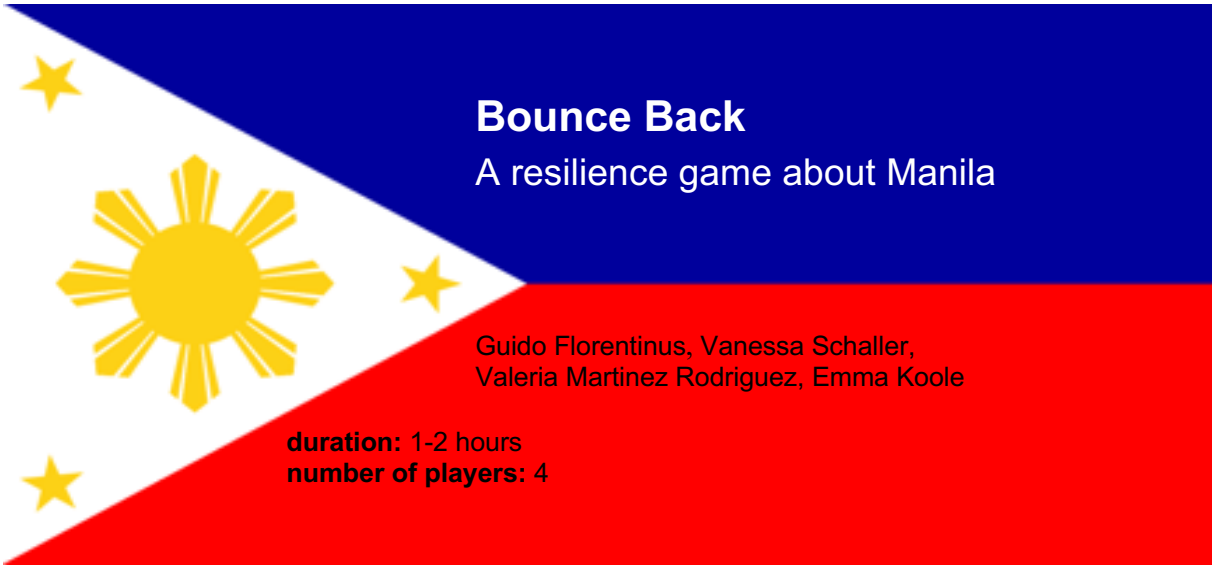


Bounce Back

A resilience game about Manila

Guido Florentinus, Vanessa Schaller,
Valeria Martinez Rodriguez, Emma Koole

duration: 1-2 hours
number of players: 4

Manila is the capital city of the Philippines and one of the most densely populated cities in the world. The greater area, Metropolitan Manila, is regularly subjected to a range of shocks. Every year multiple typhoons cause a lot of damage and also droughts and water pollution are severe problems in the Philippines. In this game you and your team, the urban council of Metropolitan Manila, are in charge of building resilience to these shocks.

Metro Manila is an enormous urban area and can be looked at as one system as a whole, but on a closer look you can see that this system is made up of multiple subsystems. All subsystems contribute to the total system and within this game four subsystems are integrated for simplicity:

- Drinking water system: Potable water is an essential necessity of life and a basic human right. Manila relies predominantly on reserves from the Angat Dam for its drinking water supply. This means that one disruption can have a large impact on the drinking water system. This system needs to be well functioning at all times.
- Infrastructure: Within Manila, insufficient infrastructure has been a major constraint to economic growth and poverty reduction. Having good infrastructure in Manila is necessary for mobility and delivery of aid throughout the region.
- Coastal Wetlands: With rising sea levels, the Manila Bay area is highly prone to shocks. A healthy wetland helps to mitigate impacts from shocks like floods and storm surges and protects the areas laying behind it.
- Informal Settlements: Communities living in informal settlements are the most affected by shocks and stresses. A lack of access to resources, low government intervention and location in high risk areas makes them more vulnerable.

Goal of the game

The goal of this game is to increase the resilience of Manila to different shocks that can affect the urban area. The four players together form the urban council, and each council member is in charge of a different subsystem of Metro Manila. Together you decide how the budget of the council is spent and in what ways you choose to increase Manila's resilience. During the game the urban area will be hit by different shocks which will affect multiple subsystems and are controlled by rolling a die. It is up to you and the other members of the urban council how to handle these shocks. Can you build enough resilience, so you won't collapse due to the shocks?

Materials

Provided as pdf-files:

- 1 main board
- 4 subsystem boards
    - Blue – drinking water system
    - Yellow – infrastructure
    - Green – coastal wetlands
    - Orange – informal settlements
- 4 action cards
- 10 blue measure cards (‘drinking water system’)
    - 4 preparation cards
    - 3 mitigation cards
    - 3 recovery cards
- 10 yellow measure cards (‘infrastructure’)
    - 5 preparation cards
    - 2 mitigation cards
    - 3 recovery cards
- 10 green measure cards (‘coastal wetlands’)
    - 5 preparation cards
    - 2 mitigation cards
    - 3 recovery cards
- 10 orange measure cards (‘informal settlements’)
    - 5 preparation cards
    - 2 mitigation cards
    - 3 recovery cards
- 8 Money cards of 1₱

Additional materials you will need:

- 2 pawns (1 to keep track of the round and 1 to keep track of the total resilience score)
- 1 die
- 22 dried lentils/beans or some kind of tokens from another game to keep track of the resilience score of the subsystems (you may choose 2 different colours for prepare- and shock-tokens)
    - 11 prepare-tokens
    - 11 shock-tokens

Overview of the gameplay

In each round the die determines which and if a shock occurs. The players can prepare for a shock, mitigate the effect of a shock, or recover after the shock has occurred. This is done by playing measure cards that belong to the corresponding subsystem that the player is responsible for. There are three types of measure cards (preparation, mitigation and recovery) and the players have a common budget to pay for these measure cards. Each card has a different score and is effective for specific shocks only. When a card is paid for, it first goes to the planning area of the corresponding subsystem and in the round after, it will be implemented in the subsystem. Throughout the game, stresses (global warming, sea level rise and population increase) will change the effect of the shock and in general it will become more difficult for you to withstand them.

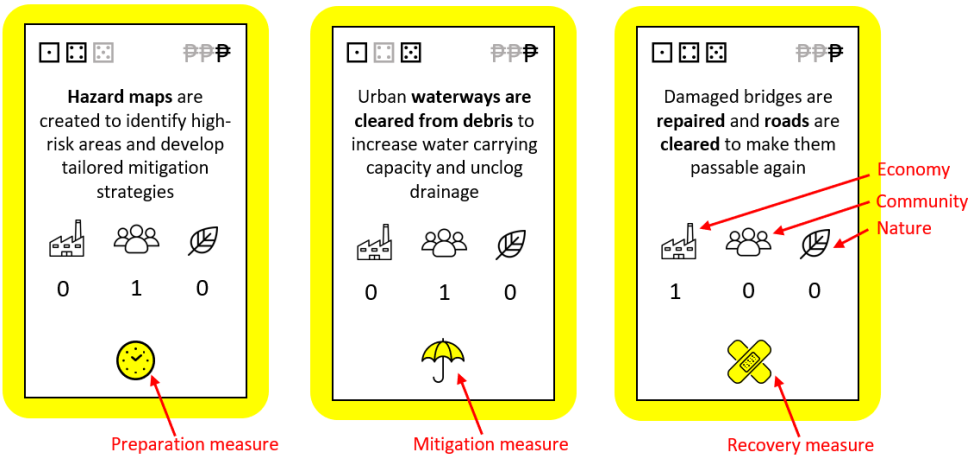
Explanation of components

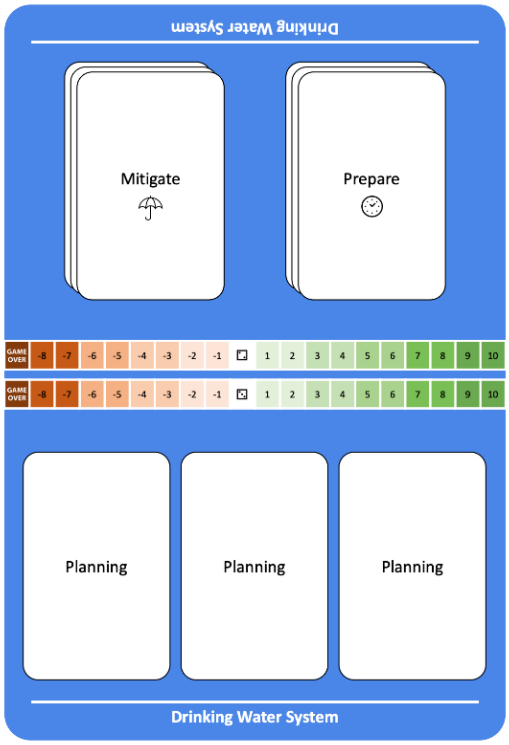
To start, we will have a closer look at the three main components of the game.

Measure cards

Below examples for the three kinds of measure cards are depicted that the urban council members can use to increase the resilience of their subsystems. The card on the left is a preparation card (recognizable by ⏲). To be effective, this card must be implemented before a shock happens to minimize the damages of the shock. Implementing preparation measures will improve the resilience of the urban area. The card in the middle is a mitigation card (recognizable by ☂). This card can be used to mitigate the effects of a shock while it is happening. However, the measure needs to be implemented in the subsystem already before the shock happens in order to mitigate the effect. This card will lower the negative resilience score inflicted by a shock. The card on the right is a recovery card (recognisable by ✚). This card can be used to recover after a shock has taken place.

In the upper left corner of each card, the black printed dice show you for which shock the card is effective (the die showing a 1 means that the card is building resilience against shock 1). In the upper right corner, the black printed Philippine-peso symbol ₱ tells you the cost of the measure. The text gives you a description of the measure that is implemented by playing this card and the symbols and numbers below the text tell you the positive (or negative) effect of the measure on economy, community and nature.



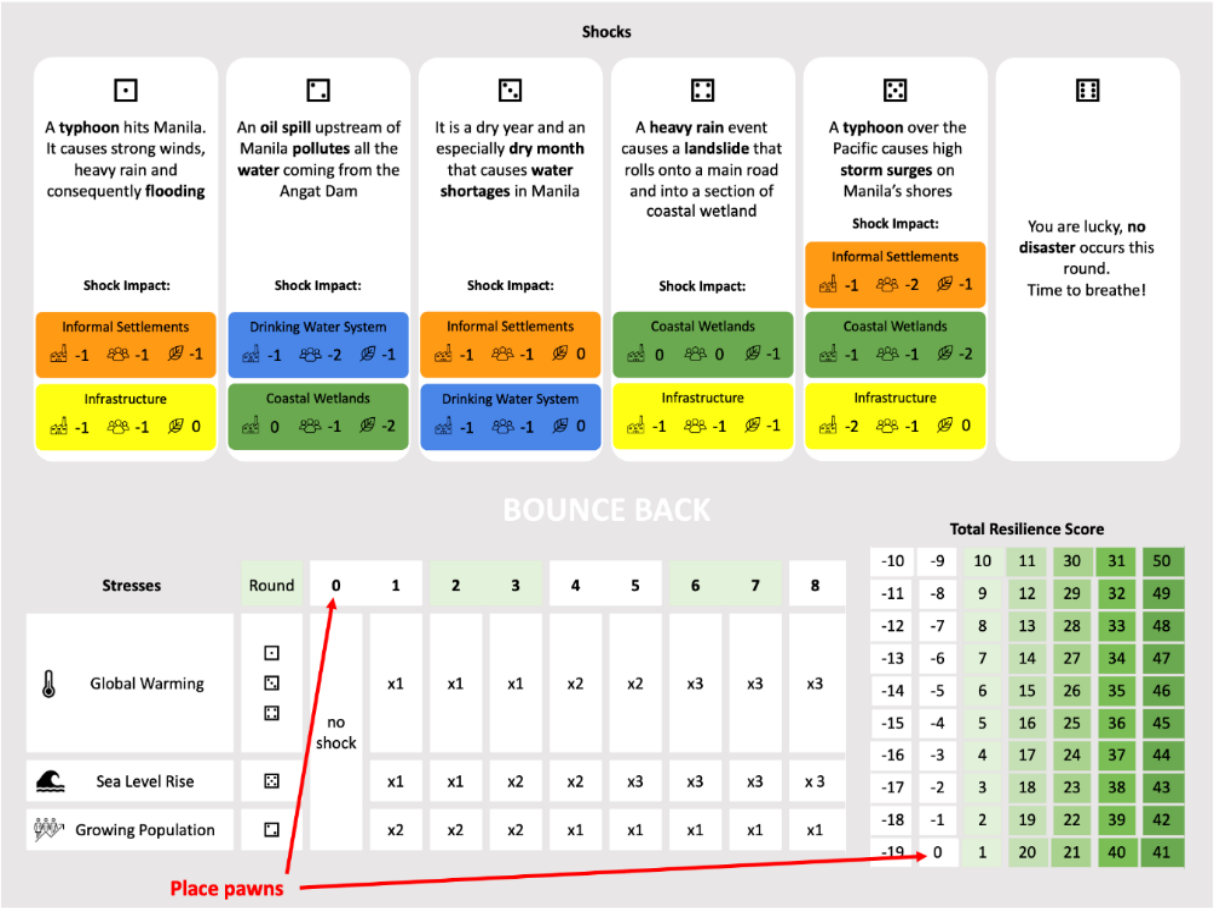


Subsystem boards

The figure on the left shows you one of the 4 subsystem boards. A subsystem consists of a planning area (3 spots where cards are laid down that are paid for but not implemented yet), a score bar for each shock that can affect the subsystem (where you will track the score of the subsystem corresponding to this shock) and two spots where the pile of implemented mitigation and preparation cards are placed.

Main board

The upper half of the main board (depicted below) shows you which shock happens depending on what number you roll with the die and the impact the shock has on the different subsystems (not every subsystem is affected by every shock). The lower left part of the main board shows by which stress the shock is intensified and for each round the factor of multiplication. The lower right part is where you will track the total resilience score of Metro Manila.



Game setup

Before you can start the game, you will follow the following steps:

1. Every council member chooses a subsystem that they are responsible for. They place the corresponding subsystem gameboard in front of them and take the corresponding measure cards in their hands. The council member who chooses to be responsible for the subsystem 'drinking water' will automatically be the game master and operate the main board.
2. The main board is placed in the middle of the table such that it can easily be seen by all players. The game master places a pawn on both round zero and on the 'total resilience score' zero on the main board (see picture of main board).
3. Every council member receives two different tokens for each shock that their subsystem can be affected by. These prepare- and shock-tokens track the resilience for each shock on the score bar shown on the subsystem (if there are 3 score-bars on your subsystems you need 3 prepare- and 3 shock-tokens). One token will be tracking the positive resilience from preparation measures (prepare token – blue in examples below) and one token will be tracking the negative resilience score from the shocks (shock token – red in examples below).
4. Each council member gets one action card that explains the actions of one round in the game and helps to remember the order of the steps taken from round 1 onwards.

General rules

Now you are ready to play the game, please follow the rules described here.

The resilience of Manila can be increased by playing preparation measure cards. You can dampen the effect of a shock with mitigation measure cards and once a shock affected your subsystem you can resolve this shock with recovery measure cards. To buy these measure cards there is a common budget available.

The budget is 8₱ for two rounds. On the main board you can see which rounds are one budget round. When the colour changes, a new budget will be available. This budget has to be shared by the entire urban council and it has to be divided over the two rounds. To clarify; the urban council can spend 8₱ in round 0 and 1, 8₱ in round 2 and 3, 8₱ in round 4 and 5, etc. You can choose to spend all of the 8₱ in round 0 and nothing in round 1 or any other distribution of your choice.

A. <u>Round zero:</u>

Round zero is a planning round where no shock happens. Everybody can look into all of their measure cards and discuss the measures they want to implement. The council members have to find an agreement and then take the money from the budget (you can simply flip the money cards that are spent). The bought measure cards are put in the planning area of each player's subsystem. *There is a maximum of three cards allowed in the planning area at any given time.*

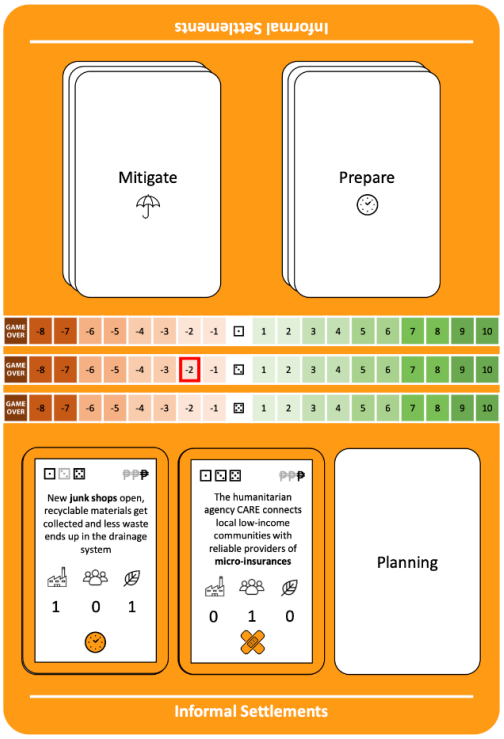
B. <u>Round one:</u>

1. Roll the die to determine what shock will affect the urban area this round. If a six is thrown there is no shock happening this round, when one of the other numbers are thrown. The main board shows you which shock corresponds to which number and gives you a short description of what is happening.

2. You look at what subsystems are affected by the shock and sum up the impact (negative resilience points) caused by the shock for each subsystem (simply sum up the numbers for economy, community and nature). Depending on which round you are in, the different shocks are intensified by certain stresses. You look at the table at the main board to see the multiplier for each shock in a specific round and multiply the total impact by this number.

   The way you deduct points from your subsystem resilience is as follows:

   If shock 3 were to happen in round 1 (which means there is a multiplier present of 1x), the informal settlements get affected by -1 for economy and -1 for community. This makes a total negative resilience score of -2. As a result, you place your shock token on -2 for shock 3, as shown in the picture on the right. (Note that if shock 2 would happen in round 1, there is a multiplier present of 2x).



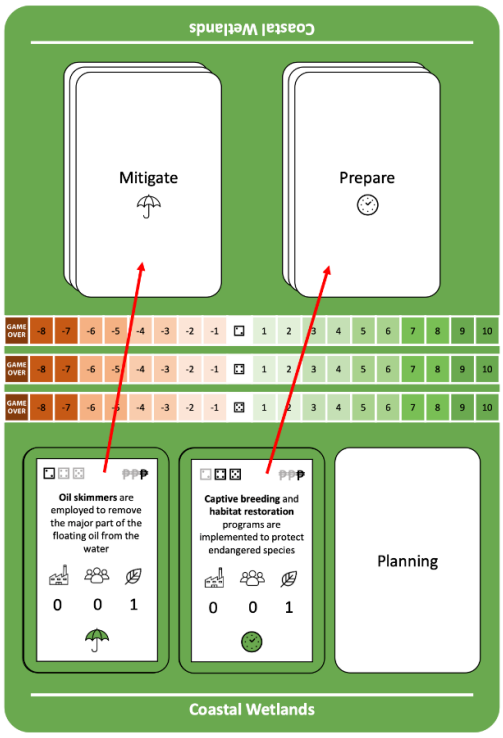
3. Now that you have a negative resilience score, you will need to recover from the shock with recovery cards. If there are recovery cards available in the planning area (already paid for), you can remove part of the negative resilience score by the shock with a recovery card that applies to that specific shock.

   On the image above this would imply that you can use the 'micro-insurances' card to move your shock token from -2 to -1. If you find yourself in a situation with a negative resilience score for 2 (or even 3) shocks, you would move the shock tokens of both shocks by 1 field if the card applies to both shocks. After the recovery card is used, it goes back to your hand and can be purchased again later.

4. After the shock has damaged your subsystem and you have potentially recovered, it is time to count the total resilience score of the urban area. Make up the resilience balance of each subsystem by summing each shock-related score and then sum the scores of all subsystem to get the total resilience score that you will track on the main board.

   For the subsystem informal settlements, displayed above, this would be -1. Adding the four subsystems scores up gives a total resilience score of the urban area.

5. Once the score has been changed on the main board by the game master, each council member gets to relocate their preparation and mitigation measure cards from the planning area to the designated area on the subsystem to implement their measure. If a preparation measure card is implemented, the resilience of the subsystem gets increased according to the total number of resilience points.



According to the measure card shown on the previous page, the resilience of the green subsystem would increase with 1 point for shock 4 and 5. (Only preparation measure cards can increase the resilience.)

Recovery cards, that were not used, stay in the planning area. They will stay there until they are used in one of the following rounds.

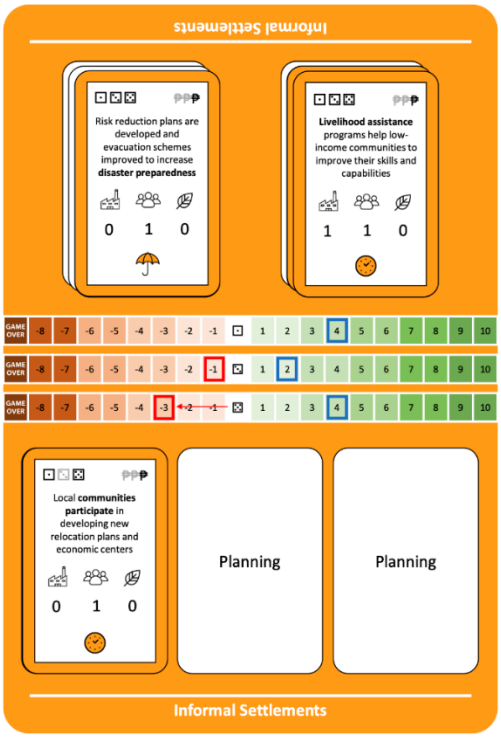
6. The last step of a round is to discuss the new measures that each council member wants to apply in their subsystem, pay for those measures and place them in the planning area.

C. Further rounds

The rounds that follow are the same as round one, except for step 2 and step 4 which will become slightly more complex.

2. The rules are the same as in round one, but now it might be that you are already prepared for a shock. The way you deduct points from your subsystem resilience goes as follows:

   We look at the same subsystem as in explanation B2, except now we are in round 3 and a few more cards have already been played. Shock 5 has just happened and in round 3 this corresponds to a score of -8. If we look at the subsystem, we can see that there are already preparation measures in place that led to a resilience score of +4 for shock 5. This reduces the effect of the shock to -4 (4 - 8). Now you can choose to play your mitigation card. As seen in the example on the right this card has a resilience score of +1. If played this card will reduce the effect of the shock to -3 and the card will leave the subsystem and go back to your hand. The shock token gets moved to -3 for shock 5.



   Be careful! If you are not well prepared or have no mitigation cards in the subsystem that you can use and a shock brings your resilience score below -8 the game is over for all players and your urban area collapses under the impact of the shock.

4. In step number 4 it is time again to make up the total balance of the resilience scores of all subsystems.

   If we take a look at the subsystem above, the resilience balance of this specific subsystem would be +6. This consists of scores of +4, +2 and +4 from the preparation measures on different shocks, and scores of -1 and -3 from the shocks that happened. Calculate this balance for each subsystem and add them all up to get the total resilience score of the urban council that is updated on the main board.

End of the game

The game ends after 8 rounds. If you survive until the last round, your city council won the game. The total resilience score tells you how well you did, the greener it is, the more resilient you made Manila.

Food for thought

Reality is more complex than the situation portrayed in this game. The game is a very simple model of the socio-technical-system Metro Manila and aims to represent the real-life situation as real as possible.

After playing this game try to answer the following questions:

- Which parts do you think are a good representation of the real situation and which parts do you think are very different in reality?
- What do you think is the main limiting factor for resilience building in the game and what type of measure is the most successful when dealing with the shocks? Is this realistic?
- As a city council you worked on a common goal in this game (to increase the total resilience score). Did you make decisions based on this goal or did you focus more on your individual subsystems?
- Would you do something different if you would play again?

Note: This game was developed during the 2020 COVID-19 pandemic and is in practice also playable remotely in the form of an online meeting. Each player can print one subsystem, the corresponding measurement cards and one action card. The main board can be looked at on their individual screen by every player and the game master can keep track of the total resilience score and round.

Acknowledgement: The icons used for this game were made by Freepik, Tomas Knop, monkik and Prossymbols and were retrieved from www.flaticon.com.