HABITABLE

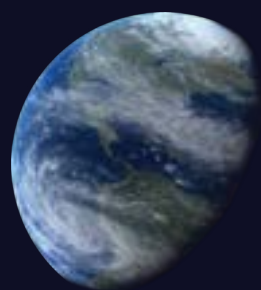# RULEBOOK

FIND PLANETS, MAKE THEM HABITABLE, KEEP THEM HABITABLE
MAKE LIFE FLOURISH

Theme and actions derived from real science!

HABITABLE

HABITABLE

Contents

In this game you:

1 - Search for planets around stars
2 - Make them habitable
3 - Keep them habitable
4 - Make life flourish on them

The winner is the player with the most life-points across all their planets, goal cards, and life-tokens.

Components

A- 1 Gameboard

B- 5 Player Boards

C- 7 Event Cards

D- 7 Goal Cards

E- 16 Planet Cards

F- 5 Starting Decks
(Of 10 Cards)

G- 6 Numbered Planet Tokens Per Player

H- 9 Colored Tokens Per Player

I- 2 Distance Dice

J- 1 Starting Player Token

K- Additional Life-tokens

Market Deck with:
L- 38 in Age I Cards
M- 34 in Age II Cards

Setup

1 - Preparing market:

    A • Shuffle **Age I** cards, and lay cards **face-up** in the 8 marketplace spaces.

    B • Choose game difficulty. Use the table below to determine how many **Event Cards** are shuffled into the **Age** decks.

    C • Stack the **Age I** deck on top of the **Age II** deck, and place it in the Market deck area.

2 - Shuffle and lay goal cards equal to the number of players +1 face-up next to the board.

3 - Each player gets a player mat.

    A • Shuffle the **Starting Decks** and put them on the "Draw Pile" of the **Player Mat.**

    B • Place **Planet Tokens** on the **Planet Token** area stacked by number *(3 stacks of 2)*.

4- Make sure the distance dice and life-tokens are within reach of each player.

5 - Select a starting player and give them the starting token.

6 - Each player draws 5 cards from their draw pile, and the game is ready to begin.

Difficulty	Event Cards in Age I	Event Cards in Age II
Easy	1	1
Moderate	1	2
Hard	2	2

Game Play

• Play starts from the starting player and continues clockwise.

The Turn Structure:

1 - At the beginning of your turn, you MAY archive. To archive, you discard any number of cards in your hand and draw up to 1 less than the number you discard:

    A • *Example: You are unhappy with 4 of your 5 card. You discard these 4 cards and then draw 4-1=3 new cards from your draw pile. Now you only have 4 cards in total. You are again unhappy about 2 of your 4 cards. You discard these 2 cards and draw 1 new card. Now you have only 3 cards in total. Then you continue with your turn.*

2 - You can play cards in your hand or buy cards from the marketplace in any order.

    A • Playing an action card (the cards in your hand):

        I • The playing-cost of the action card is indicated on that card (top left).

        II • To play this card, you need to pay* the playing-cost.

        III • After paying the playing-cost of the action card, carry out the actions indicated on the card.

        IV • Discard the played action card on your personal discard pile.

    B • Buying a card from the marketplace:

        I • The buying-cost of a card is the same as the playing-cost.

        II • Pay* the buying-cost of the card you want to buy.

        III • Place the newly bought card on your personal discard pile.

        IV • Do not replenish the marketplace. *(This is only done at the end of your turn).*

        V • *Optionally, you can pay* three times the cost of the card (including any attack or discount modifier if applicable) to buy it and immediately do the action on the card.*

*Paying:

• To pay, you use the cards in your hand. Each card is worth the number written in the top left corner.

• Discard cards (on personal discard pile) until their values sum up to, or over, the cost that you wish to pay.

• There is no change, i.e., if you overpay, the leftover cannot be used.

• You **CANNOT** use a higher value card to pay for multiple lower value cards.

3 - If you meet the criterion for any of the goal cards during your turn, you take that card and keep it in front of you.

4 - After you have taken your turn playing or buying, discard any cards left in your hand.

5 - The marketplace is filled:

    A • Move cards from the marketplace to the trash.
        4 and 5 Players: Remove the last card.
        3 Players: Remove the last 2 cards.

    B • Cards in the marketplace are pushed down in the direction of the arrows to fill in any empty spaces.

    C • The remaining empty spaces are filled in with cards from the marketplace.

6 - You then carry out any end-of-turn steps on planets that you have *(explained later)*.

7 - Draw 5 new cards. If your draw pile runs out, shuffle your discard pile, then put it face down in your draw pile area. Continue drawing up to 5.

8 - Play then goes to the next player.

Card Types & Some Special Cards

Action Cards:
(All the cards in your hand and in the marketplace except Event Cards)

• Modify the current status of your (or other players) planets.

• Have a playing cost, indicated by the number in the top left corner.

• Certain action cards can only be played on a **Habitable**** 🌍 planets, an **Uninhabitable** 🌍 planets, or a planet with at least N life points.

• Some action cards can be used to attack other players (modify). They show a **+1** on their playing-cost. The playing-cost of this card increases by 1 if played on other player's planet.

• Some life-bringing action cards show a **-1** next to their cost. The playing-cost of this card is reduced by 1 if played on a planet that is *immediately next to another habitable planet.*
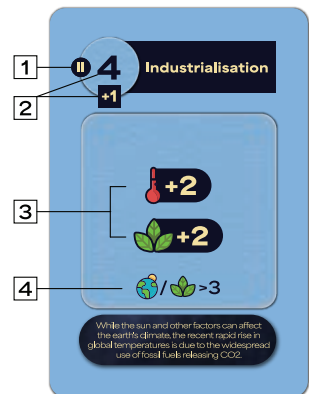
Example: Industrialization

1 - Belongs to Age II.

2 - Has a playing cost of 4, but when used as an attack it costs 5.

3 - Increases life and temperature by 2 on one of your planets that meet the criterion.

4 - Can only be played on a habitable planet or planets with more than 3 life points.

Industrialisation

+2 (temperature)
+2 (life)
🌍 / 🌱 >3

While the sun and other factors can affect the earth's climate, the recent rapid rise in global temperatures is due to the widespread use of fossil fuels releasing CO2.

**Habitable planets:

• A planet is habitable if its temperature is within ±2 and has ≥ 3 water and magnetism (indicated by the black boxes).
• Show that a planet is habitable by flipping the planet tokens on the game board and the planet card to the green/habitable side.
• If the planet becomes uninhabitable, flip the planet tokens to the red/uninhabitable side.

"Search for Planets" Card:

• Either choose a star you want to find a planet around (in a 3-player game, star "Kepler-117" is not used) and place an **Undiscovered Planet***** on that star OR choose one of your existing **Undiscovered Planets**.

• Role the 2 distance dice, add up their faces and increase the distance of the **Undiscovered Planet***** by that amount along the indicated track on the **Game Board** (circles), leapfrogging over other player tokens.

• Pay 2 if you want to change the result of the dice by ±1.

• If the **Undiscovered Planet***** is in the habitable zone (coloured zones), decide if you want to discover a planet at that distance. If yes:

> • Draw a planet card.

> • Remove one of the tokens from the **Undiscovered Planet**** and place it on the "0" indicator of the **Life-Point** 🌱 scale on the planet card.

> • Place 3 (normal) tokens on the starting conditions for **Temperature** 🌡, **Water** 💧 and **Magnetism** 🧲 indicated by the grey circles.

> • Modify the **Temperature** of your planet according to the temperature modifier of your planet's distance (shown on the game board).

• Make sure the planet token on the game-board is showing the uninhabitable side. 🚫🚫🚫🚫🚫

• Your planet token on the game board will stay fixed for the rest of the game, unless your planet is influenced by the 'orbital migration' card.

• If your **Undiscovered Planet***** is outside the habitable zone (indicated by the white zones), remove the tokens from the game board and put it back on your player-board.

***Undiscovered planets:

• Undiscovered planets are indicated by a stack of two planet tokens with the same number.
• Only the distance of undiscovered planets can be modified by the 'search for planet' card (distance can only increase).
• Once an undiscovered planet is discovered (player's choice), remove one of the token and place it on the life point scale of that planet's planet-card.

Event Cards:

• When an event card is revealed from the marketplace, resolve it immediately.

• Events affect every planet in front of players.

> • *A moon card can only save one of your planets (unless you have multiple moon cards in your hand)*

• Remove the event card from game and fill the marketplace.

"Moon" Card:
(One of the Action Cards)

• Is always **FREE TO PLAY**.

• Can be used to:

○ Trash cards from your hand, so they are permanently removed from your deck.

○ Or can be trashed to defend a planet again an attack, or event.

■ Draw a new card from your draw pile to replace the trashed moon card if used in defense.

"Orbital Migration" Card:
(One of the Action Cards)

• Move one of your planets by one place within the habitable zone.

• If there is another planet, swap places.

• Modify the **Temperature** on your (and the other player's) planet by the difference of the temperature modifiers between your new and your previous location.

Example: *You (red) move from the orange* 🌡**+2** *to the yellow* 🌡**+1** *zone. The difference of the temperature modifiers is (+1)-(+2)=-1. Therefore, the temperature of your planet decreases by one* 🌡**-1** *. If you change places with another player's planet (blue), their planet's temperature increases by one* 🌡**+1** *.*

"Bombardment/Cambrian Explosion":

• These cards cannot trigger the same card again (keep search until a fitting card is drawn).

• If you cannot find a suitable card in your personal draw pile, shuffle your discard pile and keep going.

• If you cannot find a suitable card in your entire card deck, you lose the extra ability from the card.

Goal Cards:

• As soon as one player reaches a goal written on of the goal cards, that player takes that particular goal card (this is no longer available to the other players).

• There are bonus points on all the goal cards that add to the player's final score.

End of Turn Steps

At the end of a players turn, carry out these steps in this order. For each planet:

A • If a planet has 🌿 > 4 then 🌡+1.

B • If maximum 🌡 then 💧-1.

C • If minimum 🌡 then 🧲-1.

D • If planet is NOT habitable 🌿-1.

Planets can become **Uninhabitable**, but if you make them **Habitable** again by the end of your turn, you do not lose Life points.

Life Tokens

If you make someone else's planet habitable you receive a life token.

• A life token is worth 1 Life Point.

• If there are no more tokens left, use an appropriate substitute.

End of Game

The end of the game is triggered when the marketplace can not be filled. At that time, players are no longer allowed to attack each other. Players play until the starting player so that players get the same number of turns.

• Every player does the **end-of-turn** steps on all their planets one last time..

• The player with the most life points across all planets + the bonus points from the goal cards and life tokens wins.

• If there is a tie, the player with the most habitable planets wins.

• If there is still a tie, the player with the most goal cards wins.

• If there is still a tie, the players share the win..

Neat Science

The Stars:

The stars chosen for the board are real stars with planets around them. We do not know the compositions of the planets around these stars well (except for our sun), so we do not know for sure if they are habitable.

The Habitable Zone:

The habitable zone is the distance from a star where liquid water could exist on the surface of a planet. The zones shown on the board are scaled from actual habitable zone calculations. For mass stars, like Kepler-117, the outer part of the zone is around 1au (or astronomical unit) from the star. The Earth is 1au from the Sun, so on our board, it would be in the 5th position from the star. For small stars, like Proxima Centauri, the habitable zone is so close to the star that planets in these regions are probably tidally locked (have the same side facing the star).

The Cards:

The actions and events used in the game are derived from our understanding of how planets form, and real events that we think happened in our solar system. Read the flavour text at the bottom of the cards to learn more!

About Us

We are an international team of astrophysicists working at the Heidelberg Institute for Theoretical Studies (HITS), who love board games and also care about the Earth. We are part of the Hochschulwettbewerb, which enabled us to make this game portraying Habitability from an astronomers' perspective.

We hope that you enjoy playing our game!

How did you like our game? Any constructive comment or feedback is welcome! You can contact us at **habitablegame@proton.me** or our Discord server.

Credits: Dr. Rajika Kuruwita, Dr. Eva Laplace, Dr. Dandan Wei, Vincent Bronner, Jan Henneco, Julian Saling, Simon Speith, Duresa Temaj

wissenschaft : im dialog

HITS
Heidelberg Institute for
Theoretical Studies

ZEIGT EURE FORSCHUNG!
Der Hochschulwettbewerb

GEFÖRDERT VOM

Bundesministerium
für Bildung
und Forschung

Eine Initiative des Bundesministeriums
für Bildung und Forschung

Wissenschaftsjahr 2023
unser
UNIVERSUM

HABITABLE