Mitigate

Prepare

GAME OVER	-8	-7	-6	-5	-4	-3	-2	-1	⚀	1	2	3	4	5	6	7	8	9	10
GAME OVER	-8	-7	-6	-5	-4	-3	-2	-1	⚁	1	2	3	4	5	6	7	8	9	10
GAME OVER	-8	-7	-6	-5	-4	-3	-2	-1	⚂	1	2	3	4	5	6	7	8	9	10

Planning

Planning

Planning

Drinking Water System

Mitigate

Prepare

GAME OVER	-8	-7	-6	-5	-4	-3	-2	-1	⚀	1	2	3	4	5	6	7	8	9	10

GAME OVER	-8	-7	-6	-5	-4	-3	-2	-1	⚅	1	2	3	4	5	6	7	8	9	10

Planning

Planning

Planning

Drinking Water System

Coastal Wetlands

Mitigate

Prepare

GAME OVER	-8	-7	-6	-5	-4	-3	-2	-1		1	2	3	4	5	6	7	8	9	10
GAME OVER	-8	-7	-6	-5	-4	-3	-2	-1		1	2	3	4	5	6	7	8	9	10
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Planning

Planning

Planning

Coastal Wetlands

Infrastructure

Mitigate

Prepare

GAME OVER	-8	-7	-6	-5	-4	-3	-2	-1	⚀	1	2	3	4	5	6	7	8	9	10
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Planning

Planning

Planning

Infrastructure

Rainwater is **collected** in barrels and used for irrigation and other purposes to save drinking water

1 1 0

The World Bank helps the government to start a **relocation project** to move 2500 households away from flood prone areas

1 2 1

New **junk shops** open, recyclable materials get collected and less waste ends up in the drainage system

1 0 1

Livelihood assistance programs help low-income communities to improve their skills and capabilities

1 1 0

Risk reduction plans are developed and evacuation schemes improved to increase **disaster preparedness**

0 1 0

The humanitarian agency CARE connects local low-income communities with reliable providers of **micro-insurances**

0 1 0

Local **communities participate** in developing new relocation plans and economic centers

0 1 0

Alternative temporary shelters are implemented that cover the survival needs during a disaster event

0 1 0

Meal packs are distributed by the government to provide **food relief**

0 1 0

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More **monitoring units** are installed in the drinking water system to detect pollution early

0 1 0

Increase storage capacity of the drinking water system by integrating aquifers that store water in periods of low demand

0 2 0

Yearly **capacity** of the **Angat dam** is **increased** by using reliable weather projections to optimize dam operation

1 1 0

Water in plastic **bottles** is purchased to provide drinking water during drought

0 1 -1

Water is brought into local communities with emergency **trucks**

0 2 0

Water treatment plants are **modernized** to better remove unexpected pollutants and be more flexible in operation

1 1 0

Improvements are made in the **drinking water network** to reduce losses and connect more households

1 1 0

Risk is immediately **communicated** to the consumers to avoid health impact

0 1 0

The **drinking water system** is **flushed** to remove the pollutant from the distribution network

0 1 0

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Wetland keepers are appointed who are responsible for supervising and monitoring the state of the wetland

1 0 1

Captive breeding and **habitat restoration** programs are implemented to protect endangered species

0 0 1

Several wetland **areas** are declared as **'protected'** to enhance biodiversity and limit human intervention

0 0 2

Oil skimmers are employed to remove the majority of the floating oil from the water

0 0 1

Mangrove seedlings are grown in greenhouses to later be planted along the coastline

0 0 1

Injured animals are rescued and temporarily **treated** in **shelters** before being set free again

0 0 1

Mangrove forest **restoration** and **rehabilitation projects** are undertaken to re-establish ecosystem services

0 0 2

Community clean-up initiatives are promoted to collect waste and debris that flushed into the wetlands during the storm surges

0 1 0

A **containment boom** is used to prevent pollution from spreading and the oil is bound to a **sorbent**

0 1 1

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Community-based waste management is promoted by **increasing awareness** of linkage between waste disposal and flooding

0 0 1

Dredging works are performed across the whole metro area to improve urban drainage

1 1 0

Trash traps are implemented to prevent improperly disposed waste from spreading

0 0 1

Hazard maps are created to identify high-risk areas and develop tailored mitigation strategies

0 1 0

Urban **waterways are cleared from debris** to increase water carrying capacity and unclog drainage

0 1 0

Damaged bridges are **repaired** and **roads** are **cleared** to make them passable again

1 0 0

Retaining walls are built to prevent road blockage in crucial sections of the transport system

1 1 -1

Diesel-driven **backup generators** are used to provide electricity during emergencies

1 1 -1

Damaged **utility towers** are **repaired** and functionality of interrupted network is fully restored

1 1 0

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Houses and **infrastructure** that were destroyed by the impacts of the typhoon are **rebuilt**

0 1 0

Drinking water usage is lowered by **water rationing** and **increasing public awareness** on efficient usage

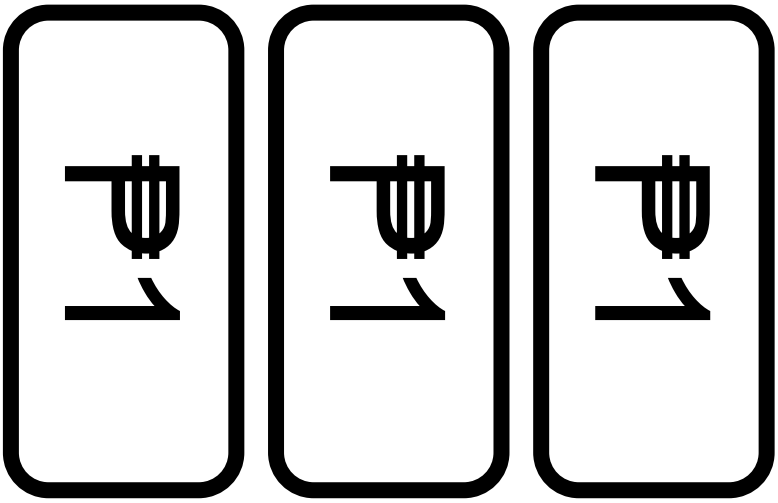
1 1 0

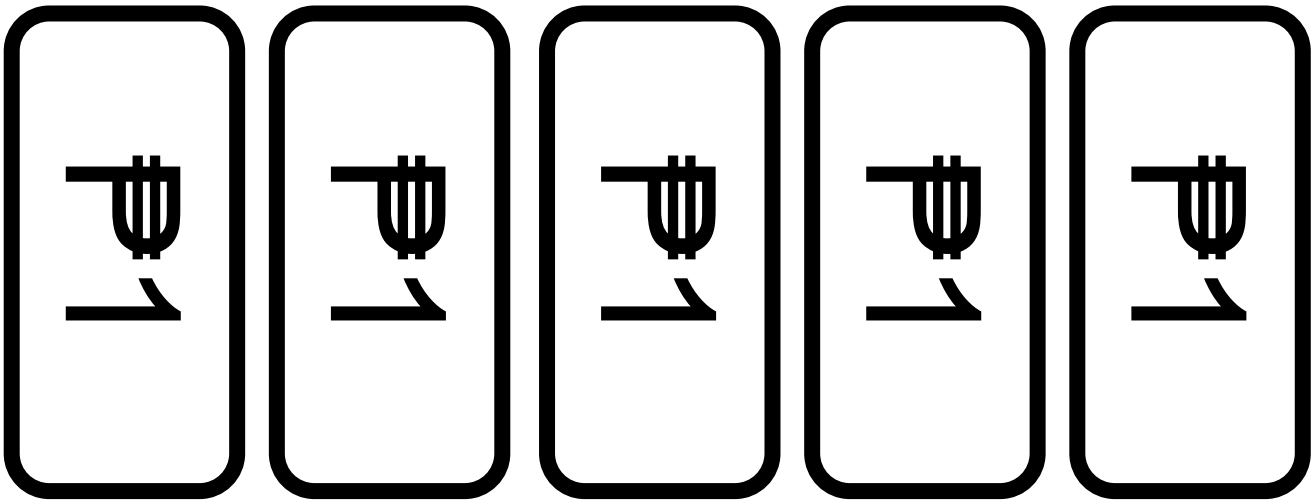
School buildings and health infrastructure are modernized and rebuilt in preferably low-risk areas

1 1 0

Young **mangrove trees** are **planted** to mitigate erosion processes and dampen storm waves

0 0 1





Bounce Back: A resilience game about Manila developed by Guido Florentinus, Vanessa Schaller, Valeria Martinez-Rodriguez and Emma Koole

Actions per round :

Move the **pawn** to the next round and check whether or not a new budget is available.

Roll the **die** to determine what **shock** will affect Manila in this round.

See **which subsystems** are affected and by what factor the **impact is multiplied**. Subtract the points from your subsystem score bar, unless enough prepare measures are already in place.

If needed, **try to recover** from the shock with recovery cards from the planning area.

Make up the total balance of each subsystem and let the game master **recount** the **total resilience score.**

Implement prepare and/or mitigate measures that are in your planning area and **increase subsystem resilience** from implementing prepare measures.

Discuss the **new measures** you want to apply in your subsystem and pay for them.

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