



# ANTARCTIC FUTURES

RESOURCE PACK



This Resource Pack has been developed for *Antarctic Futures* which is part of the Antarctic Cities Project, funded by the Australian Research Council (ARC) Linkage grant.

The project commenced in March 2017 and finishes in December 2020, studying the relationship of Key Antarctic Gateway cities – Hobart, Christchurch, Punta Arenas, Ushuaia and Cape Town – with Antarctica and each other.

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## Introduction

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*Antarctic Futures* is a serious game developed as a part of the Antarctic Cities project.

The game is an educational research output of the project. It translates the complexity of understanding future climate scenarios for Antarctica and the world into a playable experience.

The development of the game through participatory co-design served as an important methodological tool for engaging young people as key actors in issues surrounding environmental change. The scenarios players encounter in the game allow them to experience first-hand how different policy responses to climate issues affect the future of our planet.

The game is web-based and designed for relatively short group or individual player experiences. It is loosely modelled on a successful game, *Plague Inc.*, but focuses on short, casual play - ideal for classrooms or workshops, where it can act as a stimulus to discussion, debate and reflection.

## Overview

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The aim of *Antarctic Futures* is to communicate the complexity of global climate issues and their responses to the wider audience by encouraging players to reflecting upon the following key aspects:

- **Policy:** Players develop a policy platform based on global economic, political, cultural and ecological interests. Some of these interests' conflict, and players will need to think about what a coherent policy platform looks like.
- **Crisis Management:** Players respond to global environmental crises and increase the world's preparedness to minimise the risk and impact of further crises.
- **Decision-making:** Players make critical policy investment decisions based on environmental events and track their effects on the world.

## Theoretical Underpinnings

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*Antarctic Futures* and its development through participatory co-design has been conceived as a "boundary object" (Van Pelt et al 2015), in that it engages *multiple* stakeholders, disciplines, institutions and fields. In allowing knowledge translation and public communication through gameplay, *Antarctic Futures* connects multiple social worlds and facilitates a space for critical discourse between a variety of stakeholders, including researchers, youth, industry partners and policy makers.

*Antarctic Futures* draws upon the work of Rintoul et al. (2018) that uses climate scenarios to consider and discuss plausible alternative futures for Antarctica and resulting effects on the world over the next 50 years. The timescale of the game allows players to consider and reflect upon how choices made today will play out over a 50-year trajectory. While the outcome is shaped by the perspective of a single player, the game acknowledges and incorporates diverse play approaches keeping in mind the diversity in human experiences and values. The organisation of policies is adapted from a model of social sustainability put forward in *Urban Sustainability: From Theory to Practice* (James et al. 2015).

## Methodology

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*Antarctic futures* is embedded in the Circles of Sustainability approach as an overarching methodology which offers an integrated method for practically responding to complex issues of sustainability, resilience, adaptation, and liveability.

In situating its position as a boundary object, *Antarctic Futures* was developed through participatory co-design and community consultations with scientists, policymakers, practitioners, and young people from Antarctic Cities. Between 2017 and 2019 the project team ran a series of workshops in Hobart, Christchurch, Punta Arenas, Ushuaia and Cape Town. The co-design process also allowed us to test game design and usability across various stages of its development (ideation, prototyping, beta testing) in a variety of cultural, social and political contexts.

## Learning Objectives

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The goal of *Antarctic Futures* is to support the development of skills and capabilities ranging from scientific knowledge to critical thinking and reflexivity in diverse educational settings. These may include university or online courses, research methods workshops or team building activities to name a few. Some specific learning outcomes are outlined below.

### *Ecological Understanding*

*Antarctic Futures* builds the player's ability to communicate and apply key ecological concepts focusing on individuals, institutions, society, species and ecosystems. It also develops players' understanding of how natural systems interface with social systems. The scenarios embedded in the game seek to evoke players' environmental sensitivity in terms of responsible attitudes towards policy and environmental action. Players actively participate in environmental action through considering, recognizing and choosing between different value perspectives to resolve global problems.

### *Socio-Political Knowledge*

*Antarctic Futures* develops players' understanding and awareness of the interconnectedness between social, political, economic and ecological issues in shaping our environmental future. Players can experience first-hand how human cultural activities and societal systems are intertwined with and influence our environment.

### *Critical and Creative Thinking*

Critical and creative thinking involves the ability to recognize, establish and support decisions alongside generating new ideas and approaches to solve problems. *Antarctic Futures* requires players to constantly respond to the changing global environment. Players have to strategize and reason about complex situations and decisions that they are faced with. Players can also apply critical and creative thinking to achieve particular goals, or to embody specific personas within the game. See section x for more details.

## **Reflexivity**

Reflexivity refers to the relationship between cause and effect, particularly in relation to human belief and value systems. *Antarctic Futures* provides players an opportunity to reflect and consider the consequences of their decisions not only throughout the game but also post play when players can see a snapshot of the policies and strategies they adopted.

## **Environmentally Responsible Behaviours**

The core mission of *Antarctic Futures* is to 'save the world from an environmental catastrophe'. This requires players to practice environmentally responsible behaviours (REB) in policy selection, crisis management and decision making in the game. The locus is also placed on players personal ethics and social responsibility to bring change through their individual behaviours.

## **Aspects of the Game**

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*Antarctic Futures* engages players to consider and reflect upon four interconnected aspects that need to be managed simultaneously throughout the game. These include resource accumulation, policy selection, managing progress, and decision making.

### **Resource Accumulation**

In order to build a successful policy platform, players must accumulate resources. Resources can be accumulated through effective crisis management. Crises are unexpected global events, occurring due to environmental loss. Throughout the game, players are faced with global crises that need urgent response. For every positive response to emerging crises, players will obtain resources that may be used to invest in future policies.

### **Decision making**

*Antarctic Futures* prompts players to make critical decisions at various levels. Throughout the game, players will have to decide how to use limited resources towards competing policy goals. Players will also be faced with options for crisis management and will have to choose the most suitable solution for arising problems. These challenges encourage players to consider the consequences of their decisions and reflect on ethical action in a range of complex scenarios.

### **Policy**

Following the Circles of Sustainability approach, the policy platform in *Antarctic Futures* guides the process of responding to complex problems and challenges associated with building long-term global sustainability. Here, sustainability is understood in relation to global economic, political, cultural, and ecological policies (Fig. 1). Players must accumulate and allocate sufficient resources to invest in effective policies based on the overall progress of the world.

















ECONOMY	POLITICS	CULTURE	ECOLOGY
Free trade agreements 	Diplomacy 	Social media 	Fund renewable energy 
Reduce inequality 	Promote democracy 	Global festivals 	Public transport 
Automate industry 	Global treaties 	Global education 	Green cities 
Remove regulations 	Boost military 	Celebrity endorsements 	Global heritage trust 

Figure 1: *Antarctic Futures* policy platform

## Tracking progress

Beginning in 2019, the aim of *Antarctic Futures* is to build the right global policy platform to survive until the year 2070. Throughout the game, players will have the opportunity to monitor and track world progress and respond through investing in policies accordingly (Fig 3). Statistics on global progress will provide players an overview of remaining years, environmental loss, and global preparedness at any given point of time in the game. Players will also be able to view how specific countries are responding to selected policies and review global trends on loss and preparedness.

## Instructions

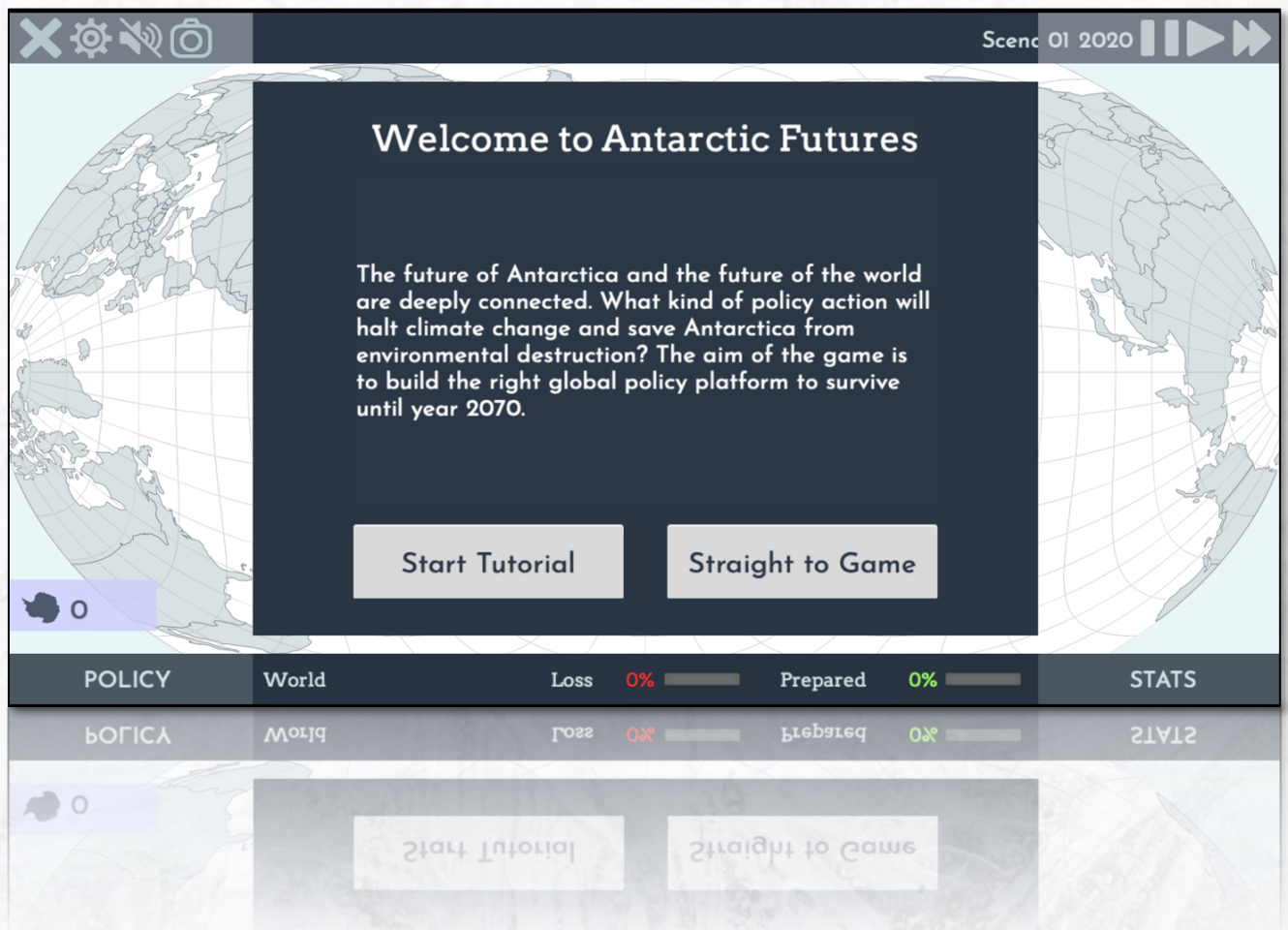
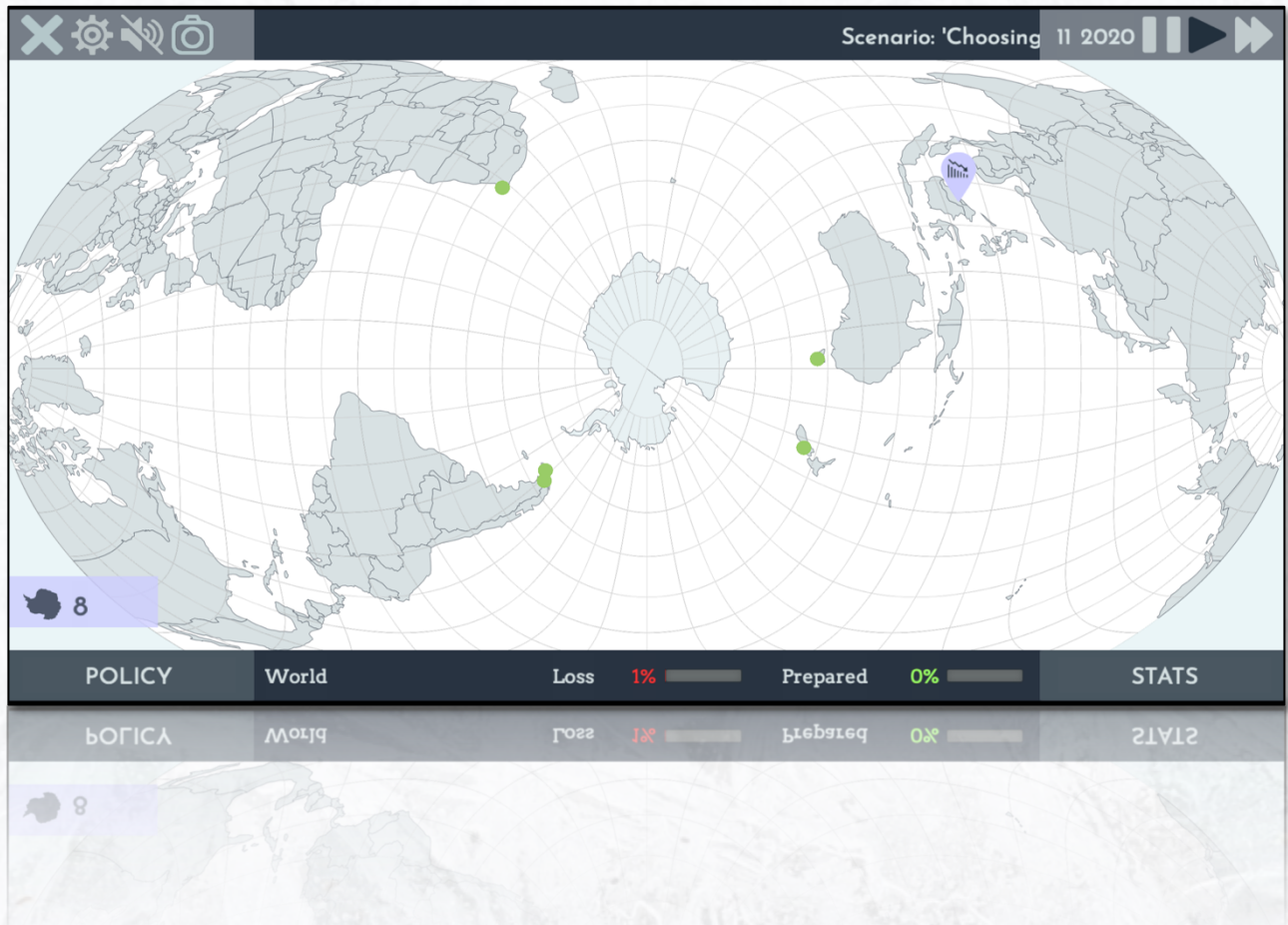


Figure 2: Welcome to Antarctic Futures

### *Aim of the game*

The future of Antarctica and the future of the world are deeply connected. Players have to devise a policy strategy that will halt climate change and save Antarctica from environmental destruction. The aim of the game is to build the right policy platform to survive until the year 2070.





**Figure 3: Antarctic Futures Interface**

The *Antarctic Futures* interface appears as an interactive world map. The flickering green dots represent the Antarctic gateway cities of Hobart, Christchurch, Punta Arenas, Ushuaia and Cape town (Fig. 3).

In 2019, the global policy mission begins in Chile. Players have until 2070 to save the Antarctic continent. The aim is to invest in policies that will reduce the effect of climate change, arrest environmental loss, and increase resilience and preparedness of each country.

### **Tutorial**

The tutorial provides a virtual overview of the interface and functionalities of *Antarctic Futures*. For first time players, we recommend beginning the game by selecting the tutorial option (Fig 2).

## Collect Resources

The lilac icons below represent resources that can be used to build a policy platform. Click on them when they appear on the screen, and the resources will be added to your wallet. You can check the amount of resources you have on the bottom left side of your screen.



## Invest in Policies



Figure 4: Build a policy platform – Economy

The **Policy** tab on the bottom left opens the policy menu (Fig 4). Here you can invest resources and build your strategy. Click on the different policy options to see how they will affect the world. Remember that not all policies are equally effective in each country. Your aim is to build a suite of policies that complement each other for the most effective outcome.

## Track how the world is doing



**Figure 5: Track how the world is doing**

The **Stats** tab on the bottom right corner of the screen provides a global view of your progress and the effectiveness of your policy platform (Fig. 5). At any point in the game, you can click on Stats (Fig. 3) to check how much time has passed, the rate of environmental loss, and the extent of the world's preparedness. You can also check stats on loss and preparedness for each country and track global trends.

Keep an eye on the message bar at the top to be aware of unexpected events and adapt your policy strategy.

As the game progresses, red/green dots will start appearing on the world map. Red dots denote environmental loss and green dots represent preparedness.

## Crisis Alert

Throughout the game, players will have to respond to crises arising around the world. Crises are unexpected events that occur due to environmental loss. Click on the red crisis icons shown below to slow the loss and increase the preparedness of the country to minimise the risk of further crises.

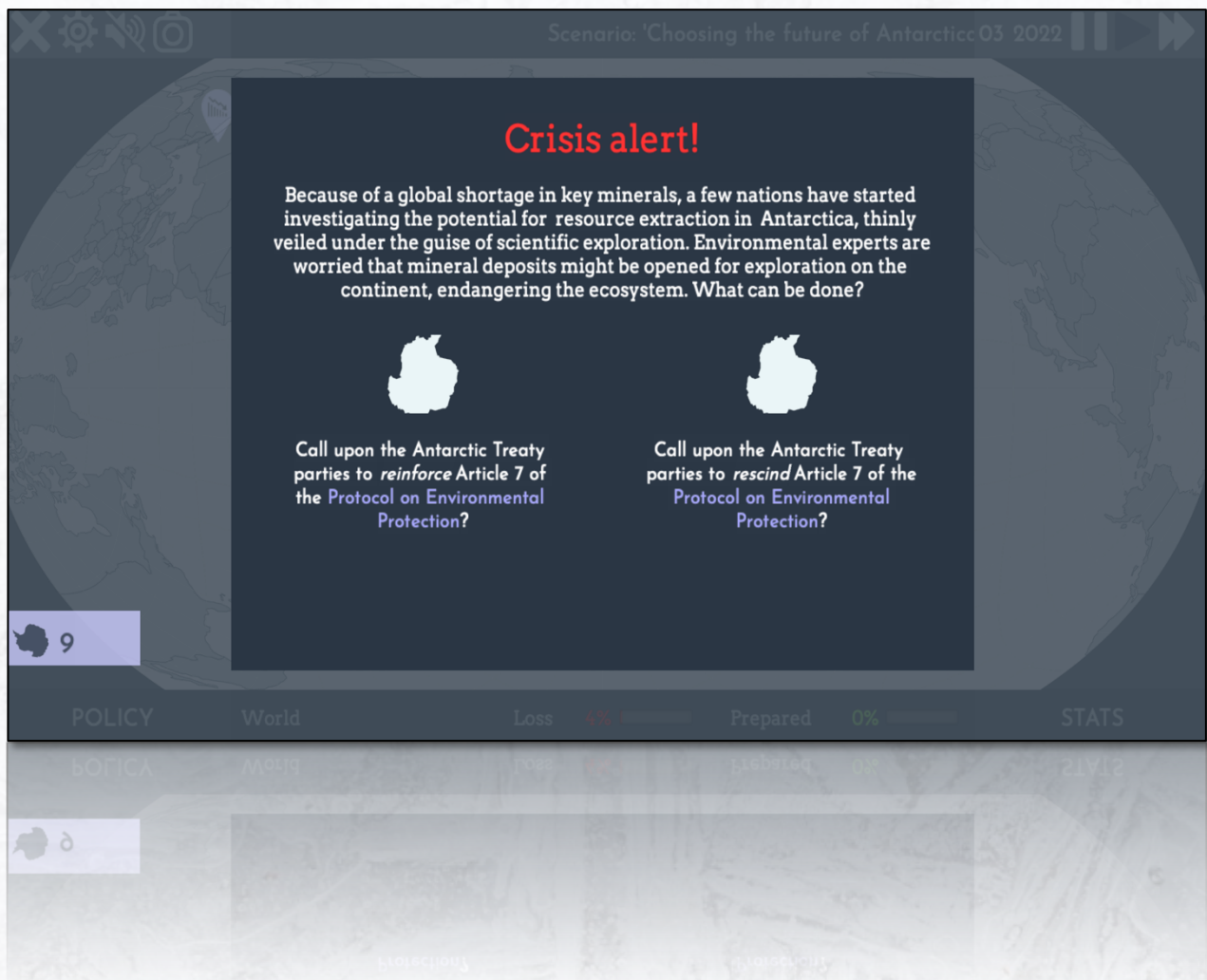


Figure 6: Crisis Alert quiz

Some crises are more specific and are designed as quizzes (Fig. 6). Players have to choose between two options for the most effective solution. You can click on the embedded hyperlinks to learn more about these issues and support your choice. Click on the Antarctica icon to select your option. The game is automatically paused during crisis alerts so you can read about them, learn more through the embedded hyperlinks, and make a decision.

## Game Over



Figure 7: Game Over screen

The Game Over screen at the end of the game will provide information on how your policy platform performed over the years, significant events that occurred, and whether or not crises were managed effectively (Fig. 7). You can also review key indicators and trends, and a summary of the policies you chose. You will also have options to play again and try out a different policy strategy, provide feedback, and get involved in real world Antarctic issues by visiting the Antarctic Youth Coalition.

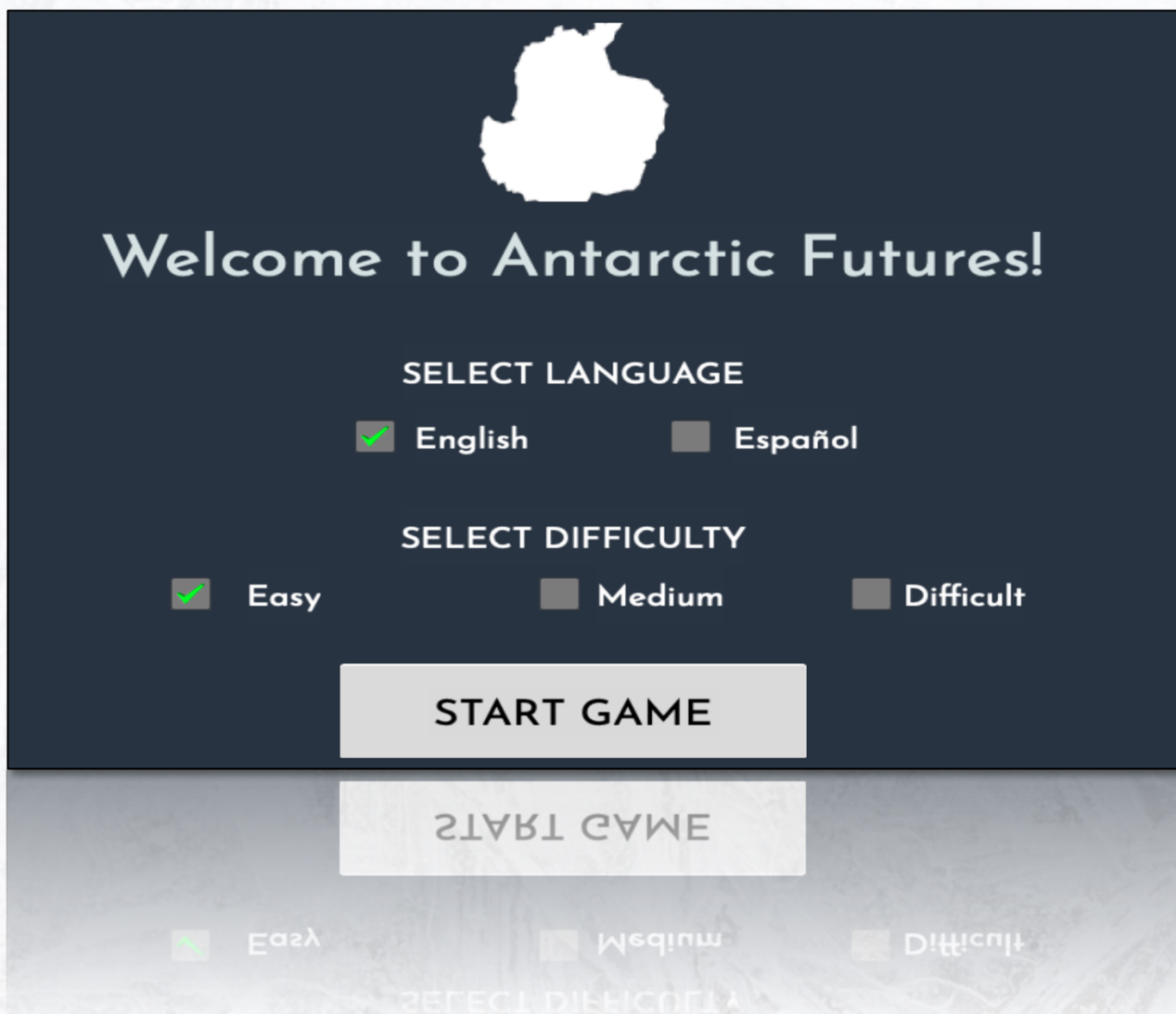




Figure 8: Start Game screen


### **Start Game**

The Start Game screen (Fig. 8) provides options for language (English/Español) level of difficulty (Easy/Medium/Difficult) to be selected at the start of the game. For first time players, we recommend starting with “Easy”.




### **Sound**


Use the  and  on the top left corner of the game interface to turn music on/off (Fig. 4).

### **Snapshot**

The camera icon  on the top left menu can be used to capture a snapshot of the game at any point. The image will be downloaded into your computer (Fig. 4).

## Pace

You can pause or control the speed of the game by clicking on these buttons    on the top right corner of your screen. The game is automatically paused during crisis alerts so you can read about them, learn more through the embedded hyperlinks, and make a decision (Fig. 4).

At any point in the game use the  button on the top left corner of the screen to adjust background colour, change language (English and Spanish) and choose your preferred country fill option.

## Learn with Antarctic Futures

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The collaborative nature of *Antarctic Futures* makes it a valuable educational resource that can be used in a variety of settings including but not limited to climate change, environmental policy and ecological sustainability.

Here are some examples of how the game can be used in different learning contexts:

### Scenario 1: Classroom

Students participate in guided play sessions facilitated by the teacher/tutor/instructor. The facilitator may begin the session by providing a quick tutorial through the game interface and choosing a level for the game. Depending on the size of the class, students may be divided into groups with a lead player or play the game individually on their own device for 10-15 minutes. Students may take notes on the following questions. Some of this information will appear on the game over screen.

- Which policies were selected or prioritised and why?
- Which policies were rejected and why?
- What was your % of preparedness at the halfway mark around 2045?
- At what point in the timeline did you reach 90% preparedness?
- What were the most challenging decisions you had to make?
- What were your loss/preparedness indicators at the end of the game?

Some points for a broader classroom discussion may include:

- A discussion of key terms, concepts and documents such as 'moratorium', 'Antarctic treaty' and 'marine protected areas'.
- A discussion of each of the policy groups and implications of individual policies
- How digital simulation games like *Antarctic Futures* may/may not be useful in influencing human behaviours on issues of environment and climate change.
- How human cultural activity impacts our global environment.
- A discussion on the feedback form for future development of the game.

### Further activities

- Students can get involved in real world Antarctic issues by joining the [Antarctic Youth Coalition](#).
- Students can provide [feedback](#) on the development of the game.

### Assignments

- Students may write a reflection on their play experience.

- Students may write an essay incorporating one or multiple aspects of the game.
- Students may design/develop their own version of the game

### **Scenario 2: Ice-breaking session**

Participants are divided into teams. The facilitator may begin the session by providing a quick tutorial through the game interface and choosing a level for the game. The teams nominate a lead player and engage in structured role play sessions, and make decisions in the game based on the role they are

- Team building activity: types of targets and agendas that can be set. For example, the goal is to reach 80% preparedness to take action against climate change.
- The facilitator explains that each team has to define a strategy in advance. To make a decision, the lead player pauses that game. Each team discusses what action/quiz answer to take.
- After the game, results are shared with the other teams.

Another possible ice-breaking activity is a role-playing session.

- Each team is assigned a *persona* (e.g. climate change sceptic, environmentalist, etc.) and the lead player plays the game according to how the character would play. For example, a climate change sceptic will try to maximize resources, whilst an environmentalist would try to invest in climate friendly policies. The personas are decided upon by the facilitator. Game cards can be created accordingly.
- Each team develops a gaming strategy depending on the persona assigned to them.
- During the game, to make a decision, the lead player pauses that game. Each team discusses what action/quiz answer to take.
- After the game, results are shared with the other teams.

#### **Further activities**

- Participants can get involved in real world Antarctic issues by joining the [Antarctic Youth Coalition](#).
- Participants can provide feedback on the development of the game.

### **Scenario 3: Team building activity**

Participants may be divided into teams depending on the size of the group. The facilitator may begin the session by providing a quick tutorial through the game interface and choosing a level for the game. The facilitator also assigns a particular goal or sets a target for the play session. This may include, but is not limited to:

- Achieving a certain % preparedness to take action against climate change
- Minimising environmental loss to a certain %
- Achieving an assigned preparedness goal by a certain time

Team members may take notes during the play session. At the end of the play session, the group engages in a facilitated discussion on the types of strategies adopted to reach the assigned goals, and the challenges they faced, and whether these strategies supported them in winning the game.

#### **Further activities**

- The group can get involved in real world Antarctic issues by joining the [Antarctic Youth Coalition](#).
- Participants can provide feedback on the development of the game.



