

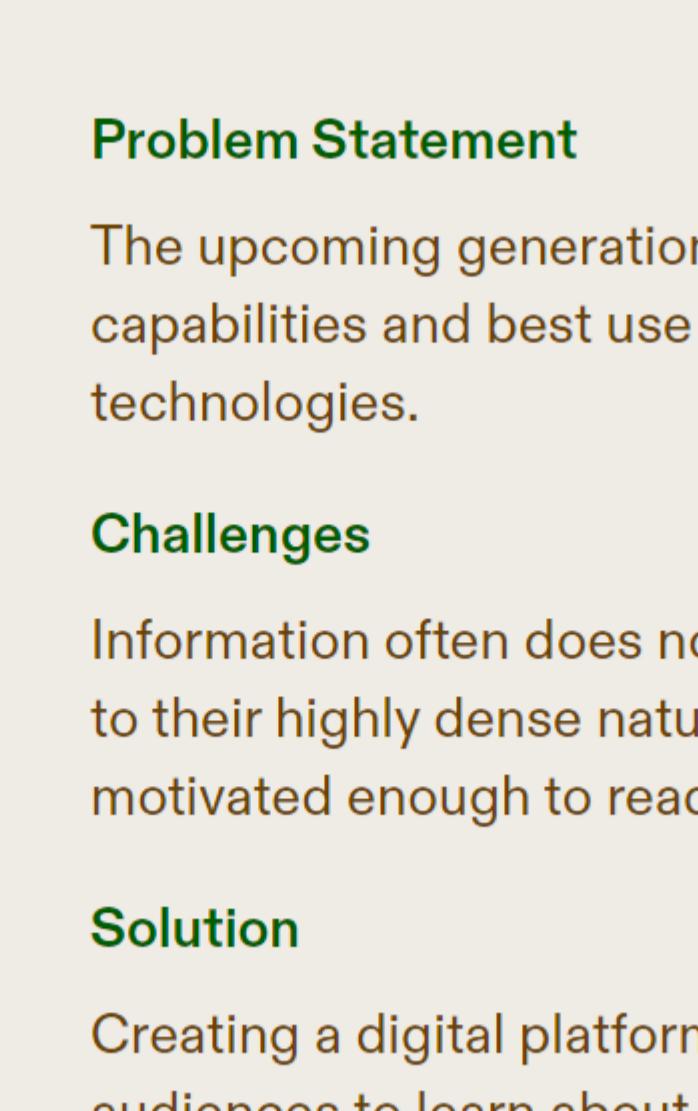
New Day

Rev Productions

Devin Prehn and Rafael Rubin de Celis Urias

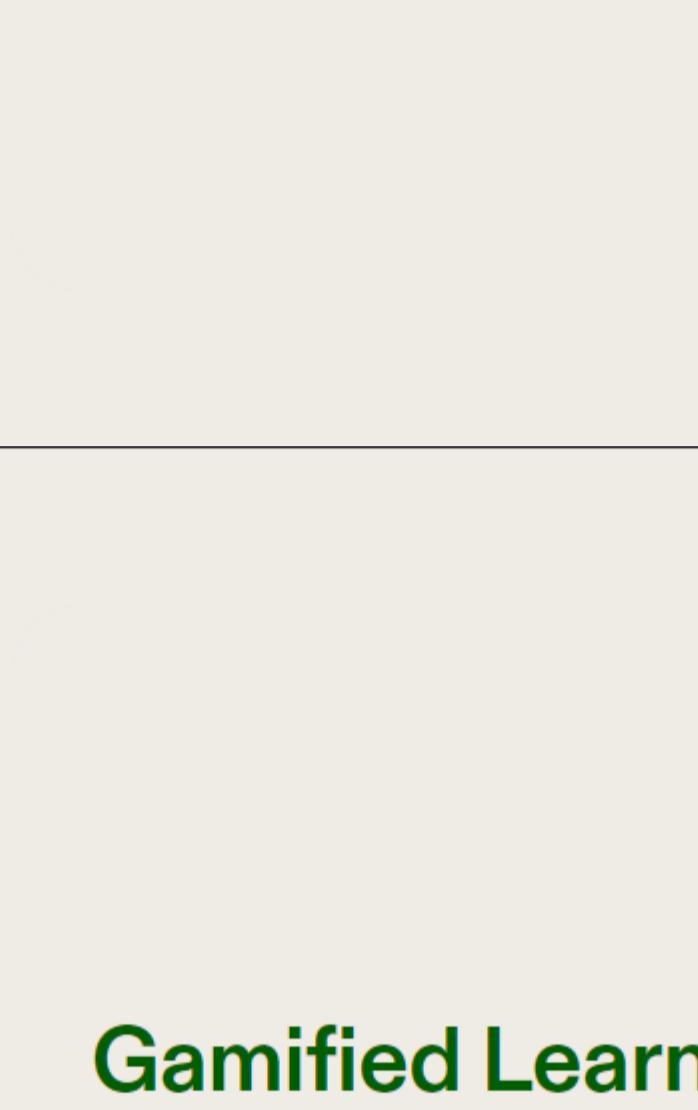
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Meet Our Team



Devin Prehn

Computer Science



Rafael Rubin de Celis Urias

Engineering Physics and Computer Science

Project Overview

Problem Statement

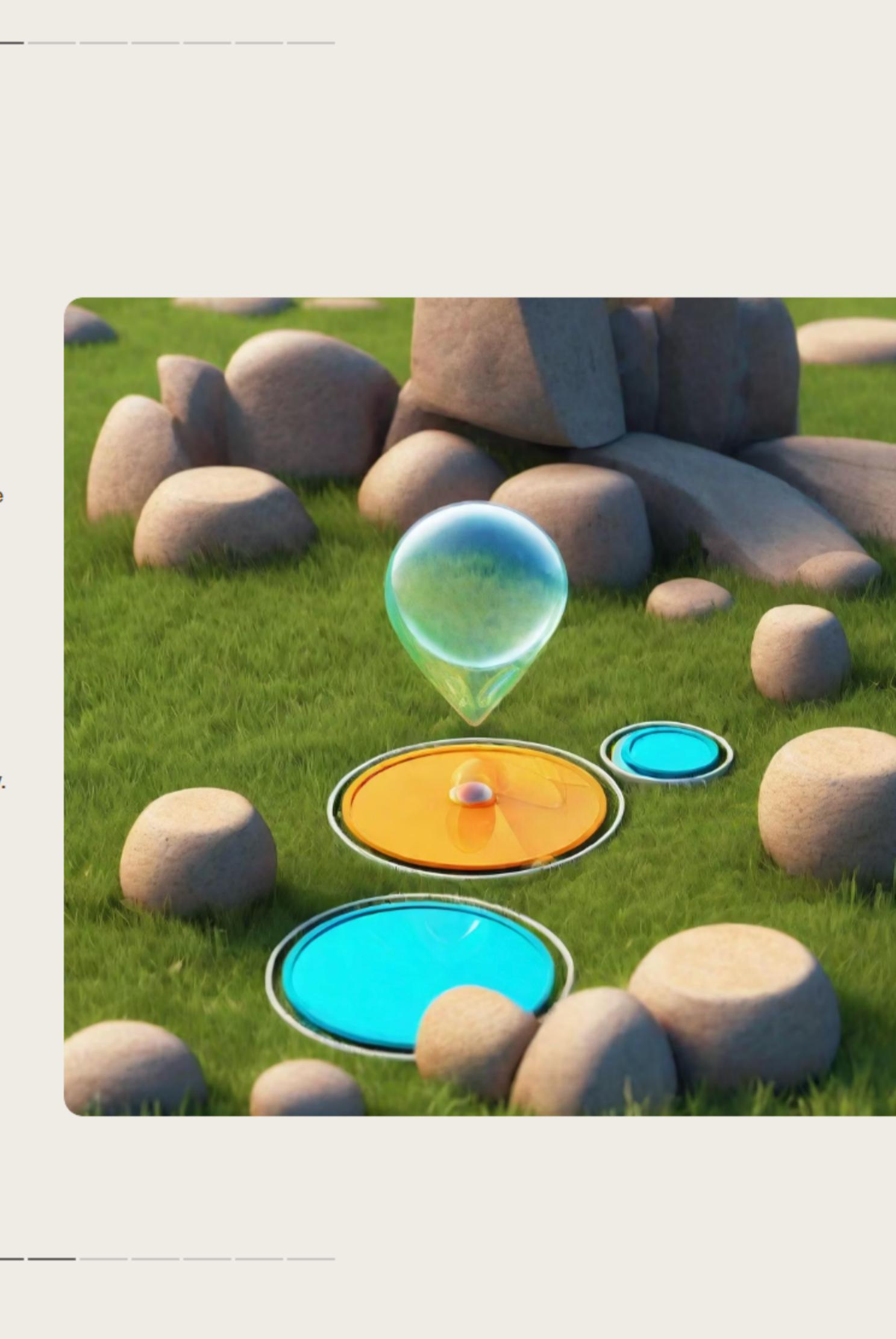
The upcoming generation is ill informed about the capabilities and best use scenarios of renewable energy technologies.

Challenges

Information often does not reach young audiences due to their highly dense nature. Few youths are intrinsically motivated enough to read long strings of information.

Solution

Creating a digital platform that incentivizes young audiences to learn about renewable energies.



Gamified Learning

Designing an Interactive Simulation

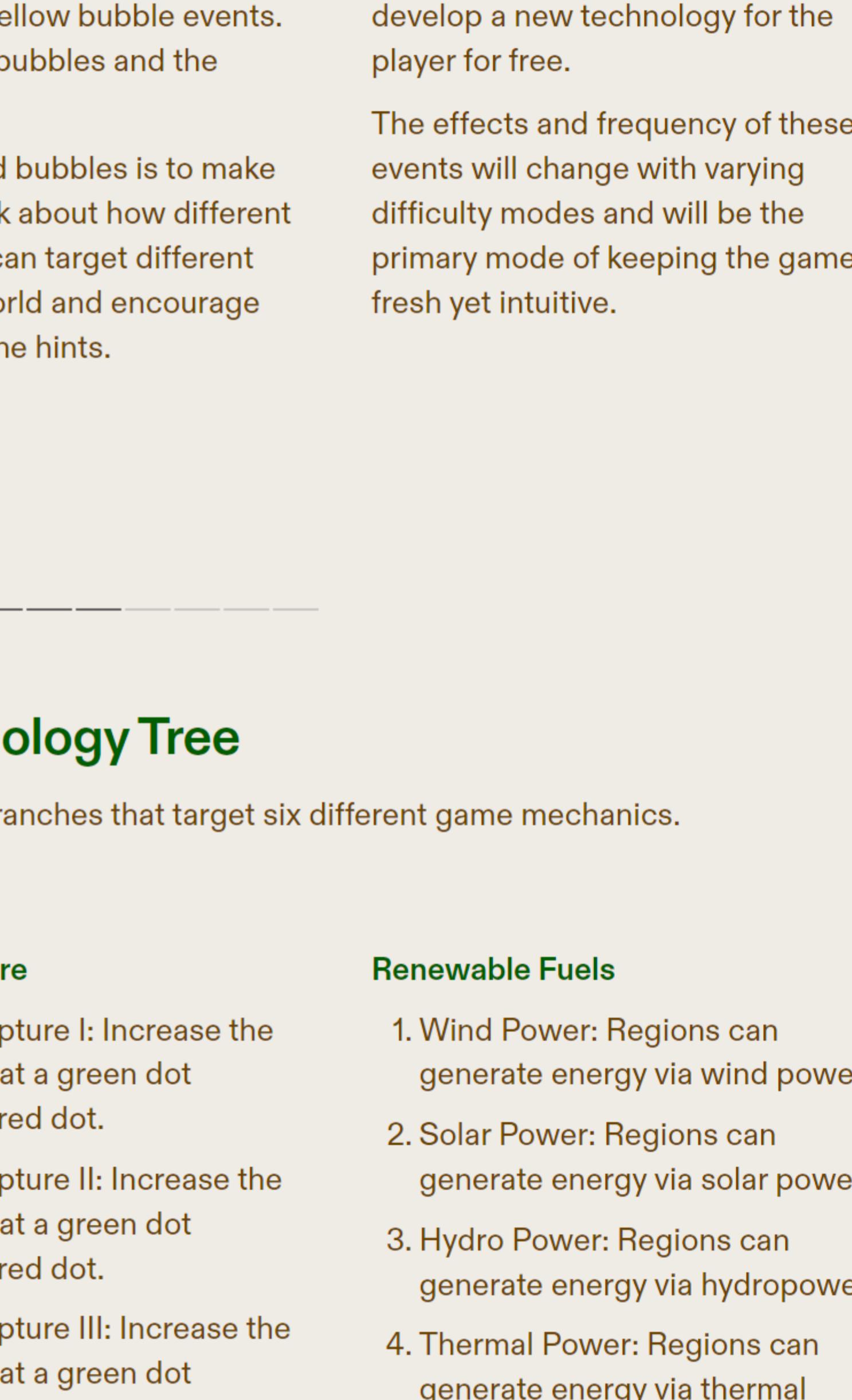
Step 1: Create approachable prompts about renewables

Step 2: Make prompt optional hints

Step 3: Reward users' knowledge

Step 4: Increase unpredictability and replay-ability

Step 5: Make learning feel like playing!



Game Mechanics

At its core, the game is a simulation of the world as it adapts new renewable energy technologies. As you research new technologies, the player expands the reach of renewable energy to the world.

Bubbles

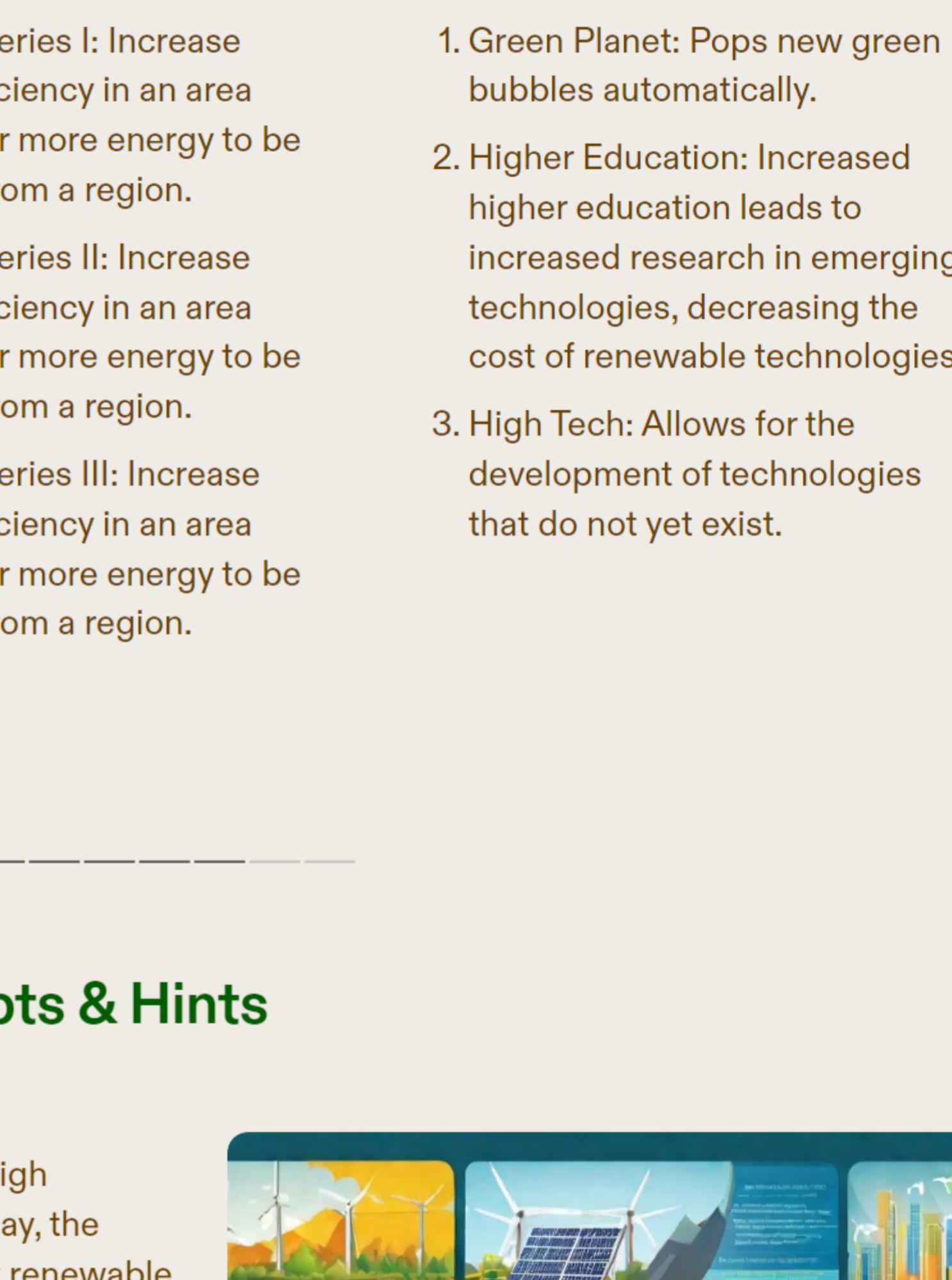
Bubbles are the main mechanic in this game. Each bubble represents one of three game event types. Popping a bubble gives players 'Green Points' which can be used to research new renewable technology. Furthermore, bubble have a randomization component that increases unpredictability and replayability.

Technology Tree

The Technology Tree is where a player can spend their 'Green Points' to research new technology. This tree is composed of 6 different branches that impact different aspects of the game. The order and time at which a player chooses to make upgrades introduces different playstyles and again encourages replayability.

Prompts & Hints

Throughout the game, the player receives hints about how to target specific regions of the map. These hints are always real-life facts about renewable energy that inform the player about the best-use scenarios for each energy type. The player is never forced to these but is heavily rewarded with strategic advantages.



Bubbles

Green Bubbles

Green bubbles represent the building of a new renewable energy plant. The primary goal of the game is to fill the world map with these green markers

Blue Bubbles

Blue bubbles are indicators of energy exports occurring between two different regions. These allow for more strategic playthroughs of the game and become increasingly important in higher difficulty games.

Red Bubbles

Red bubbles represent the building of a new non-renewable energy plant. These can occur due to negligence to develop renewable technologies for targeted areas or as a result of yellow bubble events. Too many red bubbles and the game will end!

Yellow Bubbles

Yellow bubbles represent social, economic, or political events that have a positive or negative impact on renewable energy development.

These also have the chance to develop a new technology for the player for free.

The effects and frequency of these events will change with varying difficulty modes and will be the primary mode of keeping the game fresh yet intuitive.

Technology Tree

The technology tree is composed of six branches that target six different game mechanics.

Hydrogen Fueling

1. Hydrogen Transport I: Allows the export of energy between neighboring regions.

2. Open Trading I: Increases the likelihood of new trade route establishment.

3. Hydrogen Transport II: Allows the export of energy between regions in the same continent.

4. Open Trading II: Increases the likelihood of new trade route establishment.

5. Hydrogen Transport III: Allows the export of energy between any two regions.

Carbon Capture

1. Carbon Capture I: Increase the chances that a green dot replaces a red dot.

2. Carbon Capture II: Increase the chances that a green dot replaces a red dot.

3. Carbon Capture III: Increase the chances that a green dot replaces a red dot.

4. New Age Carbon Capture: Replace all red dots with green dots. (Cannot upgrade until High Tech Trait is active)

Renewable Fuels

1. Wind Power: Regions can generate energy via wind power

2. Solar Power: Regions can generate energy via solar power

3. Hydro Power: Regions can generate energy via hydropower

4. Thermal Power: Regions can generate energy via thermal power

5. Nuclear Power: Regions can generate energy via nuclear power. Increases the rate of energy generation but decreases the rate of adaptation (green bubbles).

Prompts & Hints

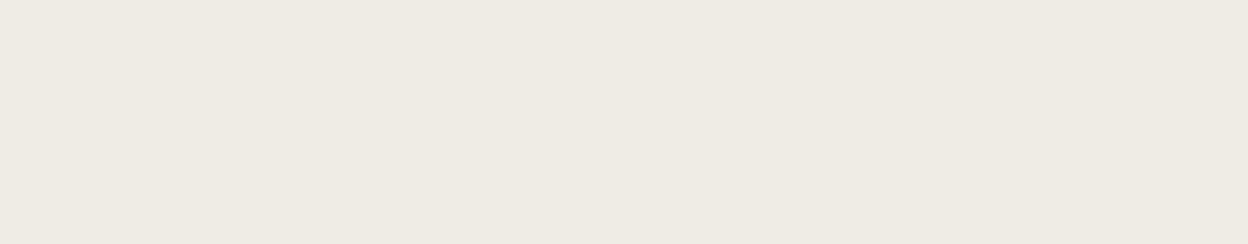
The biggest way we reward learning is by having such high versatility and replayability in the game. The more you play, the more hints you learn and the more knowledge about renewable energy you accumulate. This information will help players learn how to react to random scenarios by targeting specific regions with renewable technology and thus better at beating the game.

Example Prompts/Hints

- "Wind power is the cheapest renewable energy per kWh. China is the world leader in wind power generating 655,600 GWh. Did you know that offshore wind power has the potential of generating 18 times the current global energy demand!"

- "Did you know that 66% of Iceland's energy comes from geothermal energy plants?"

- "With increasing awareness of ecocide in European states, the EU is pushed to sign a treaty to go carbon neutral by 2050."



Data and Research

Nodes

To make this game come to life, we needed real data points about real energy plants. We used a data bank with nearly 35,000 data points all over the world from a collection of different sources. Each of these points contained the following information:

1. Country Name
2. Company Name
3. Energy Capacity in MW
4. Location in Latitude and Longitude
5. Primary Fuel Source

By manipulating the data using the pandas python library we were able to quickly sort points into respective energy types and countries. Using the newly sorted data frames we made every possible bubble in the game correspond to a real energy plant of that same energy type. This feature makes it so that the player is constantly learning about where renewable energy efforts are strongest by simply looking at a map and playing the game.

Research

The bulk of our research went into writing prompts, hints, and breaking news events. It is important to us that every prompt, hint, and breaking news event be a real event that impacted renewable energy development in recent history. An example of this might be the EU reaching a green deal after COP29. By putting real news and events inside the game, players are more receptive and curious about the news when they hear/read about it outside of our game. This is an important step in opening the renewable energy conversation in upcoming iterations.

Future Iterations

More Info

The hope is to incorporate more of this information into the game. This would increase the complexity of the game and further increase learning capabilities, flexibility, and replayability. For example, the player could zoom into individual plants around the map and click on them for information about the energy capacity, fuel source, and the company/organization supporting it.

Difficulty Modes

Higher difficulty modes will increase the need for players to adapt to scenarios and become better at beating the game. This will in turn further incentivize players to read prompts and hints. It can also teach players about the history of renewable energy development.

Opening the Conversation

Without noticing, players will gain knowledge about world events that are impacting the development of renewable energy. Not only that but they will learn about the capabilities of upcoming renewable technologies and how they can be implemented more efficiently. This will give the upcoming generation the knowledge and confidence needed to enter the renewables space.