time they could dedicate to the exploratory scenario process. When the staff members could not compile the research necessary for the stakeholders to have informed discussion, the task fell to the facilitator who completed the work pro-bono. One potential solution suggested to avoid this challenge was to dedicate a staff member to the project instead of relying on the assistance of several staff members whose priorities were focused elsewhere.

Limited project budgets and the large scale of project areas constrained the amount of stakeholder engagement that could be completed over the course of a project. Several convening organizations aspired to raise awareness of the issues and foster community discussion about the future scenarios across a wide geographic area. However, it was essentially impossible to convene additional workshops given the scale of the region and the project budgets. In one case, the final outreach and engagement piece was not even budgeted into the overall project cost even though it was considered an essential part of the process. In another case, the organization was only able to convene a single, daylong workshop, which left the project participants feeling as if their concerns were not heard or fully integrated into the final scenarios.

Some interviewees also suggested that external influence on the convening organization could limit the range of issues discussed during the process and discourage participation. In one case, an organization who funded the exploratory scenario planning process directed the convening organization to not use the term climate change for fear that participants would not discuss other issues. Ultimately, the consequences of climate change were described but special care was taken to not use the words climate change. In the same case, some participants stopped participating because they were mistrustful of the convening organizations willingness and ability to respect the results of the process.

Changes in the Convening Organization's Leadership or Priorities

The ultimate goal in two cases was to influence decision makers and cause policy change at the local, regional, or state level. However, in both cases this goal was not realized due to leadership changes or changes in organizational priorities. In the first case, the exploratory scenario planning process took place over several years and new people were leading the organization by

the time the final narrative scenario descriptions were completed. For unidentified reasons, the new leaders either did not accept the final narratives or simply did not support using them to influence decision makers. In the second case, changes in organizational priorities diverted project funding and few if any activities were implemented to influence decision makers.

Process Challenges

Interviewees from nearly all of the cases noted that many participants in the exploratory scenario planning processes initially struggled to understand the process. One interviewee attributed this challenge in part to the examples used to describe the exploratory scenario planning process. According to the interviewee, most of the exploratory scenario planning examples used to describe the process came from the private sector, while most of the participants in the process were from government agencies or non-profit organizations. Interviewees recommended keeping the examples of exploratory scenario planning relevant to the field in which the majority of the participants work.

Participants in another case felt the positive future scenario was overly optimistic, which led them to question the usefulness of focusing on such an unlikely future.

Facilitation was cited as a process challenge in a couple of cases. For example, in one case the interviewee suggested the facilitators should have received a short training on exploratory scenario planning prior to facilitating the break out groups. This training may have contributed to an increased degree of consistency across the narratives produced by each group. In another case, the process convenors spent additional time trying to establish the right allocation of technical presentation, meeting facilitation, and work in between meetings to allow the participants to feel as if they were developing the outcomes with only minimal guidance from the technical consultants and the facilitators.

Achieving and Maintaining Broad Stakeholder Participation

Although there were projects that engaged over 100 stakeholders, certain stakeholder groups remained underrepresented or their participation dwindled throughout the process. In one case, several participants lost interest in the process and skipped meetings while others stopped attending altogether. New participants were invited to replace the former participants, but this required rehashing previous group discussions to bring the new participants up to speed. Ultimately, the participants who completed the process may not have been the participants whose viewpoints were most needed. Instead, the participants who provided the most input on the final recommendations were those who were most interested in participating but who might not have known all the intricacies of the proposed recommendations. To overcome the challenge of sustaining participation, interviewees suggested working with a smaller, more committed group of participants, requiring a steering committee to do more of the heavy lifting in-between workshops, offering stipends to encourage participation, or compressing the process timeframe and being clear about participant commitments. Unlike in the private sector, where senior leadership directs employees to dedicate time and resources to a scenario planning project and employees are invested in the company's future, participants in public scenario planning processes are not "captured" as they are when employed by a private company. Thus, if the effort

appears too complex, too slow, to esoteric, or too unrelated to the participants' individual goals, participants appear to pretty quickly abandon the effort.

Achieving Policy Change Goals

As previously mentioned, the ultimate goal of some of cases was to directly influence decision makers to change policies or to raise public awareness of the issues and use public persuasion to influence policy makers to change applicable policies. To help achieve the goal of concrete policy changes, interviewees suggested including decision-makers in the process or coalescing a group of stakeholders to present the scenarios to decision makers along with a policy agenda. An interviewee also recommended seeking early public support for the process from elected officials as another method to help achieve policy change.

Works Cited

Börjeson, L. , Höjer, M., Dreborg, K., Ekvall, T. and Finnveden, G. 2005. Towards a user's guide to scenarios — a report on scenario types and scenario techniques. 53 pp. *http://www.infra.kth.se/fms/pdf/ScenarioRapportVer1_1b.pdf*

Hopkins, Lewis D. and Zapata, Marisa A., eds. 2007. Engaging the Future: Forecasts, Scenarios, Plans, and Projects. Cambridge, MA: Lincoln Institute of Land Policy.

Futures of the Wild: A Project of the Wildlife Conservation Society Futures Group. 2007. Wildife Conservation Society Futures Group and Bio-Era.

van Notten, P. 2006. Chapter 4: Scenario development: a typology of approaches. In *Think Scenarios, Rethink Education***.** *http://www.oecd.org/site/schoolingfortomorrowknowledgebase/futuresthinking/scenarios/37246431.pdf*

Appendix A: Case Study Briefs

1. Rising Waters

Initiated by: The Nature Conservancy

Designed by: Bio Economic Research Associates (bio-era).

Purpose: To strengthen the preparedness and adaptive capacity of the Hudson River Estuary Watershed (HREW) to meet the impacts of climate change.

Region: Hudson River Valley, New York

Funding source: The Nature Conservancy funded the initial contract. The New York State Department of Environmental Conservation subsequently awarded TNC with several grants to support project activities. Steering Committee members also contributed staff time and resources.

Drivers: Global economy, Hudson Valley gas prices, public attitudes, Hudson Valley land-use trends, political climate

Stakeholders: Rising Waters engaged approximately 160 stakeholders representing a wide range of interests in the Hudson River Valley including railroad companies, utility companies, the insurance industry, emergency preparedness experts, health care groups, religious orders, state transportation, municipal and county planners, conservation professionals, academic institutions, and national and state government agencies.

Stakeholder selection process: The steering committee identified and invited participants.

Strategy and process overview:
The process led by bio-era and TNC included both a small steering committee and a larger stakeholder group, which met five times over approximately eighteen months. Bio-era facilitated the large stakeholder group meetings and the steering committee members facilitated small groups in the workshops. Steering committee members collected input from the larger stakeholder group at the workshops, then processed, organized and focused the information so that participants in the larger stakeholder group could easily pick up where they had left off in the previous workshop. In essence, the facilitator and the steering committee, which provided process design guidance between the workshops, collaborated to adaptively manage the exploratory scenario planning process.

Scenarios developed: A scenarios team composed of a representative group of stakeholder participants developed the scenarios:

1. Procrastination Blues — Little to no climate change preparation occurs until extreme weather events push people into action. Procrastination leads unfavorable outcomes in 2030.

2. Stagflation Rules — Poor economic conditions dissuade people from investing in climate change preparation yet the public cries for preparation result in stricter land use regulations that serve to increase the regions adaptive capacity.

3. Nature be Dammed — Climate change preparations begin quickly and many sustainable measures are implemented; but serious flood events elucidate the measures' weaknesses and public favor returns to hard engineered structural protection measures.

4. Give Rivers Room — Significant damages from flooding provides the impetus for the government to spend money on hard engineered solutions on a section of the river, but subsequent flooding events downstream from the new engineered sections swing the pendulum in favor of working with natural systems rather than attempting to manage them.

2. Scenarios 2040

Initiated by: Center for Houston's Future

Designed by: Barbara Heinzen

Purpose: Implement a research and planning process to develop a set of scenarios that could be used to encourage elected officials and civic business leaders in Houston to begin strategically planning for Houston's future while considering long-term competition and sustainability.

Region: Scenarios 2040 covered eight counties of greater Houston: Harris County, Fort Bend County, Montgomery County, Brazoria County, Galveston County, Liberty County, Waller County, Chambers County.

Funding source: Shell Oil Company, Center for Houston's Future, as well as private foundations.

Drivers: Biosphere conditions, hydrocarbons, US economy, global competition and US standing in the world, US and Latin America influences, reality of equal opportunity, greater Houston society, economy and competition.

Stakeholders: A 30 person volunteer Scenario Building Team was created to develop the scenarios. The volunteers were architects, teachers, doctors, bankers, lawyers, social workers, students, artists, small business owners and large business representatives, scientists, planners, and representatives from government agencies, academic institutions, and civil society organizations.

Stakeholder selection process: Participants were selected by tapping into both the Center's professional network and the personal networks of the Center's staff. The Center also requested their contacts nominate others who should be involved in the process.

Process overview: A focused interview process with 30–60 individuals and ten focus groups was initially used to gather information on the current state of Houston and to begin framing the current and future critical issues. The Scenario Building Team then identified and discussed the assumptions people held about the future of Houston and developed an outline of what they anticipated the future would hold based on the current state and the drivers. These first 'draft scenario lists' were not in narrative form. Step three was to conduct background research to identify the driving forces that would shape alternative futures and begin to flesh out the scenarios and associated narratives. The storylines were presented to the Scenario Building Team, which then refined and merged three scenarios into two scenarios: Learning to Live and Playing to Win. A public relations firm further refined the narratives describing the alternative future states. The final step was to convert the narratives into audio visual clips to describe and show what Houston might look like in 2040. The Center then promoted the new versions of the scenarios throughout Greater Houston.

Scenarios developed — The process produced two public scenarios:

1. Learning to Live — This alternative future describes a region that showed slow and steady progress despite fierce political battles and challenges related to air quality, fresh water, and mobility. Investments in education are beginning to show positive impact and people want to move to the region to work and live.

2. Playing to Win — This alternative future describes a region that experienced unsurpassed growth and development and is now viewed as a model city-state economy. Although a hurricane destroyed portions of the region's ports, it was a opportunity in disguise since it spurred investments in storm surge protection and enabled the expansion of local ports. Unfortunately, a widening disparity in wealth and education threatens continued growth in the region.

3. Valley Futures Project

Initiated by: Great Valley Center (GVC)

Designed by: Global Business Network (GBN)

Purpose: Raise public awareness of how decisions being made today lead to different outcomes that impact quality of life in California's Central Valley, and how altering the current decision making process can change these outcomes.

Objectives:

1. Create regional view of and conversation about the future of the Central Valley by raising awareness of regional interconnections and the relevance of regional action

2. Identify and generate responses to regional population growth and related changes in land use, transportation, and demography

3. Motivate community members to take action on key issues through dissemination of information about the Valley's future

4. Inform local decision making on regional issues

5. Develop mechanisms to feed regional outcome to state decision makers

Region: California's Central Valley including 18 counties, divided into three regions for the purposes of the scenario planning process.

Funding source: James Irvine Foundation, the William and Flora Hewlett Foundation, Caltrans, State Water Resources Control Board, and the San Joaquin Valley Air Pollution Control District.

Drivers: Poverty rates, population growth, economic growth (establishment of correctional institutions and agriculture), educational attainment, transportation, water use, air quality, unemployment rate, and educational attainment.

Stakeholders: Approximately 75 participants were involved—25 stakeholders in each of the three regions. Stakeholders were identified to represent a range of interests reflected in the region including local government, social services, neighborhood organizations, youth, business, education, health care, economic development, media, the arts, transportation, water, air quality, real estate development, tribal representatives and farmworkers.

Stakeholder selection process: GVC brainstormed the representation categories above and asked local officials to nominate representatives. GVC then fine-tuned the list to ensure a wide geographical representation.

Process overview: GVC and GBN convened each of the three stakeholder groups over the course of a weekend in the spring of 2002. The goal of the meetings, which were facilitated by the GBN, was to identify the likely or potential influences on future scenarios and to brainstorm four potential futures in each group. During summer 2003, the GBN combined the main elements of the 12 futures, conducted research and modeling, and developed four scenarios from the original 12. In fall 2003, the groups met for a second time to discuss and evaluate the four scenarios. The staff at the GVC then used the four scenarios as a template and added another level of story telling based in the Central Valley. This led into a multi-year outreach campaign conducted by GVC that included audio and visual tools to share the four scenarios with the broader public.

Scenarios developed:

1. Rosa's World — A woman remembers her life after immigrating to the San Joaquin Valley. An economic recession leads to decay of public school system. The residents are

separated and isolated according to race. The affluent flee the Valley while the less fortunate riot.

2. New Eden — Fresno's new mayor Graciela Rodriguez, addresses the citizens. Because Congress invests billions into the Valley after a drought contingent upon the residents working together to diversify the economy, environmental quality, and education improve in this scenario.

3. Toxic Gold — A grandfather tells his grandson why turning the Valley into a primary location for toxic and urban waste was not a good way to bring money into the area. Residents use the money to invest in infrastructure but the Valley is left with an image of being a dump with diminishing environmental quality.

4. A Tale of Two Valleys — Emphasizing the dichotomy that has developed, UC Merced's Class of 2025 is addressed by successful agricultural entrepreneur Raphael Hernandez. New technology spread to the Valley, UC Merced provides increasing educational opportunities. Some residents are left behind, increasing the gap between rich and poor. Unemployment soars from a decrease in agricultural jobs.

4. Middle Rio Grande Water Assembly: Futures Project

Initiated by: Middle Rio Grand Water Assembly

Designed by: Mr. Jack Jekowski, Innovative Technology Partnership. Mr. Jekowski was trained by the Global Business Network (GBN) and designed the process according to their formula, but he modified the GBN techniques to allow the scenarios and process to continue to be used after the initial process.

Purpose: The goal of the project was to foster community dialogue and raise the awareness and sense of responsibility for water resources among the general public and official decision makers. It was hoped that increased community dialogue about the scenarios would persuade political decision makers to measure the successes or failures of the targets established in the 2004 Middle Rio Grande Water Plan and to implement further needed changes.

Region: Middle Rio Grande Region in including portions of several Indian tribes, the City of Albuquerque, New Mexico, and Sandoval, Bernalillo, Valencia, and Socorro Counties.

Funding source: None (all volunteer)

Drivers: Fire, economy, endangered species act, infrastructure, energy, possible cataclysmic events, water (including withdrawals, river flows/riparian evapotranspiration, state and federal policies, water quality, and Pueblo and tribal water claims)

Stakeholders: About 100 participants participated in the process. The participants represented a range of interests reflected in the region including environment, business/industry, agriculture:

small irrigators and large irrigators (Middle Rio Grande Conservancy District), university/academic (both students and professors), tribal nations, the City of Albuquerque, independent consultants, lawyers with experience in water rights legislation, members of the Water Assembly.

Stakeholder selection process: The workshop was open to the public (although some targeted invitations were distributed.)

Strategy and process overview: In 2010, the Water Assembly convened an expert team to develop a plausible future scenario for the year 2025, assuming no new policy changes would occur. This group also vetted the critical uncertainties to be used in creating the axes of the uncertainties, which Mr. Jekowski created with help from the Water Assembly members. The uncertainties were approved for use in the public workshop by the Water Assembly Board. In November 2011, the Water Assembly convened local leaders and representatives of a broad array of stakeholders, as well as individuals whose work is focused on water, to develop several alternative futures during the public workshop. Those attending the workshop were divided into four groups of approximately 20 individuals to develop the narrative of one of four potential futures. With the help of a facilitator, each of these groups created the extremes of the axes of the future world, established event timelines for their particular future world, and identified factors that could prevent the realization of their future world. After these rough narratives were created, Mr. Jekowski refined the narratives for release to the public.

The next step in the Water Assembly's strategy was to present the alternative futures scenarios at town hall-like events to foster public dialogue, create a shared understanding of the possible futures, and move decision makers to action.

Mr. Jekowski's process typically follows these steps:

- Identify the focal issue
- Identify external drivers influencing the issue
- Identify critical uncertainties
- Develop scenarios by combining two critical uncertainties to create four plausible future worlds.
- Identify the events that could lead to the future worlds
- Develop stories/narratives of the future worlds
- Develop strategies to help one prosper in one of the future worlds or change course from a less desirable world, and strategies that would be useful in all future worlds

Scenarios developed:

1. Paradise Regained? — A positive scenario describing a future where changes in public policy, reduction in energy and water consumption, as well as advances in energy efficiency and desalination technology led to a remarkable turnaround for population in the Southwestern United States.

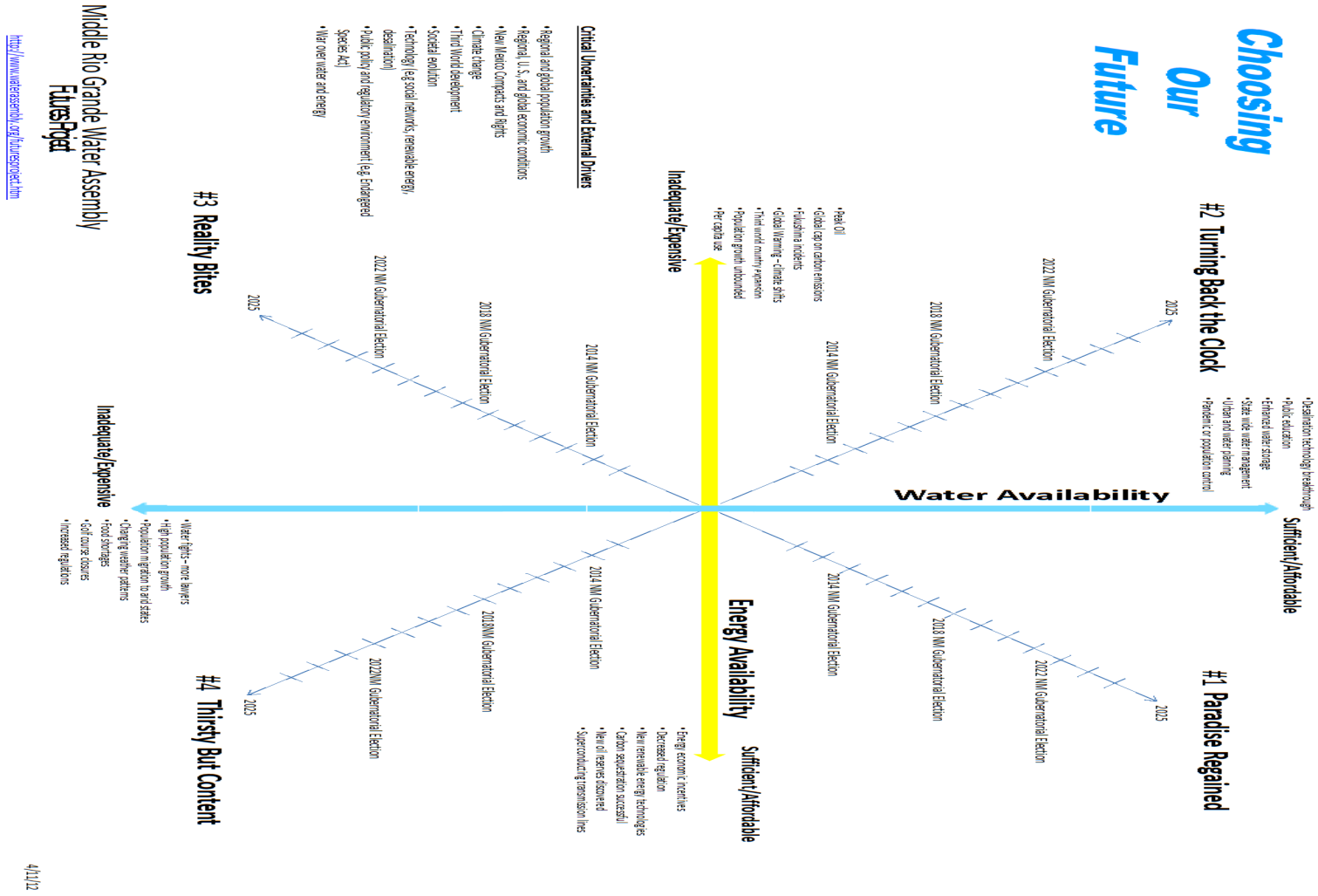
2. Turning Back the Clock — The price of electricity soars while water use dramatically declines.

3. Reality Bites — The demand for water and energy soar, unemployment is on the rise, and people and business leave New Mexico in search of cheaper electricity and more water.

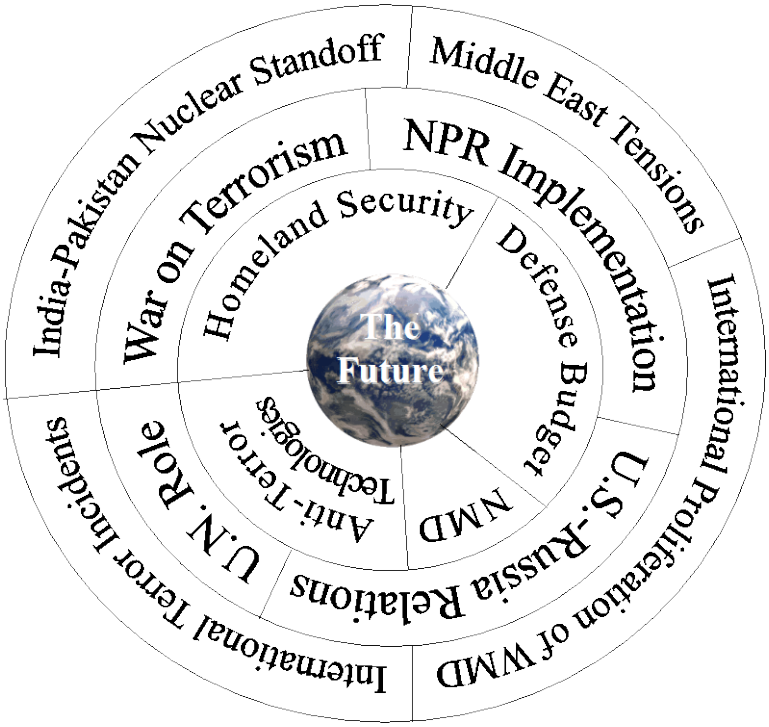
4. Thirsty But Content — Renewable energy is commonplace and energy is cheap, but the price of water, an ever-scarce resource, continues to rise along with the increasing temperatures associated with climate change.

Figures

Appendix B: Middle Rio Grande Water Assembly Axis of Critical Uncertainties



Appendix C: Scenario Wheel Indicator



Appendix D: Vector Analysis Tool