Two Phase Development of a Flood Resilience Bond

ISSUE AREA AND THE OUTCOMES IDENTIFIED

Inland flooding is a massive problem around the world. In the US, the Federal Emergency Management Agency (FEMA) has developed the National Flood Insurance Program (NFIP). Several large storms have put this agency severely in debt to an amount that exceeds $30 billion. This bankrupt program would benefit greatly from private capital working to reduce flood risk. In addition, many rivers have been cut off from their floodplains due to development, river incision due to poor upstream land management and levees. In these cases, several ecosystem services are degraded. Runoff tends to be flashier which leads to worsened flood conditions downstream and summer low flows tend to be lower. Other degraded ecosystem services can also include lower water quality, higher water temperatures, and degraded fish habitat.

A flood resilience bond seeks a win-win-win outcome. The first win is for the investor that gains a market rate return on their investment. The second winner are the multi-stakeholders who finance the bond with monthly cashflow payments. These entities are insurance agencies, water suppliers and hydropower operators who have been able to price out the benefit of the floodplain restoration project through various modeling exercises. Finally, the ecosystem benefits because a restored and intact river floodplain has been created.

CHALLENGES IDENTIFIED THAT THIS DESIGN ADDRESSES

Determining the value of the floodplain restoration will be extremely challenging. Stakeholders will be presented with a brand-new idea. The value of the restoration will need to exceed the cost of the monthly cash flow payments. The forest resilience bond that Blue Forest Conservation has developed is an innovative financing tool that really is a ground-breaking idea. The flood resilience bond is designed in many ways to mimic this bond.

This idea will only work if a significantly large enough area of floodplain can be restored. In other words, if the project only connects an extra acre or two of floodplain, then very little measurable benefits for the Phase 2 cash flow providing stakeholders will accrue. The GIS screening tool really is a cherry-picking exercise where sizable chunks of land can be set aside to flood when a flood does occur.

Landowners that are in the floodplain likely won't be thrilled about hearing that their land will be flooded more often. They might need to be compensated.

Any investor that might invest in the bond will be doing due diligence. The bond must have rock solid numbers, risk assessment and contracted cash flow that make the deal even worth the time of the investor taking the time to look at the deal.

Ultimately, this design starts to address the disastrous debt that FEMA has accrued in its NFIP by lowering flood risk at no cost to FEMA and it provides private capital to fund river restoration.

RESOURCES I'VE IDENTIFIED THAT THIS DESIGN USESS

As an individual with an idea, I need foundation money to back this initial idea. A partner such as the Rockefeller Foundation would be ideal as they have backed Blue Forest Conservation and they have excellent contacts with banks and modelling firms. Given their understanding of the challenges and structure of the forest resilience bond, they would have valuable insight.

Phase 1 funding would also go to catastrophe modeling firms such as AIR Worldwide or RMS. They could look at flood scenarios before and after the floodplain restoration project and determine the savings in claims payment for insurance companies that have policy holders downstream of the project.

Phase 1 funding would also go to either a firm such as ESRI, or it could go to a university geography department. The purpose would be to develop a screening tool to identify potential floodplain restoration sites that are large enough for benefits to be accrued.

Phase 1 funding would also go to a bank capable of structuring the bond. The bank would provide the legal and financial expertise to vet the idea and identify potential funders.

Phase 1 could also involve a land trust or environmental NGO that might be interested in obtaining or managing the restored floodplain land.

Phase 2 would be to develop a flood resilience bond. Outside investors would put real money into the bond with expectation of a return on their investment. The stakeholders that are benefiting from the restoration project would be providing contracted cash flow into the special purpose vehicle. These stakeholders would include insurance companies selling flood insurance policies, hydropower operators benefiting from higher summer baseflows and water suppliers also benefiting from higher summer baseflows.

THE OPPORTUNITIES AROUND BUSINESS MODEL INNOVATION, MULTI-STAKEHOLDER PARTNERSHIPS AND FINANCING STRUCTURES THAT I'VE IDENTIFIED

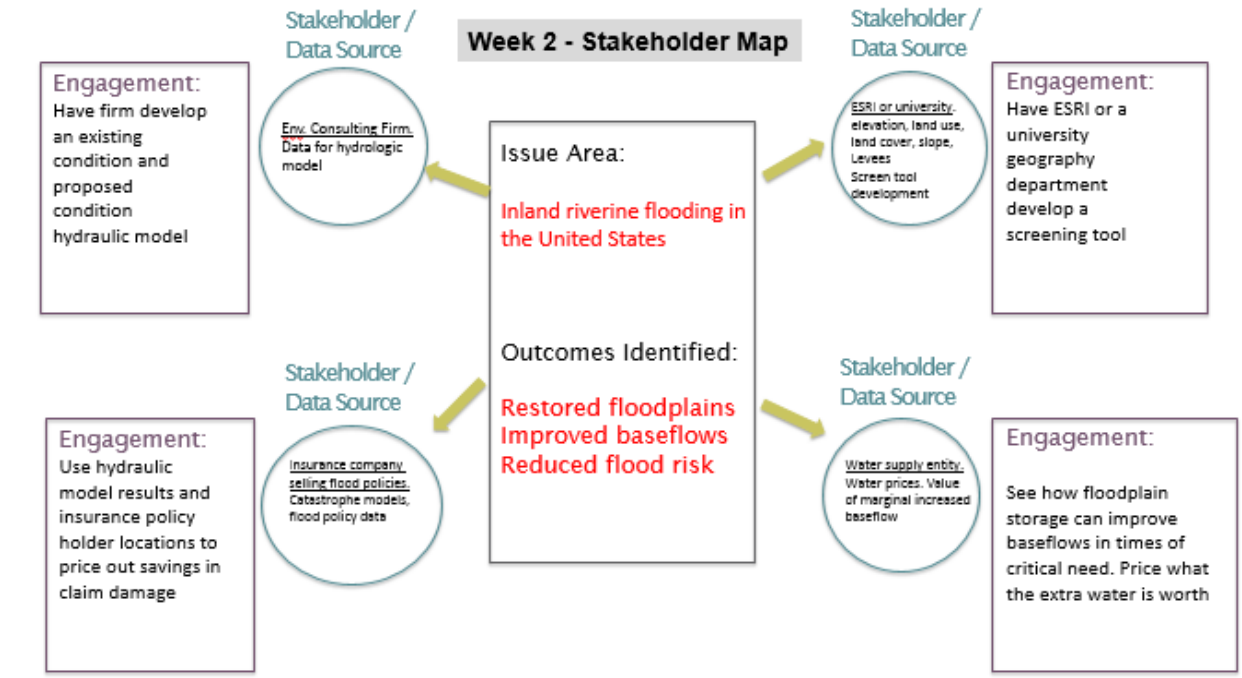
The project would be outcome based. Measurable improvements in flood claim reduction and increased baseflow must be demonstrated.

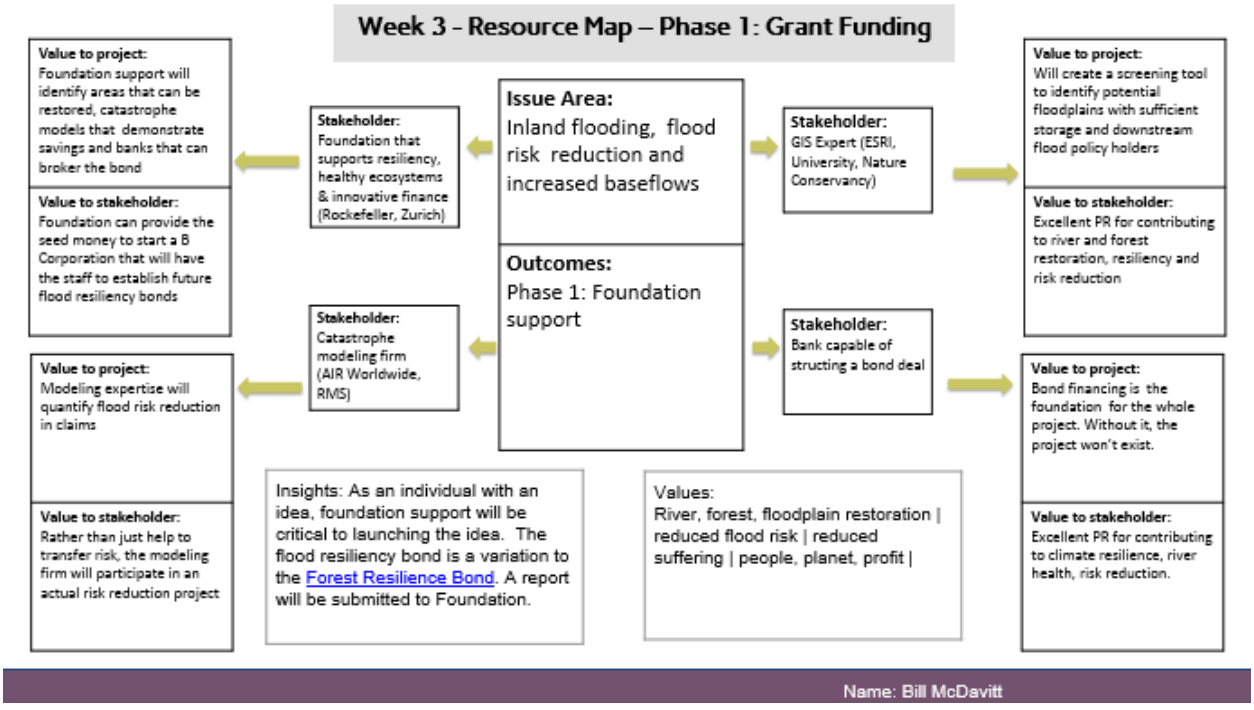
The flood resilience bond involves multi-stakeholders in Phase 1 and Phase 2.

Floodplain restoration has typically been publicly funded. Private financing of restoration is a new and exciting idea. Private capital could change FEMA policy through the value creation in floodplain restoration.

NEXT STEPS TO PILOT MY DESIGN

I’m an individual with an idea and a love of rivers. I could approach the Rockefeller Foundation or the Hewlett Foundation and pitch them the idea. I could have conversations with ESRI or geography departments to develop a screening tool. Foundation backing with money in hand will allow me to approach modeling firms to spend time on their analysis.





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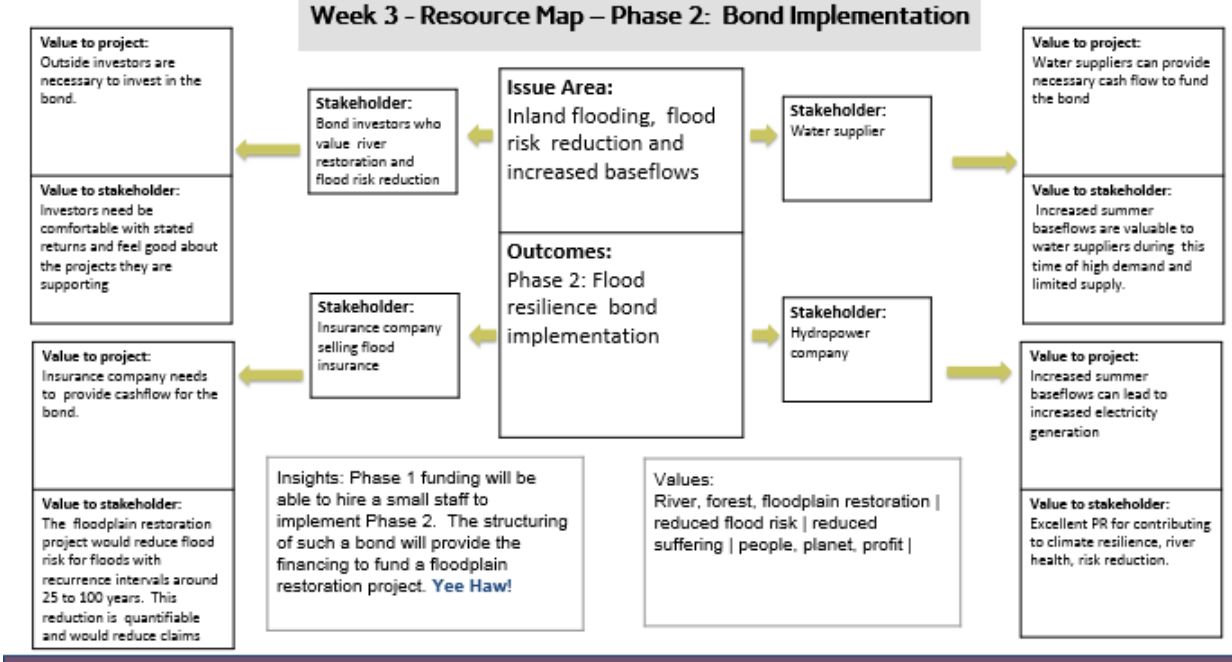
Week 3 - Resource Map – Phase 2: Bond Implementation



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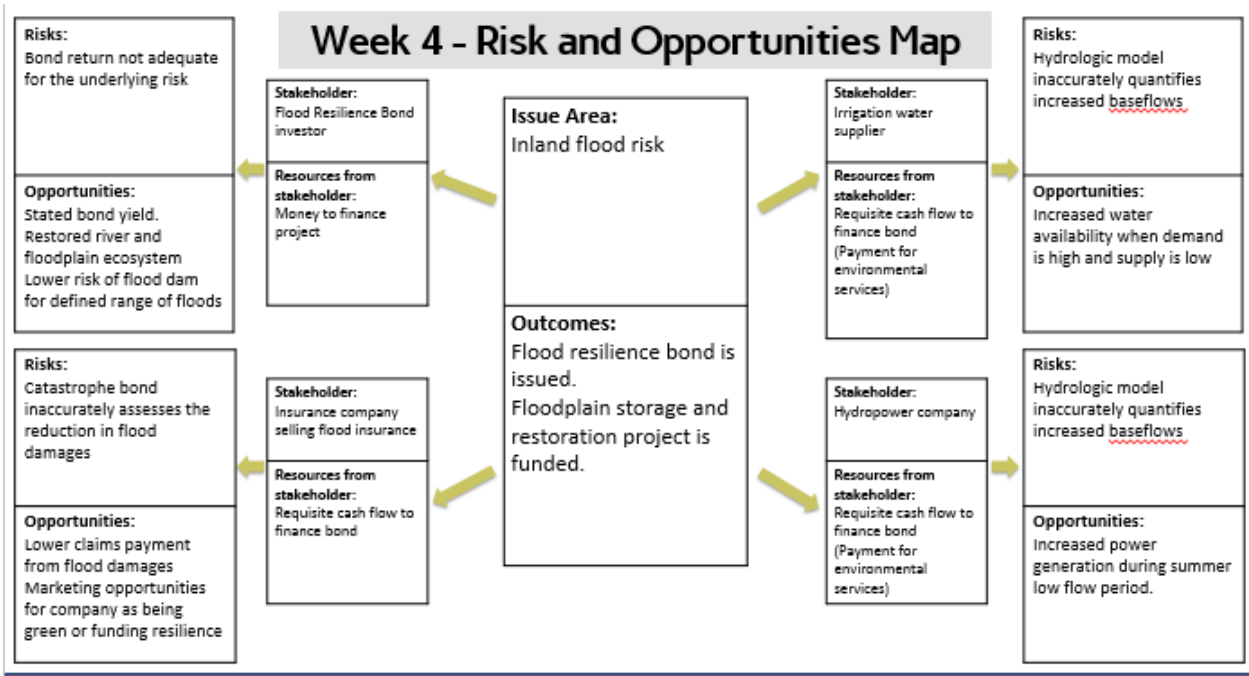
Week 4 - Risk and Opportunities Map



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