



The Climatic Dragon's Roar, a way to act on the determinants of social and environmental health, sensitizing the collective about climate change and its consequences.

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Short Bio, ~100 words:

Leonardo Adorno is a public health graduate and researcher at the University of São Paulo's department of Environmental Health with a FAPESP bursary, he has experience working in health management, pharmacovigilance and environmental health. During his graduation he found that communication with the public is one of the major challenges in health, thus his undergraduate research was focused on this issue. Communication is very important to him as well as climate change mitigation in cities, especially for vulnerable communities since those are the ones that will face the worst impacts of climate change related disasters in the future.

Small sized summary, ~200 words:

The Climatic Dragon's Roar is a card game developed as an undergraduate research project with the objective of creating a method of sensitizing the general public about climate change. The card game focuses on the consequences of natural disasters, such as heatwaves, and on the political and governmental possibilities of combating such disasters, while also exploring Brazilian culture. The game sees players taking the role of city mayors in a region where multiple natural disasters, worsened by climate change, are happening very intensely. In reaction to such disasters the mayors must play cards in order to mitigate the disaster's immediate effects, adapt the city long-term and carry out research and political development. A round starts by turning over a Disaster Card (DC), each a reimagining of a Brazilian myth and representing a natural disaster, and mayors must protect their city's Quality of Life. The core idea here is that these disasters are a consequence of our misuse and disrespect of nature, leading its protectors to turn their wrath on us. During testing with different age groups, a game focused on health promotion and education was created, and all of the participants shared the will of working against the negative effects of climate change.

Medium sized summary, ~600 words:

The Climatic Dragon's Roar is a card game developed by me, Leonardo Adorno, Sanitarian and graduate on USP's Public Health course and Marco Akerman, USP's Faculty of Public Health Director, as an undergraduate research project from January to December of 2025, with the objective of creating a method of sensitizing the general public, primarily in Brazil, São Paulo's high schools, about climate change. This objective was achieved through the

development of a card game focused on the consequences of natural disasters, such as heatwaves, and on the political and governmental possibilities of combating such disasters, while also exploring Brazilian culture.

The game sees players taking the role of city mayors of cities in a region where multiple natural disasters, worsened by climate change, are happening so intensely that it's almost like they have a life of their own. In reaction to such disasters the mayors must play cards from 3 distinct card groups, Fast Recovery cards (RC), focused on mitigating the disaster's immediate effects, Preparation cards (PC), representing actions focused on adapting the city long-term and Advancement cards (AC) which represent research and political development. Each card group also has specific illustrations, focused on a congruent design identity, which, at the moment, are prototypes in nature, 1 "base" illustration for each card group, but eventually we plan on having special illustrations for each card.

A round starts by turning over a Disaster card (DC), each of them characterized from reimaginings of different figures of Brazilian culture and representing a natural disaster. Brazilian folklore is chock full of myths that protect our nature, this connection between the disasters and mythology can be visualized in the card "Boitatá's Fire". Boitatá is most often described as a giant fire snake, known for protecting our forests from those that would seek to burn it down, and this card portrays a severe heatwave affecting all cities. The core idea here is that these disasters are a consequence of our misuse and disrespect of nature, leading its protectors to turn their wrath on us.

Mayors must protect their city's Quality of Life (QL) after each DC is played, in the game's current state each city has 12 QL, and will receive that DC as a point if they were the mayor that had the most amount of QL left at the end of a round, after 7 disasters, or after the first city ends their turn with negative QL the game ends, and the mayor with the most amount of points wins.

During testing with different age groups, one test with 11-12 year olds, one with 12-14 year olds and one with University students ranging between 25-50 year olds, we faced multiple challenges in implementing the card game and evaluating its impact, which led to multiple adaptations, such as the game being played with a council of mayors making decisions for each city. At the end of the testing phase though, we reached the most important conclusion of the study, a game focused on health promotion and education was created, and all of the participants shared the will of working against the negative effects of climate change.

In conclusion, "The Climatic Dragon's Roar" is a game focused on showing its players that the mitigation of climate change related consequences on our cities is possible, making it clear that smart resource management, investments in environmental policies and decision making based on the long term are all necessary in order to fight one of humanity's greatest challenges, climate change. And we hope that, with this knowledge, people will be able to vote and stand for environmental health, and how it can help us save our city's quality of life.

Long size, in depth summary ~1150 words -

The Climatic Dragon's Roar is a card game created as an undergraduate research project by me, Leonardo Camargo Adorno, Sanitarian, graduate from the University of São Paulo's Faculty of Public Health and Professor Marco Akerman, full professor of the University and as of March of 2026 Director of the Faculty. Marco believed in my potential as we created, designed and tested the game during a 1 year research period from January to December of 2025. We aimed to create a card game, focused on using fun and educational ways to delve into the challenges faced by urban environments in the wake of climate change and the natural disasters worsened by it, while also teaching about the political and governmental possibilities of combating these disasters, such as heatwave and torrential rainfall, worsened by the effects of climate change. To add an imaginative aspect to the game, we chose a figure from Brazilian mythology to represent each disaster, in order to show that mother nature is angry at our misuse of its resources.

In order to immerse the players in the idea of the game, each of the players are allocated into the role of a city mayor in a region being ravaged by disasters so powerful they seem to have a life of their own, which mayor will better adapt their city in order to resist such disasters? This question will be answered during the game as each round starts and a new disaster affects all the cities, and in response each mayor will have to choose which card to play as each of them are associated with different approaches in combating climate change's consequences. Cards such as Fast Recovery cards (RC), focused on mitigation of the disaster's immediate effects, Preparation cards (PC), representing actions focused on adapting the city on the long-term and Advancement cards (AC) which represent research, political development and other ways to combat climate change. Each card group also has specific illustrations, carrying a congruent design identity, which, at the moment are prototypes in nature, 1 "base" illustration for each card group, but eventually we plan on having special illustrations for each card.

To teach players as they play, all of the cards have short descriptions describing the ways that said card works to mitigate effects on cities. As an example, the preparation card "Green and Sustainable Planning" reads "Urban planning focused on the presence of green areas, public transport and accessible leisure areas leads to the betterment of air quality, emotional health and general quality of life of your population. This card restores 2 QL points immediately and 3 QL points long-term for the next 2 rounds."

Cards usually affect a city's "Quality of Life" (QL), a complex theme here resumed as the city's "Hit points" In the game's current state each city has 12 QL, meaning that once your city finishes a turn with a negative number of quality of life, people move out, signalling its end.

Once each player plays their cards, another disaster card is turned, signaling the start of a new round, and a new disaster to be tackled. Each disaster card represents a different climate disaster and a reimagining of a mythological figure from Brazilian culture, such as the card "Boi Tatás's Fire" that depicts a severe heatwave affecting the cities. Brazilian Folklore is chock full of figures that protect our nature, to cite a couple of them, Boitatá is a giant fire snake, said to protect our forests from all of those that would seek to burn them down, another example is Curupira a small men-like spirit with red hair that has inverted feet, using them to trick people that sought to do harm to forests such as hunters.

Disaster Cards (DC) also have descriptions that aim to educate the player, and each of them have different effects on quality of life, to show their intricacies. As an example, the description of the card "Boitatá's Fire" reads "An intense, unpredicted heat wave in conjunction with the heat island effect afflicts each city, heat waves worsen the effect of comorbidities and in extreme cases can be one of the factors leading to heart attacks", the card itself reduces each city's quality of life while also restraining the use of Fast Recovery cards, as a way to show the difficulty in applying policies during an extreme heatwave.

At the end of each round the mayor that has the most quality of life left "wins" the round, keeping that disaster card as a point. Tiebreakers have been developed and can be used if necessary, those being: whoever reached the number by playing the fewest possible cards wins the DC; whoever started the round with the lowest QL to the number wins the DC; otherwise, no one wins the DC. After 7 disasters, representing a very, very difficult week for each city, the game ends; the game can end prematurely if a city ends their round with a negative number of quality of life, being abandoned by its people. At the end of the game the mayor with the most number of disaster cards wins.

The game is in its final stage of fine-tuning, but an initial testing phase took place amongst students in the University of São Paulo and in a School in São Paulo, with players ranging from multiple ages from 22 to 50 years olds, and in schools, with 11-14 year old players, all whom have shown a single through line between them, the will to act against climate change and to learn how to better protect their city.

The project showed great potential, being presented at different events such as: The 25th International Union for Health Promotion and Education (IUHPE) in May of 2025; Environmental Week on USP's Faculty of Public Health in June of 2025, to representatives of the USP Agency of Innovation (AUSPIN) in August 2025, in the 33rd International Symposium of Scientific and Technological Undergraduate Research of the University of São Paulo (SIICUSP) in October 2025 and in the 14th Brazilian Congress on Public Health in November of 2025.

Today, the Climatic Dragon's Roar is in prototype phase, pending translation to english, recommended for ages of 14 year olds and older, and being able to be played in two different ways, with players managing one single city as a group, or by each player managing their own city. Overall, "The Climatic Dragon's Roar" is a game focused on showing its players that the mitigation of climate change related consequences in our cities is possible, making it clear that smart resource management, investments in environmental policies and decision making based on long term management are all necessary in order to fight one of humanity's greatest challenges: climate change.

And we hope that, with this knowledge, people will be able to vote and stand for environmental health, and how it can help us save our city's quality of life.

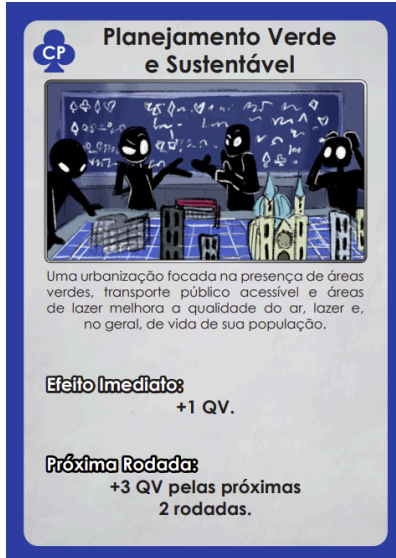
ANNEXES - A few of the cards present in the game's current prototype:

In the cards below "QV= Qualidade de Vida" in Portuguese, meaning QL= Quality of Life in English.

There are 4 Card groups, each of them with 9 cards. Below are an example of a card from the **Disaster Card** card group and an example of a card from the **Preparation Cards** card group.



Card "O Fogo do Boitatá", or "Boitatás Flame", Disaster Cards in the current prototype all show three mythological beings reimagined as, from left to right, Boitatá, the giant fire snake protector of Brazilian forests, and bringer of terrible heatwaves; Saci Pererê, a playful and trickster spirit, here he is responsible for terrible storms; and Iara also known as "Water Mother", a mermaid of Amazonian waters, before becoming a spirit she was a fearsome warrior, here she controls the floodings that destroy our cities after torrential storms. The card's description reads: "An intense, unpredicted heat wave in conjunction with the heat island effect afflicts each city, heat waves worsen the effect of comorbidities and in extreme cases can be one of the factors leading to heart attacks, immediate effect: -7QL and RC recuperate only half of all QL, Next Round: RC recuperate only half of all QL."



All preparation cards show a couple of “planners” trying to figure out a way to protect their city, on top of the “map” we can see 2 of São Paulo’s Tourist Landmarks “MASP” and “Catedral da Sé”. This card “Planejamento Verde e Sustentável” or Green and Sustainable Planning in English, reads: “Urban planning focused on the presence of green areas, public transport and accessible leisure areas leads to the betterment of air quality, emotional health and general quality of life of your population. This card restores **1 QL points** immediately and 3 QL points long-term for the next 2 rounds.” All preparation cards show a couple of “planners” trying to figure out a way to protect their city, on top of the “map” we can see 2 of São Paulo’s Tourist Landmarks “MASP” and “Catedral da Sé”

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