




**Are you game for Climate Action?**

**Lessons for STEAM education from developing the  
built environment climate literacy board game  
CLIMANIA through youth-led co-design**

**Simeon Shtebunaev and Claudia Carter  
Birmingham City University**

**STEAM Conference, Birmingham  
20/10/2022**





# Are you Game for Climate Action?

November 2021 - March 2022

Simeon Shtebunaev & Claudia Carter

🔊 The Climate Action Game project has been an exciting **co-creation** and play project! This involved working with **13 young people aged 14-18** living or studying at **Balsall Health, Birmingham** in a co-design process to develop a climate action board game. No prior knowledge or experience was needed, just interest in learning about climate change and working with researchers. Part of the project was to **gauge young people's level of awareness about the impact of the built environment on climate change.**

The project was funded by the UK Arts and Humanities Research Council.

A PROJECT BY:



**BIRMINGHAM CITY**  
University

SUPPORTED BY:



FUNDED BY:



**Arts and  
Humanities  
Research Council**

## Influencing past work:



### Green Thinking: Activism and Young People

Dr Melanie Ramdharan Bold works with young people on creating zines and films shot on mobile phones. Simeon Shtebunaev looks at architectural planning via making board games.

04 November 2021  
Available now  
0 26 minutes

### Place Makers- Educational Tool for Teachers

Subject: Geography Age range: 14 - 18 Resource type: Other

★★★★★ 1 review

#### File previews



JPG, 1.97 MB

PPTX, 5.2 MB







**Some background and  
influences that helped  
shape the project ...**

# Minu Balkanski Summer School – Climate Change

August 2021 (and previous years)

Simeon Shtebunaev

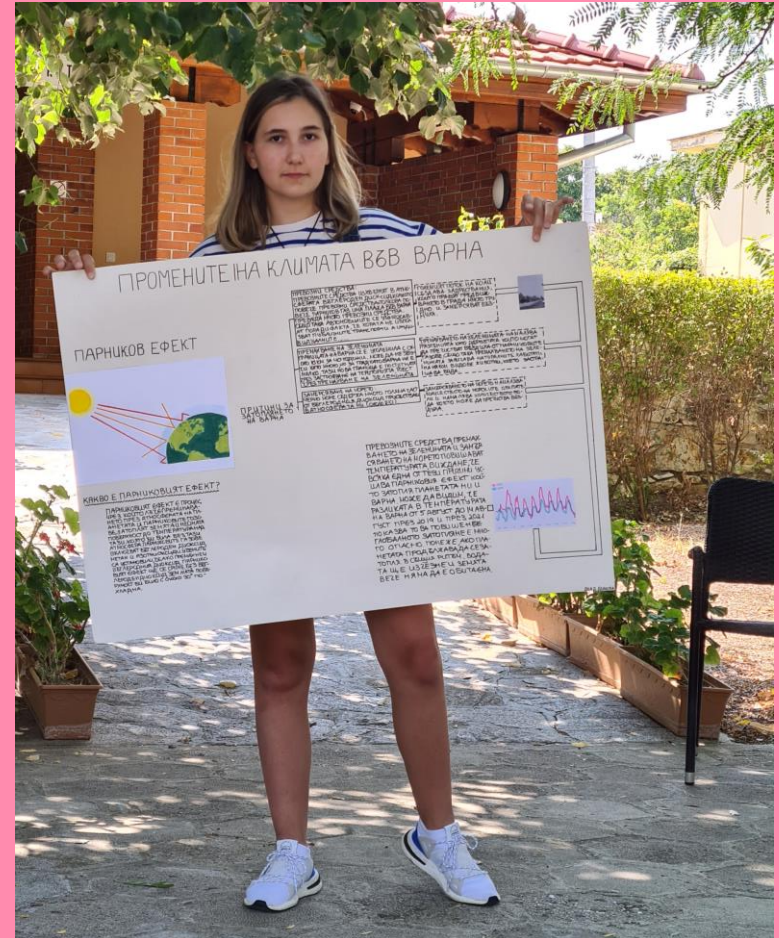
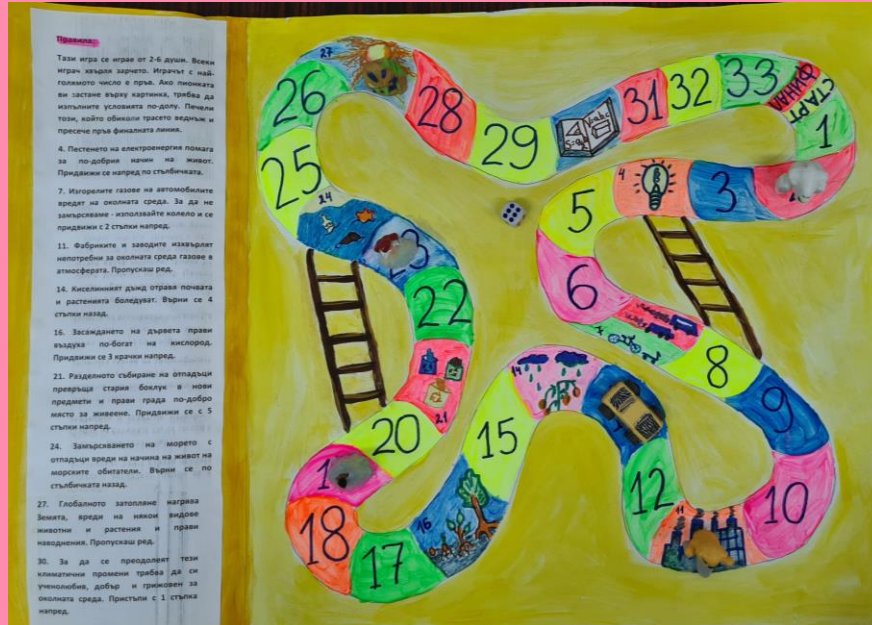
📢 This summer school programme is funded by the Minu Balkanski Foundation based on high student and parent satisfaction, effective course design and effective budgeting of resources.

In 2021, 32 pupils attended the school. The focus was on [climate resilience](#). We had the opportunity to critique the processes of the Foundation (“[get your own home in order](#)”) and to propose different adaptations at the local level. We delivered [outputs ranging from web publications, models, 1:1 scale projects, rubbish collection, bird boxes and a focus on systems within the school such as food processing, biodiversity and cultural integration.](#)



## Bulgarian Pre-summer school Assignment

## Recognising interest and stimulating active experimentation



# Participology Resource – 2014-2016

Alister Scott and Claudia Carter

🔊 The focus of this **Knowledge Exchange (KE) Project** was about how to facilitate effective and deliberative participation in planning (and policy- and decision-making more generally).

We worked with academic, policy and practice partners to develop this participatory resource kit, following the success of the **RUFopoly** game developed in a previous research project on the rural-urban fringe (RUF). The KE project was funded by the ESRC (Award Reference ES/M006522/1) and was shortlisted for the 2016 RTPI 'Sir Peter Hall Award for Wider Engagement'.

**Participology** is a flexible resource, with detailed guidance to support developing appropriate and effective participatory tools using “play” and providing a safe space for deliberation and reflection. The resource is available online for free at:  
<http://www.participology.com/>






# Participology

<http://www.participology.com/>



## Place Maker Board Game (2017)

Claudia Carter, RTPI & Alister Scott

 The 'Planning Game' project used the Participology resource to create the Place Makers board game for A-level and GCSE students to help them gain an insight into balancing different interests and aspects of sustainable development.

This work received the RTPI West Midlands' Chair Award in 2018 in recognition of the regional and national impact of the game to help future generations understand the work of planners and help attract young people into the profession.

The design and testing involved GCSE and A-level students and teachers in the West Midlands, Northumbria and South of England.







# **Climate Education through Co-creation and Play**

## Underlying Rationale

- Play as a tool of engaging young people
- Serious play used to break down complex ideas and learn through curiosity and enjoyment
- Using design thinking and co-production for creating the game
- Seven 2-hour workshops



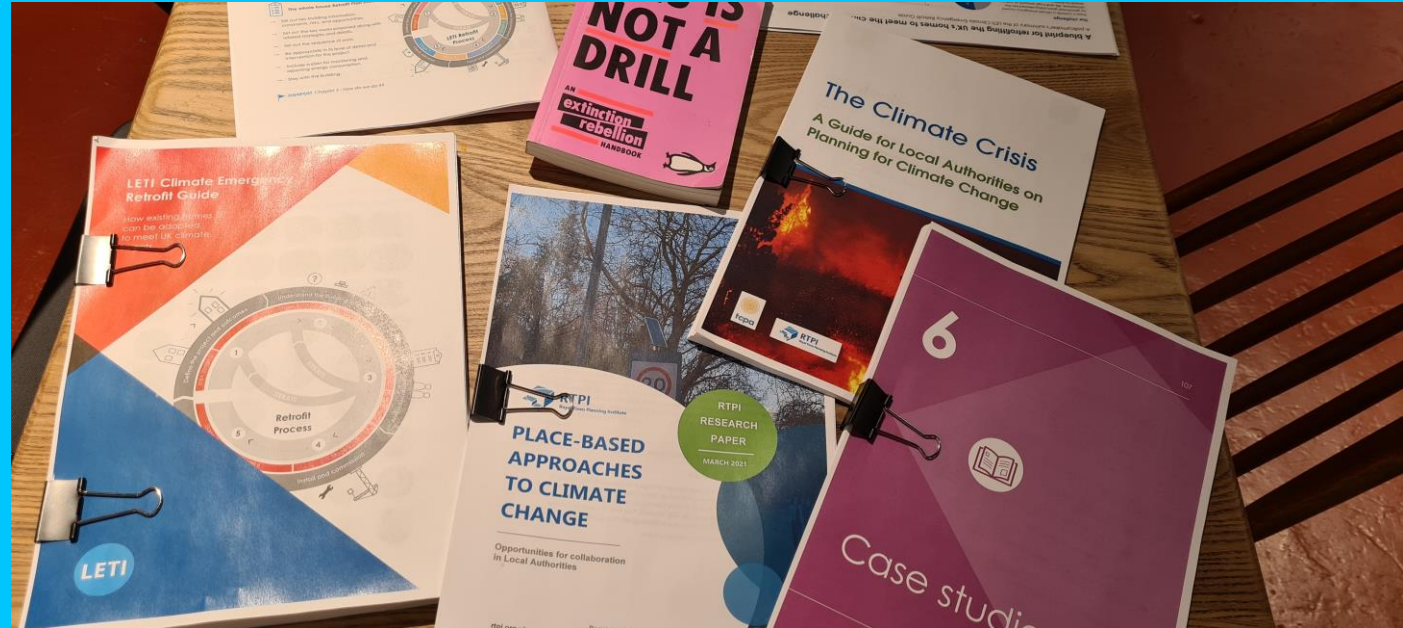
# Knowledge Inputs

## Academics

## Experts' (online and in-person)

## Local research

- interviews
- observation



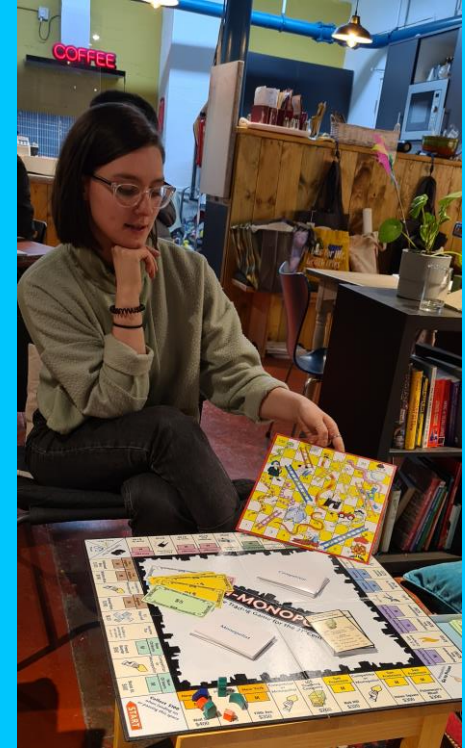


[illegible]

<p>1. What worries you about climate change? Why?</p> <p>Rising sea levels...</p> <p>Ease of life going down for future generations / Irreversible change</p> <p>How is it affecting communities and people across the world?</p> <p>We will be unable to go to parks for morning walks</p> <p>Animals will die</p> <p>Rise of sea level would cause death to polar bears, affect habitats at cold areas</p> <p>Increase in sea level causes homelessness for people who live near coastal areas</p> <p>Increase in sea level causes homelessness for people who live near coastal areas</p> <p>sea levels rising and loss of rainforests</p> <p>Loss of rainforests means less CO2 absorbed, increase of greenhouse gasses, causing pollution</p> <p>worried about health and birth defects due to polluted air</p> <p>Worried about conflict over land for people to migrate to and mass migration</p> <p>global warming pollution and waste of electricity</p> <p>death - quality and ease of life decreasing</p> <p>couldn't go abroad - pollution</p> <p>what did people tell you after your own interviews?...</p>	<p>2. How climate change might affect your lifestyle?</p> <p>Less good locations for living</p> <p>Respiratory problems</p> <p>We have to make big changes</p> <p>It would affect sea levels! they will increase</p> <p>It will affect our own social lives</p> <p>change to lifestyle will mean also change in health</p> <p>It is controlled by our decisions</p> <p>Greener cities? Helping each other more We need to look out for one another</p> <p>I think it will mean people are very unhealthy in the future</p> <p>house getting flooded</p> <p>It would affect your lifespan and the lifespan of future generations to come</p> <p>no diesel cars</p> <p>what did people tell you after your own interviews?...</p>	<p>3. What would you like to find out about climate change?</p> <p>Short term solutions</p> <p>I want to be educated on what everyday people can do</p> <p>Doing research on climate change and planting plants</p> <p>Global warming pollution and waste of electricity - focus on the things we can control</p> <p>Why are the military exempt from carbon emissions control.</p> <p>Waste of natural resources</p> <p>pollution and waste of electricity</p> <p>COP26 and the key outcomes - are there are some real improvements to action?</p> <p>Are the figures real?</p> <p>How can we be a climate fighting leader</p> <p>demonstration</p> <p>research</p> <p>what did people tell you after your own interviews?...</p>
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# Prototyping and Design Brief

- Incorporating all/several ideas
- Voting & decision by consensus



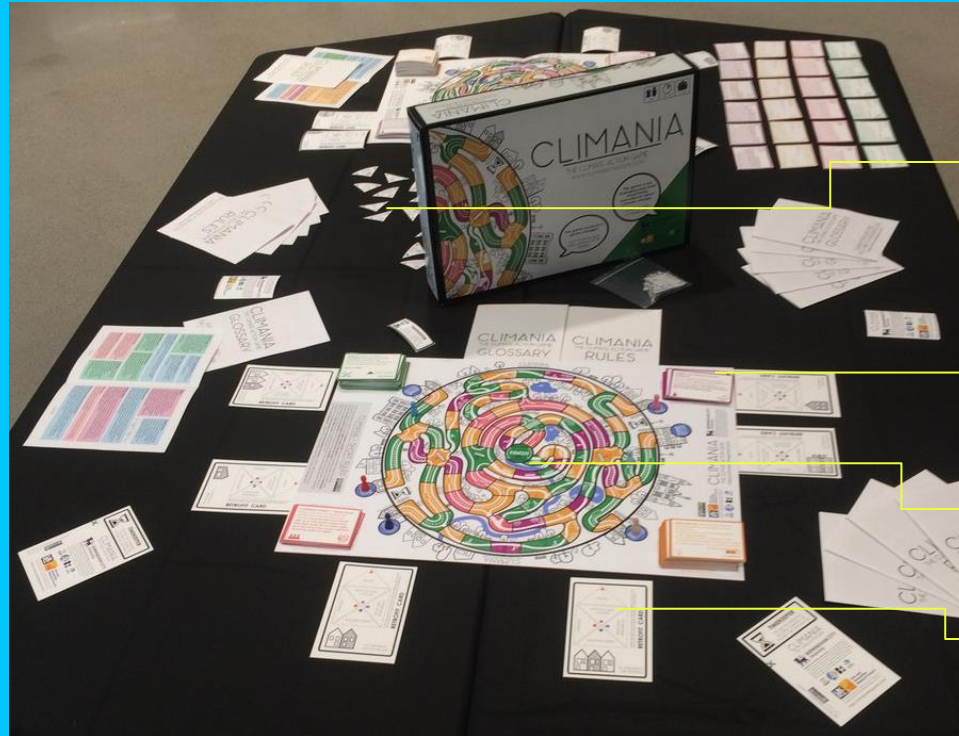


# Play - Test - Refine





## How Does the Final Game work?



**Retrofit Components**

**Question Cards**

**Board**

**Retrofit Cards**

# How Does the Game work?

**QUESTION 20:** Air source heat pumps do not work in cooler countries such as the U.K.

**TRUE or FALSE?**

 If correct, choose a retrofit component.

**ANSWER: FALSE** Air source heat pumps can operate effectively, even in Scotland. The better insulated the house is, the more effective the system will be.

CLIMATE THE GAME



**CHANGING PLANET 11: Drought!**

A prolonged early summer drought leads to crop failure and water shortages across the country. Heat exchange and water recycling systems are failing. **Every player with a 'services and systems' retrofit loses it.**

CLIMATE THE GAME



**QUESTION 51:** Carbon stays in the atmosphere for about:

- A) 30-95 years
- B) 10-30 years
- C) 1-2 years

CLIMATE THE GAME



If correct, move two fields



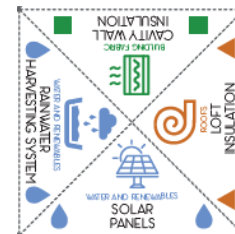
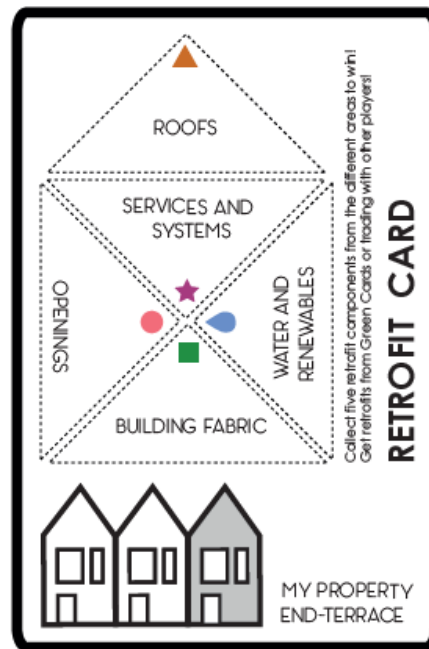
**ANSWER: A)**

CLIMATE THE GAME



**JOKER 1: Refurbishment VAT Tax Scrapped!**

The U.K. government bows to public pressure and changes current legislation that places a 20% extra cost on retrofitting buildings. **The next time you answer a question, you can try a second time should you get it wrong.**



**What are some of  
the key lessons?**



# How is gaming an effective and engaging STEAM tool?



1. Providing participants with a creative challenge and agency.
2. Moving away from didactic learning to active experimentation and reflection.
3. Situating the problem to a personal issue / relevance.
4. Providing quick expert advice!
5. Knowing when to be a facilitator, when to be a doer, when to be an expert and when to be quiet!



# How do we communicate and discuss complex concepts through play and gaming?

1. Do not oversimplify it - explain the complexity but focus on a **MANAGEABLE** element.
2. Provide participants with **CHOICE** - some aspects will be easier to understand.
3. Use existing **FRAMEWORKS** - do not reinvent the wheel.
4. Provide access to someone who has implemented the issue in **PRACTICE**.

How can we best harness many young people's commitment to and interest in issues of social justice, wider environmental concerns and ethics to create more sustainable and greener buildings and spaces?

1. Have a clear output and demonstrate impact!

2. Do not shy away from complicated topics, be prepared to admit that you don't know or are in the wrong, but willing to learn.

**How can young people be actively and meaningfully involved in monitoring, evaluation and performance to ensure that targets are being met?**

**1. Involve them in the evaluation of outputs.**

**2. Create/use educational tools to engage with choices and cultural shift.**

**3. Provide incentives at the personal and communal levels.**



**How can gaming be  
utilised in urban  
resilience dialogues?**



# 1. Educational Tool

Free to download and play at schools, colleges and youth clubs

Use for community / environmental / climate change events

An 'on-demand print' version available from a professional printer

Used at BCU Planning/Built Environment to showcase public/community participation and climate change / retrofit 'experiential' learning



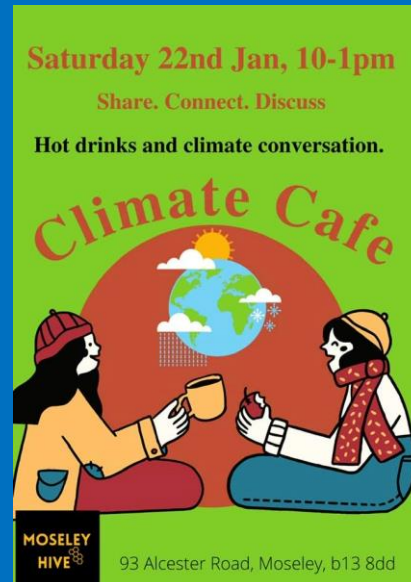
## 2. Advocacy and Engagement Tool

Embedding gaming in local, regional and national networks, campaigns and organisations as a community engagement tool.



### 3. Discussion and Policy-Making Tool

Popularising gaming with action groups and politicians; using CLIMANIA to enable conversations.





## 4. Professional Development

Using gaming as a team-building tool

Using the game(s) as CPD tool



People Powered Retrofit @PeopleRetrofit · May 26

...

We played **Climania** the climate game created by [@shtebunaev](#) [@cectweet](#) we really enjoyed it! Loads of fun and educational. 🙌 [Climaniatgame.org](#) for more information.



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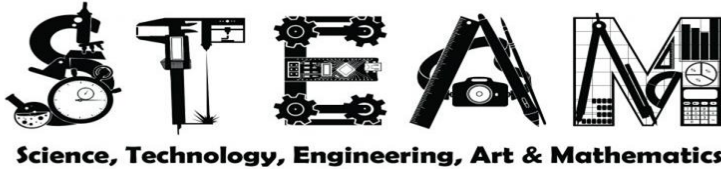


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Game-development and gaming as a STEAM process and transdisciplinary learning tool.

Putting Arts and Sciences on an equal footing.

### STEAM in (Higher) Education:

Carter, C., H. Barnett, K. Burns, N. Cohen, E. Durall, D. Lordick, F. Nack, A. Newman and S. Ussher (2021) 'Defining STEAM approaches for Higher Education', *European Journal of STEM Education* (Special Issue STEM & Arts Education), 6(1): 13. Open access at <https://doi.org/10.20897/ejsteme/11354>

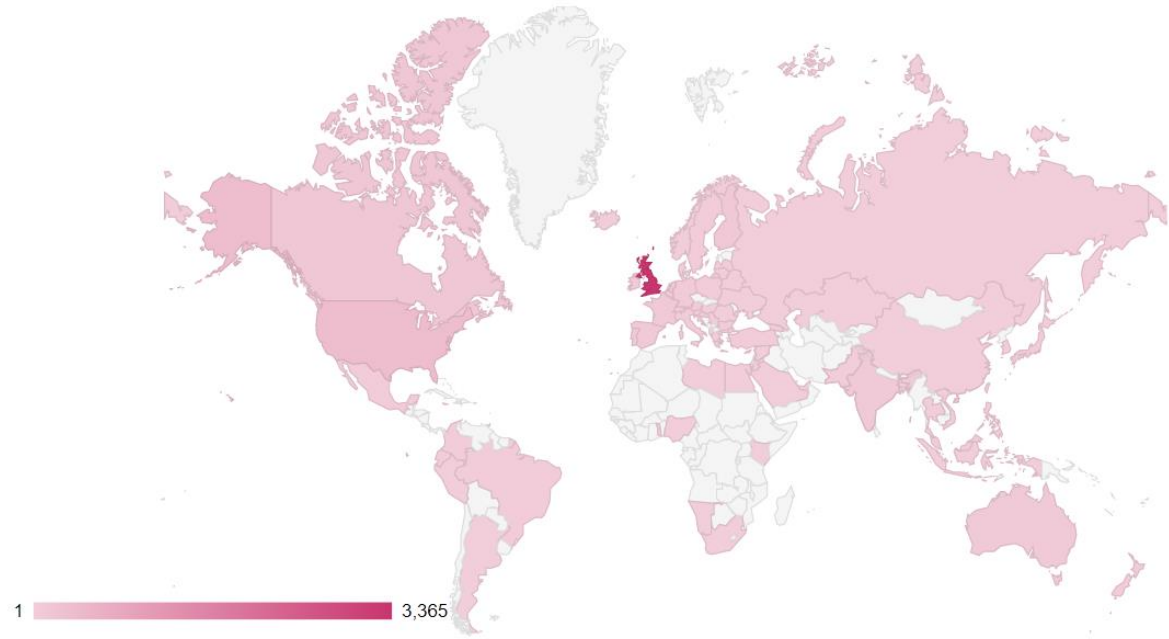
- Process-driven
  - Collaborative
  - Radical openness
  - Curiosity
  - Critical thinking
  - Proto-typing / making
- 
- Communicate, be diverse, have safe spaces for experimentation



# Reach

Stats for 2022

**1000+ downloads**





**Download, print and play the game:**

**<https://climaniathegame.com/>**