COASTAL FLOODING IN SHOREHAM: RESPONDING TO CLIMATE CHANGE RISKS

Teaching Notes

Climate change threatens infrastructure, other components of the built environment, and coastal ecosystems. While there is overwhelming evidence that the climate is changing and sea levels are rising, exactly how and when climate change's effects will materialize in any particular place remains unclear. Adaptation efforts will be necessary to protect human development and ecosystems, but are likely to be complicated by the fact that stakeholders vary in their level of concern about whether and to what extent climate change is an issue that must be addressed now. Additionally, in many places, there is strong disagreement about what, if anything, government needs to do to manage climate change risks. Despite these challenges, adaptation decisions will have to be made, and it is increasingly important that cities and towns take the best possible scientific projections into account as they make collective judgments every day about what infrastructure to build, what development to allow, and what land conservation efforts should be given priority.

This seven-party, multi-issue negotiation exercise introduces a facilitated approach to collaborative risk management. It illustrates the value of engaging key stakeholders in joint decision-making in light of scientific uncertainty. Players must consider the impact of current land-use decisions and infrastructure investments on their community's economic wellbeing and safety, as well as its ecological stability, in the face of climate change risks.

Scenario

Residents of the coastal town of Shoreham have grown increasingly concerned about the number of "freak" storms that have hit their town and region. Big rainstorms, snowstorms, and hurricanes have led to severe flooding, which is particularly problematic given the number of people and businesses that are concentrated along the waterfront, where the flooding is worst. Shoreham recently experienced a major flooding event, which generated a lot of media attention highlighting the potential for climate change to increase Shoreham's flooding risk. The storm and related media prompted residents to demand that their town do something to address coastal flooding risks and to provide protection from the long-term effects of sea level rise and climate change.

In response to this public concern, the Town Manager convened a small working group called the Coastal Flooding Task Force to figure out how to reduce the town's vulnerability

and increase its capacity to respond to coastal flooding, particularly in light of climate change. The job of the Task Force is to come up with a fiscally responsible and environmentally sound proposal that addresses three approaches for reducing flood risk: flood protection infrastructure, flood-proofing, and land use management. Today, at the final meeting of the Task Force, the goal is to reach consensus on a proposal that will be presented to the Town Council. Consensus will require agreement of at least five of the six voting members.

Teaching Objectives and Key Lessons

This game is designed to achieve the following objectives:

- Increase awareness and concern about potential climate change risks and obstacles to addressing them as a community.
- Teach collaborative decision-making methods that can effectively address the consequences of climate uncertainty.
- Demonstrate the importance of using scientific forecasts and credible risk assessments in current everyday decision-making.

The role-play simulation aims to convey the following key points:

- Climate change adaptation poses difficult planning choices, but there are actions cities and towns can take now to protect themselves that will be beneficial regardless of how severe climate change risks turn out to be.
- Development, conservation, and infrastructure investments decisions made today will continue to affect communities far into the future. Short-term actions that do not take long-term climate change risks into account could prove extremely costly in the long run.
- There are ways of handling climate change risks that can meet multiple municipal goals simultaneously, and do not require significant extra investment. “No-regrets actions” that take climate change projections into account can help to implement short-term planning, zoning, infrastructure and land-use decisions that will also make sense in the long term.
- A community-wide approach to managing the collective risks associated with climate change can create opportunities to address other issues while reducing vulnerability and enhancing community resilience.
- Communities must assess their vulnerabilities and decide which adaptation strategies are most appropriate.
- Stakeholders may have conflicting interests that shape their views about which public policy choices should be made. By working collaboratively and taking science into account, groups can find creative solutions that meet the interests of diverse stakeholders.
- At-risk towns and cities will have to consider how the financial responsibility for reducing climate risks will be distributed and whose responsibility it is to manage certain climate change impacts.

Logistics

Time required:

- 15 minutes to introduce and provide and overview of the game
- 30 minutes for players to read and review their General and Confidential Instructions
- 60-75 minutes for players to engage in the role-play simulation
- 30 minutes (minimum) for follow- up debriefing

The game requires a minimum of seven players (six task force members and one facilitator). For any given training event or class, multiple groups of seven may play the game at the same time, preferably in separate rooms or spaced far enough apart to avoid overhearing each other's conversations. Some roles can be doubled up at a single table to incorporate extra players.

Introducing the exercise

Players should be informed in advance that the role-play exercise explores how stakeholders can work together to address climate change risks facing coastal towns and cities. They should also be informed that the scenario is intended to help them reflect on how at-risk communities might proceed with preparing for climate change; it is not aimed at promoting any particular perspective on how adaptation ought to proceed.

Players will likely have personal opinions on the issues that will come up, but they should stay true to the roles they have been assigned and the directions in their Confidential Instructions. The debriefing at the end of the role-play will provide an opportunity for everyone to step out of character and talk about their real-life concerns and opinions. See further instructions in the debriefing section below.

Setting up

Players gather in groups of seven at separate tables. As mentioned above, many groups can play at the same time. If there is an uneven multiple of seven, extra players can be assigned to double-up playing the Association to Protect Shoreham County role or Shoreham Shores Civic Association role. More than one person filling a role at a table may require additional preparation time to plan how they will work together.

If possible, the person playing the facilitator role for each group should be provided with a whiteboard, chalkboard, or flip chart so they can keep track of their group's ideas and decisions.

As the game manager, circulate through the room during game play to make sure all the groups have what they need and that the game is proceeding smoothly. Listening in to get a sense of what is going on at the game tables will make it easier for you to lead the debriefing.

Preparation

All players should receive a copy of the General Instructions ahead of time. The General Instructions describe the scenario and the decisions the group will have to make. Some

scientific information about climate change risks is provided in easy-to-understand language.

Each player should also receive individual Confidential Instructions that should *not* be distributed ahead of time. These instructions describe each player's concerns and priorities based on interviews with people in these actual roles in a community similar to the one depicted in the role-play. When distributing the Confidential Instructions, remind players *not to show* these instructions to other players.

Everyone should be given at least 30 minutes to familiarize themselves with their instructions and prepare for the simulation. If two players are sharing the same role at a given table, they may need an additional 5-10 minutes to caucus and develop a joint strategy.

It is critical that all seven roles at every table be filled.

The facilitator's role
The game manager should be aware of the purpose and directions for the facilitator role, which are spelled out in his or her Confidential Instructions. Although all other roles should be assigned randomly, the game manager should ask if anyone is willing to play the facilitator role; not everyone is comfortable with this responsibility, and although it is not mandatory, prior experience with group decision-making and facilitation is especially helpful for playing this role.

The facilitator should start the discussion in each group using the agenda in their Confidential
Instructions. Prior to the simulation, it is helpful to meet with people playing the facilitator role to remind them to:
• keep a close eye on the time.
• stick to the agenda described in their Confidential Instructions.
• make sure their groups to refer to the climate change projections in the General Instructions when making decisions.
• guide the group to discuss their underlying interests rather than merely stating their rigid positions.

Simulation process
The simulation will require at least 60 minutes, though 75 minutes is preferable. Before beginning, make sure all the parties understand their instructions and the game logistics. During the introduction to the game, emphasize the following points:

- Once the negotiation begins, players should remain in their roles until the end of the game.
- There is a designated facilitator who will manage each group.
- Players should try to come to consensus, which will mean that at least five out of six players (not including the facilitator) agree with the "deal" that is worked out.
- All parties must remain faithful to their Confidential Instructions. No player can agree to an outcome that includes provisions identified as unacceptable in their

Confidential Instructions. Players are allowed to "fill in the blanks" i.e., to improvise when no specific guidelines are provided, but they must take stands consistent with the priorities indicated in their Confidential Instructions.

- Time is limited so all parties should make their points as clearly and efficiently possible. No one should be allowed to monopolize the conversation in a group.
- Players should not interact with players from other groups during the exercise. Comparisons of decisions reached at each table should be made only during the debriefing, and not before.
- Modifying policy options or creating new options is entirely permissible. However, players must not invent options that they know are unrealistic in the real world.

When all players have read their instructions and are prepared to begin, the groups should convene. If there are multiple groups, they should meet in separate rooms or at separate tables. If roles are doubled up, people playing the same role should sit next to each other

Once the simulation begins, the facilitator at each table should start the discussion, as explained in his or her Confidential Instructions. The players then have the rest of the allotted time (60 to 75 minutes) to reach agreements. The game manager should stop negotiations after the allotted time, regardless of whether or not tables have reached agreement. All players should then reconvene as one large group to begin the debriefing.

Possible Agreements

The following are examples of agreements that are possible given the restrictions imposed by the Confidential Instructions. Other outcomes are possible, particularly if players choose to modify or combine options.

- Example Agreement 1:
  - Flood Protection Infrastructure (Issue 1): Mandate that all armored properties remove armoring within five years (Option 1.3 with the contingency that the timeline be increased from two to five years)
  - Flood-Proofing (Issue 2): Offer flood-proofing subsidies to homes and businesses in the 100-year floodplain (Option 2.3)
  - Land Use Management (Issue 3): Apply for state/federal funds to buy back impacted properties in the 100-year floodplain. If funding does not come through, Shoreham will pay (Option 3.4 with the contingency that Shoreham will pay if state/federal funding falls through)

- Example Agreement 2:
  - Flood Protection Infrastructure (Issue 1): Create a mandated town-wide buy back program for coastal armoring, all armored properties must remove armoring within ten years (Combination of Options 1.2 and 1.3 with the contingency that the timeline be increased from two to ten years)
  - Flood-Proofing (Issue 2): Offer flood-proofing subsidies to homes and businesses in the 100-year floodplain (Option 2.3)
  - Land Use Management (Issue 3): Reduce future development in the 100-year floodplain through new zoning regulations (Option 3.2)

Trading across issues: Task Force members may be willing to accept a strategy that they are less supportive of on one issue if the group agrees to implement something that they strongly favor for the second issue. For example, the Association to Protect Shoreham County may be more willing to accept flood-proofing infrastructure to address issue 1 if the group agrees to reduce the density of development in the 500-year floodplain for issue 3.

Contingent agreements: As shown in the example agreements, contingent agreements are possible and likely. For example, the Task Force might agree to only flood-proof certain types of key infrastructure, with a plan to flood-proof additional infrastructure as the need arises. Or the group might agree to conduct further research on the impacts of existing coastal armoring and to buy back or mandate the removal or armoring only if seawalls are found to be particularly impactful on neighboring properties and coastlines.

Debriefing

The debriefing is an important part of the exercise that allows players to discuss possible "take-aways" and link them to their real-life situations. All game players should be gathered for one large group debriefing.

To start the debriefing, the game manager should have the facilitator from each group give a brief summary of what agreement, if any, was reached. If no agreement was reached, have the facilitator and other group members try to explain why.

Then, the game manager should ask the following questions—or a similar set of questions—to promote discussion about group decision-making and climate change adaptation.

1. How did it feel to take on a role or perspective that is different from your own?
2. How did this exercise affect your understanding of the climate change risks facing your community?
3. Did this exercise give you any ideas about how your community might work together to reduce its vulnerability to climate change risks?
4. Should your town undertake a collaborative process for preparing for climate change impacts? What might such a process look like? Who would need to be involved?
5. What do you think are the most interesting take-aways from this experience?

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