
## GAME RULES - SPIELREGELN

# 1. Game Overview

Europe, end of the 20th century. Our economy runs entirely on CO2 emitting Coal and Gas Power Plants. Climate change is a fact. 6 European Regions compete to get rid of these Coal and Gas Power Plants and be the first to have CO2 free electricity production.

You win the game if you are the first Region to close down all your Coal and Gas Power Plants and you produce enough GigaWatt of Electricity (GW Production) for the demand (GW Demand) in your Region. Each game round, the GW Demand in your Region increases due to the fate of the dice. It is up to you to build Power Plants to let your Electricity Production (GW Production) grow at the same pace. As your Demand and Production grow, which are tracked alongside the board, you pass through 3 Technological Phases enabling you to build bigger and better Power Plants. But Power Plants cost money. Luckily, you receive a guaranteed income based on the GW Demand in your Region. But if you produce more (GW Surplus) or less (GW Shortage) than your GW Demand, you will pay costly penalties, so it is key to stay in balance each Game Round. In order to avoid the penalties, you can trade your GW Surplus or GW Shortage with other players or External Markets. If you play it well, this leads to additional income. You need this income to win Closing Rights in the Closing Auction, which you need to be the first to close down your Coal and Gas Power Plants and win the game.

But beware, the Wind Dice and Sun Dice make GW Production hard to predict and GW Demand increases faster and faster. So, do you immediately start closing down Coal and Gas Plants - with the risk of a high GW Shortage or even going bankrupt - or are you more careful - with the risk of being too late to catch up? But don't just look at each other, if you take too much time for you transition – and reach the end of the track (>90 GW) – you lose immediately!

# 2. Game Elements

*A* **Board:** Europe.

*B* **Money:** 15x20, 40x10, 15x5, 40x1.

*C* **GW (GigaWatt) Tokens:** 80 green cubes for 1 GW Surplus and 80 red cubes for 1 GW Shortage.

*D* **Technology Cards:** 60 Technology Cards and 6 CO2 Tax Cards.

**Dice:**

*E* 1 blue Wind Dice, 1 red Sun Dice.

*F* 3 red regular GW Demand Dice.

*G* 1 green External Markets Dice for GW Surplus or GW Shortage.

**Pawns: 2 per player in the color of your Region**

*H* 1 unique Demand Pawn for the GW Demand in your Region (outer track)

*I* 1 Production Pawn for the GW Production in your Region (inner track).

> The upper part is the Weather Pawn and is used to adjust your GW Production for the Sun Dice and Wind Dice outcome.

*J* **Game Step Marker:** 1 Marker to indicate in which step the game is.




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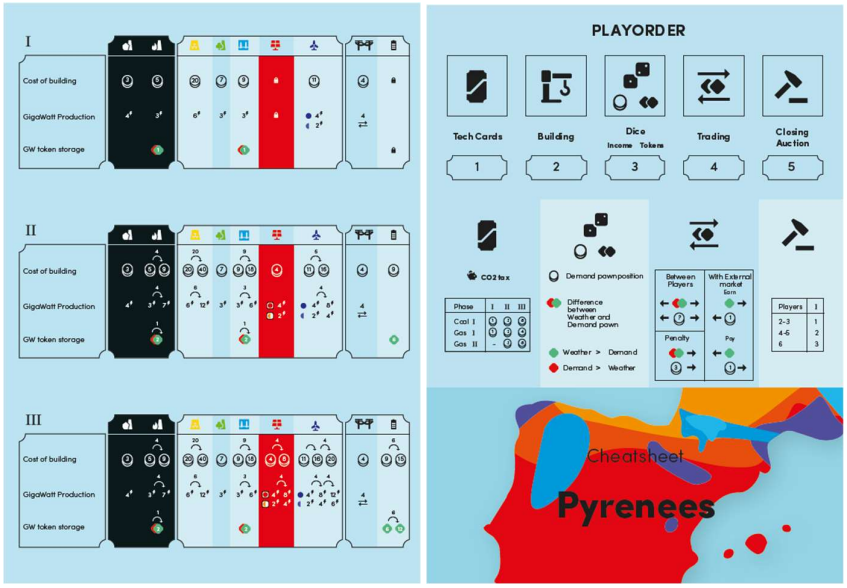
*K* **Starting Player Token:** Search for a battery you have at home.

*L* **Cheat Sheet: 6x (1 per Region)**

| Building Step; for each Power Plant | Other steps |
|---|---|
| • Cost of Building<br>• GW Production<br>• GW Storage Capacity<br>• New Technologies & Upgrades per Phase<br>• Discount highlighted for your Region | • Play Order<br>• CO2 Tax costs (if card drawn)<br>• GW Tokens: how many you get<br>• GW Tokens: Trading options & cost<br>• Closing Auction rights |




*M* **Power Plants, Storage Facilities & Connections**

9 types with different amounts available in the 3 Technological Phases.

| | Technology | Generation I | Generation II | Generation III |
|---|---|---|---|---|
| *M1* | Coal Plant | 20 | - | - |
| *M2* | Gas | 15 | 15 | - |
| *M3* | Nuclear | 12 | 12 | - |
| *M4* | Biomass | 8 | - | - |
| *M5* | Hydro | 8 | 8 | - |
| *M6* | Wind | 15 | 15 | 12 |
| *M7* | Solar | - | 15 | 12 |
| *M8* | Storage | - | 9 | 9 |
| *M9* | Connection | 16 | - | - |

*M1-M8*

*M9*



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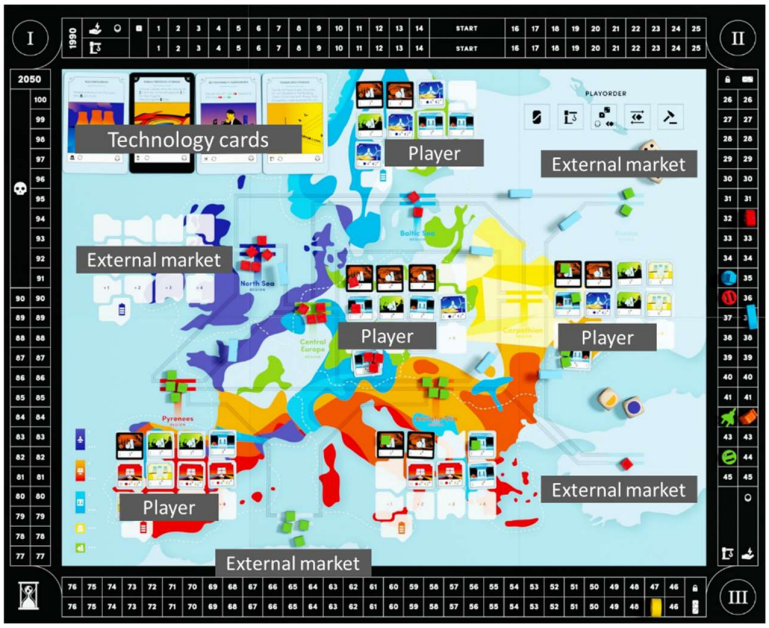
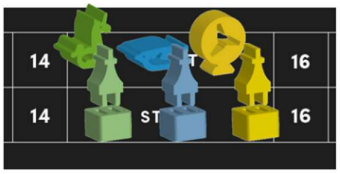
# 3. Preparation

**Every player chooses one Region**




The most energetic person is the Starting Player. The players each picks a Region on the Board, starting with the Starting Player and continuing clockwise. This player is also the Starting Player at the start of the game. You can use a battery you have at home to indicate who the Starting Player is every Game Round. You can choose any Region, as long as the Regions of the players connect. The Regions that are not selected are all External Markets. See this example of a three player setup:

**Starting Power Plants: Gas & Coal Plants**
Place 1 Generation I Gas Plant and 3 Generation I Coal Plants on the top 4 Building Fields in your Region.




**Production Pawn** – Start Position of the Production Pawn is 15.

**Start Position** – Start Position of the Demand Pawn is 15.

**Money** – Each player receives 15 starting money.

**External Markets** – Throw the External Market Dice for each External Market Region. (including all Regions that are not selected by any Player). Place the outcome - either 5 Red GW tokens or 5 Green GW tokens – on the External Markets.

**Technology Cards** – Shuffle the Technology Cards and the CO2 Tax Cards together and place them in a pile face down next to the board. Place four cards face up on the assigned places on the board. If a CO2 Tax card is drawn, move it to a discard pile and draw another card.
> ***Short Version****: in the Short Version of the game, the Technology Cards are left out.*

**Remaining Money & GW Tokens** – Place the remaining money and the GW tokens next to the board.



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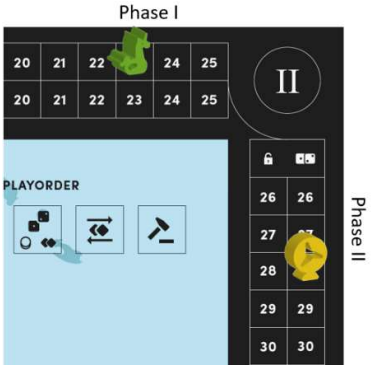
# 4. Play Order

The game is played in a series of rounds, until one player wins the game. Each Game Round consists of 5 steps. Each of these steps is taken by each player in clockwise order, starting with the Starting Player. Once all players have completed Step 1, they move to Step 2, and so on. Once all steps have been completed, the Game Round ends. The Starting Player Token is then passed to the next player in clockwise direction, and a new Game Round begins.

**The 5 steps of 1 Game Round:**

1. **Technology Cards** – choose to invest in a Technology that helps your strategy by buying a Technology Card. The Technology Card describes in which step it can be played.
   > ***Short Version****: in the Short Version of the game the Technology Cards are left out and this step can be skipped.*
2. **Building** – use your income to build new Power Plants, Storage Facilities and Connections. Choose your strategy and anticipate increasing demand.
3. **Dice & Income**




   - Throw the **GW Demand Dice** to increase your GW Demand. In Phase I (until 25 GW Demand) use 1 Dice, in Phase II (until 45 GW Demand) 2 dice and in Phase III (from 46 GW Demand onwards) 3 dice.
   - If you have Solar and/or Wind Plants, throw the **Sun Dice** and/or **Wind Dice** to determine the Solar GW Production and Wind GW Production. Use the Weather Pawn to indicate the GW Production of this Game Round.
   - **Income & GW tokens**
     - Receive income equal to the position of your Demand Pawn.
     - Receive Red or Green GW tokens for your GW shortage or surplus.
   - Throw the **External Market Dice** only for External Market Regions without GW Tokens and place 5 Green or 5 Red GW tokens.
4. **Trade & Penalty** – trade your Red or Green GW Tokens to avoid a penalty. Earn extra income by trading your GW tokens with other players or the External Markets.
5. **Closing Auction** – use your income to close your Starting Power Plants by bidding for Closing Rights.

Next, pass the Starting Player Token in clockwise direction and continue with a new Game Round.

# Step 1: Technology Cards

***> Short Version**: In the Short Version of the game, you completely skip this step for the whole game.*

There are always four Technology Cards face up on the board, the unused cards are face down on a Deck next to the board, and the used cards are face up on a Discard Pile next to the board.

The Starting Player first chooses to buy one Technology Card and pays the described cost on the card, or passes. Then continue clockwise.

After a player buys a card, cards are moved to the right to fill the open space. A new card is drawn from the Deck and placed face up on the left most (open) space. When everyone has had an opportunity to buy or pass, the most right card is discarded and a new card is drawn.

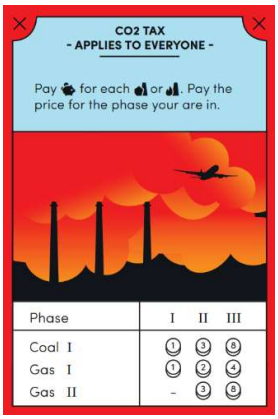
Each player must keep their active Technology Cards face up in front them. The cards describe:


1) Card summary
2) The action when played (incl. whether it is played immediately, or later)
3) The technology category
4) Whether it can be played only once or multiple times
5) The cost to buy the card (this might differ for the phase you are in)

Cards that can be played only once will be discarded to the Discard Pile after being played. In case the Deck is empty, the Discard Pile is shuffled and placed face down next to the board.

**CO2 Tax Card**

There are 6 CO2 Tax Cards in the Deck. When one of these is drawn by a player, all players have to pay the indicated costs for each of their Starting Power Plants, depending on the Phase they are in (see the Demand Pawn). Then it is removed to the Discard Pile and replaced by a new Technology Card. The player that draws the CO2 Tax Card still has the option to buy a Technology Card. If another CO2 Tax Card is drawn in the same Game Round, no costs have to be paid and it is immediately removed.



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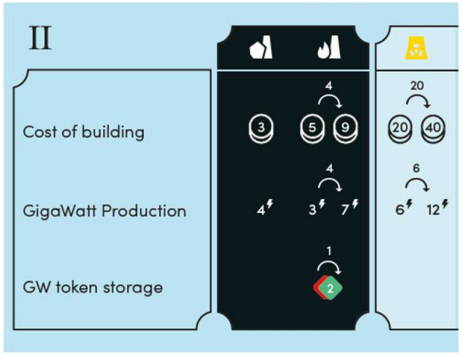
# Step 2: Building

In this step, you can do any or all of the following options:

1. Build or upgrade Power Plants or Storage Facilities.


2. Build Connections with other Regions to be able to trade GW Tokens (see Step 4: Trading).

**Building Power Plants -** You can build as much as you want as long as you have enough money to pay for it. The Board shows 13 Building Fields in your Region on which you can build Power Plants. When building a Power Plant, place the Power Plant on one of these Building Fields. Pay the costs indicated on the Cheat Sheet and move your Production Pawn the number of GW indicated on the Cheat Sheet forward on the Production track. **Example**: You build a Generation I Gas Plant. You pay 5 and move your Production Pawn 3 steps forward (3 GW).




**Upgrading -** You can build a new Generation II (or Generation III) Power Plant from the moment your Demand Pawn is in Phase II (or Phase III). You can also upgrade your Power Plants from earlier Generations. The upgrading costs are equal to the difference of the two Generations. **Example**: You upgrade a Generation I Gas Plant to a Generation II Gas Plant. This costs 4 (= 9 - 5) and you move your Production Pawn 4 steps forward (4 GW = 7 GW – 3 GW).

You can continue to build new Power Plants from earlier generations. All the costs, GW production and specialties for each plant in each phase are on the Cheat Sheet.

When there are no Power Plant tokens available you cannot build that Power Plant anymore.

**Building Storage Facilities -** Storage Facilities give you flexibility to store a surplus of Green GW Tokens (see Step 4: Trading). Hydro Plants and Gas Plants have a similar function, they can store both Red or Green GW Tokens (see Cheat Sheet). Building and upgrading Storage Facilities works the same as Power Plants, but they do not have a GW Production.

**Building Fields** – On the Building Fields you can build any Power Plant. For some Building Fields you have to pay extra (1, 2, 3 or 4), regardless of which type of Power Plant you build.


**Dedicated Building Fields** – Each Region has 4 Dedicated Building Fields. On these Fields you can only build that specific Power Plant.

**Regional Advantages** - Due to geographical advantages, some Regions have better prices for 1 type of Power Plant (these prices are on the Cheat Sheets):

- Adriatic: Solar Plants are 1 cheaper.
- Pyrenees: Solar plants are 2 cheaper.
- North Sea: Wind Plants are 2 cheaper.
- Baltic Sea: Hydro Plants are 1 cheaper.
- Carpathian Region: Nuclear Plants Generation I are 1 cheaper and Generation II are 2 cheaper.

**Closing Power Plants** – In this step you can close any Power Plants you have built, except for Coal or Gas Plants. The costs of closing these Power Plants always equal the original building costs (excluding any discounts you might have received). If you close a Power Plant, you pay the costs, remove the Power Plant from the Board and you move the Production Pawn the corresponding number of GW back on the track. The Building Field from which you removed the Power Plant is available to build a new Power Plant.

**Connections** - Connections can be used to trade your GW Tokens with other Regions (see Step 5: Trading). Every Connection has a Trading Capacity of 1 GW (1 Red or 1 Green GW token) at the start of the game as indicated on the board.

You can 'upgrade' every Connection on the board to a Trading Capacity of 4 GW Tokens by buying a Connection. The cost for this is 4, which you can find on the Cheat Sheet. You place the Connection on the triples between the two connected Regions.

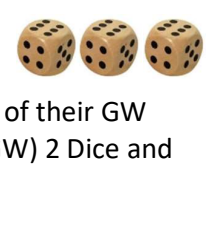
- If you build a Connection to another player you can negotiate how to share the costs of 4 among each other.
- If you build a Connection to External Markets, you pay the full amount of 4.

# Step 3: Dice, GW Tokens & Income

In this step each player does 3 things:

1) Throw dice to find out the GW Demand and the weather in this Game Round (GW Demand Dice and Wind/Sun Dice).
2) Receive GW Tokens based on a surplus or shortage of energy.

3) Receive Income based on the GW Demand.

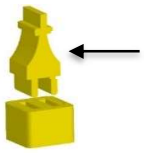



**GW Demand Dice**

Each player throws the GW Demand Dice to determine the increase of their GW Demand. In Phase I (1-25 GW) you throw 1 Dice, in Phase II (26-45 GW) 2 Dice and in Phase III (46-90 GW) 3 Dice (see also “5. Phases I-II-III”).

**Sun/Wind Dice**

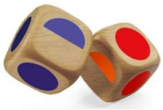
Each player throws the Wind Dice if they have one or more Wind Plants and the Sun Dice if they have one or more Solar Plants. These dice reflect the weather in your Region and determine whether your Sun and Wind Plants produce 50% of their GW or 100% of their GW in this Game Round. Depending on the outcome of the dice you move the Weather Pawn.



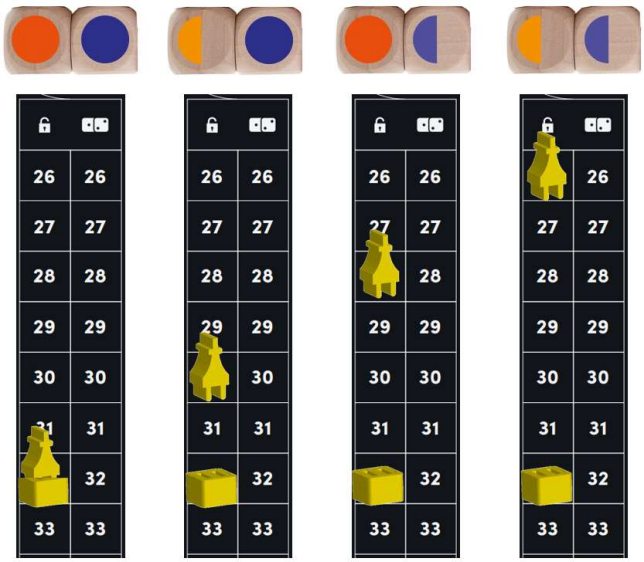

*Example*

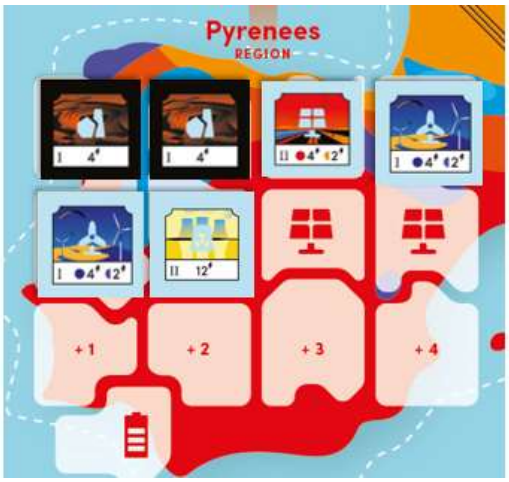
You build a total GW Production of 32 GW.

- You have 1 Solar Plant for a total of 4 GW.
- You have 2 Wind Plants for a total of 8 GW.
- You have 3 other Power Plants for a total of 20 GW.




The picture below shows the four possible outcomes.





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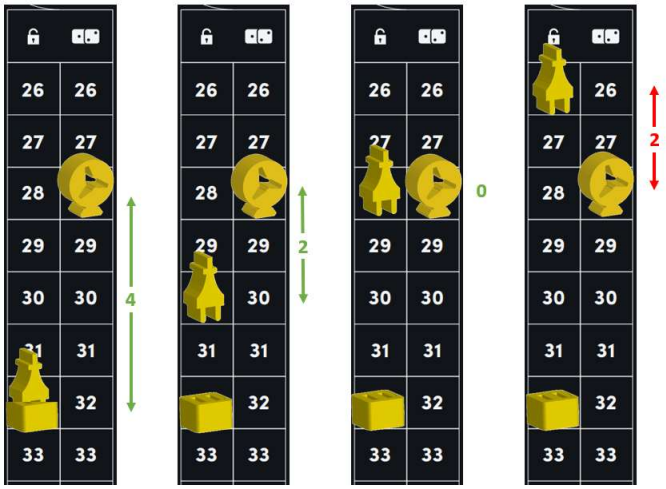
**Receiving GW Tokens**


Every player receives GW Tokens equal to the difference between their GW Production and their GW Demand. The GW Production is measured by the position of the Weather Pawn. The Green GW Tokens stand for a GW surplus (overproduction) and the Red GW Tokens stand for a GW shortage (underproduction). These are placed on the T of your region.

*Example - continued*

In the same example, suppose your GW Demand is 28. You then receive in the 4 situations of the Sun/Wind Dice either 4 Green GW Tokens, 2 Green GW Tokens, nothing, or 2 Red GW Tokens.




**Receiving Income –** Every player receives Income equal to the GW Demand in their Region. This income is equal to the position of the Demand Pawn. In the example your Income is 28.

**Replenish External Markets** – If any External Markets do not have any remaining GW Tokens, throw the External Market Dice to replenish these Regions. Throw a dice only for External Market Regions without GW Tokens and place depending on the outcome 5 Green GW Tokens or 5 Red GW tokens. Throw for each empty Region separately.

**Win Condition –** It is in this step that a player can win the game. This happens when at least one player meets the Win Condition at the end of this step. See “6. End of Game” for a full explanation.

**Place Weather Pawn back –** At the end of this step, if no player meets the Win Condition, each player places their Weather Pawn back on top of their Production Pawn.

# Step 4: Trading GW Tokens

In this step players trade their surplus of energy (Green GW Tokens) or shortage (Red GW Tokens) to avoid paying a penalty. If played well, the trading can generate extra income. The Starting Player starts, then continue clockwise.


**Trading**

GW Tokens can be traded between connected Regions, as indicated by the triple lines on the Board. At the start of the game all connected Regions have a Trading Capacity of 1 GW. When you build a Connection on the triple lines to another Region (in the Building Step), the Trading Capacity is increased to 4 GW.

Both a surplus of energy (Green GW Tokens) and a shortage (Red GW Tokens) are a problem for your Region. Therefore, it is important that you not only buy energy when you have a shortage, but also sell energy when you have a surplus. When you have both Red and Green GW Tokens in your Region, you can remove them from the Board.


- You can buy or sell 1 or more (if you built a Connection) Red GW Tokens or Green GW Tokens to all your connected Regions.
- When trading GW Tokens with other players you negotiate which player has to pay and how much. Both players need to agree to be able to buy or sell to another player.
- When trading with the External Markets you always earn 1 when selling 1 **Green GW Token**. You pay 1 when buying 1 Green GW Token. Vice versa for **Red GW Tokens**.

It is possible to buy a GW Token from one Region and then sell it to another Region in the same Game Round.

**Storing GW Tokens**

Sometimes trading with your connected Regions is not possible, or not sufficient to solve your surplus or shortage. As an alternative to trading, each player can use Storage Facilities to store Green GW Tokens or use the flexibility of Hydro Plants and Gas Plants to store either Red or Green GW Tokens (see Cheat Sheet). Place the GW Tokens on the Storage Facility or Power Plant. The GW Tokens stay here until the next Game Round and can then be used again for trading.



If a player is not able to trade anymore or does not want to trade anymore, it is the next player's turn. For this next player it is still possible to trade with players who already had their turn.

**Removing GW Tokens**

When all players are done trading, they can now solve their surplus or shortage using the energy they bought or sold. Remove pairs of Red and Green GW Tokens from your Region from the Board.

**Paying Penalties**

When all players are done trading and have removed pairs of Red and Green GW Tokens from the board, each player has to pay a penalty of 3 for each remaining Red or Green GW Token that cannot be placed on a Storage Facility, a Hydro Plant or Gas Plant. These GW Tokens are removed from the Board.

# Step 5: Closing Auction

In order to win the game you have to close all your Coal and Gas Power Plants (Starting Power Plants) during the game. See “6. Game End” for the full Win Condition. Therefore, every Game Round a number of Closing Rights for Coal Plants or Gas Plants becomes available through an auction. This is the main way you can close the Starting Power Plants. The number of available Closing Rights depends on the number of player. See the table below or the Cheat Sheet.

| Players | Closing Rights |
|---|---|
| 2-3 | 1 |
| 4-5 | 2 |
| 6 | 3 |

Every player can buy 0 or 1 Closing Rights per Game Round. It is possible that 1 or more Closing Rights are not bought at all. The number of Closing Rights available is always less than the number of players, so not all players can close a Starting Power Plant in the same round.

**Working of the Auction**

The Starting Player declares their first bid of at least 1 or passes. Then going clockwise every player chooses to bid at least 1 higher than the previous bid or passes. After passing, you cannot re-enter the auction. This continues until the number of players left in the auction equals the number of Closing Rights available. These remaining players have won the auction and have to pay their last bid. A player cannot bid higher than the money they have available, taking into account any penalties for red tokens on Gas Plants (see below).

With an obtained Closing Right, you have to immediately close 1 Coal or Gas Plant of your choice. You pay the cost, remove the Power Plant from the board and you move the Production Pawn the corresponding number of GW back on the track.

The Building Field from which you removed the Power Plant is available to build a new Power Plant in the Building Step.

**Example (4 players, 2 Closing Rights available)**

Player 1 (Starting Player) passes. Player 2 bids 1. Player 3 bids 3. Players 4 passes. Player 2 pays 1, player 3 pays 3 and both players close down 1 Starting Power Plant of their choice.

**Red token on Gas Plant** - In case you want to close a Gas Plant and there is a red GW Token placed on that plant (see Step 2: Building), you can move the GW Token to another Gas Plant or Hydro Plant. If that is not possible, you have to immediately pay the penalty of 3 per GW Token.

# 5. Phases I-II-III

Each player can go through 3 Demand Phases, which stand for technological advancement and accelerated growth. The Phase a player is in is determined individually by the position of their Demand Pawn. So when a player's GW demand exceeds 25 GW after throwing the dice, that player will enter Phase II. Likewise, above 45 GW that player enters Phase III. In the 3 phases, the playing steps are exactly the same. The only changes are (see details on the Cheat Sheet):

- When you enter Phase II (and later Phase III), all Generation II (and later Generation III) Power Plants and Storage Facilities become available to build or upgrade towards. You can still build or upgrade to the plants and Storage Facilities from earlier generations (in Step 2).
- The number of Dice you throw for GW Demand increases. 1 dice in Phase I, 2 dice in Phase II and 3 dice in Phase III (in Step 3).

# 6. Game End

A player can win the game at the end of Step 3, if the Win Condition is met.

**Win Condition:** A player meets the Win Condition when for the first time they produce more energy than they use, while they have completely transitioned away from Coal and Gas. So when their Weather Pawn is ahead of (or equal to) the Demand Pawn **AND** the player has no remaining Coal or Gas Plants. This can take place during any of the 3 Phases.

*> If more than one player meets the Win Condition in the same Game Round:* In Step 3 the players just received income and (Green) GW Tokens. The players store as many Green GW Tokens as possible in their own Region (using Storage Facilities Gas Plants or Hydro Plant). The player with the least remaining GW Tokens (not in storage) wins. The Win Condition is checked at the end of Step 3, so players do not have the chance trade any GW Tokens (which happens in Step 4).

*> If multiple players have the same number of remaining green GW tokens (possibly zero):*

The player with the most money wins. If money is also equal, these players all win.

**Losing the game**

Besides not winning the game, there are two ways for players to lose the game.

**1)** If a player cannot pay the penalty for the shortage or surplus of GW Tokens (in Step 4) or cannot pay CO2 Tax (in Step 1), **the player is bankrupt**. Take away the GW tokens for which the player can still pay the penalty and the GW tokens on their Power Plants. The remaining GW Tokens stay. From the next round, this Region will become an External Market. Connections remain. The player does not participate anymore. Their Energy Transition has failed.

**2)** When a player reaches a GW Demand higher than 90**, that player loses immediately,** even if they had reached the win condition that turn. The other players continue to play. Your Energy Transition took too long.

# 7. Game Variants

## SHORT VERSION

We recommend this Short Version when you play the game for the first time.
In the Short Version almost all rules are the same, with a few exceptions explained below.

**Starting Position**

- Every player starts with 2 Coal Plants and 1 Gas Plant. Starting Production is 11 and Starting Demand is 11. Starting Money is 15.

**Technology Cards**

- There are no Technology Cards. “Step 1: Technology Cards” is skipped.

## SOLO VERSION

GigaWatt is also a great 1 player game. Almost all rules are the same, with a few exceptions explained below.

**Starting Position**

- You start with 4 Coal Plants and 1 Gas Plant. Starting Production is 18, Starting Demand is 18 and Starting Money is 18.

**Auction**

- There is no auction anymore in “Step 5: Closing Auction”. Instead the costs to close a Starting Power Plant are fixed: 6 in Phase I, 12 in Phase II and 24 in Phase III. You can only close 1 Starting Power Plant per Game Round.

**Technology Cards**

- You cannot buy any of the “Protest” type cards. Instead when a “Protest” type card is drawn it is always played against you for that round. Discard it at the start of the next Technology Card Round.

**Win Condition**

- The Win Condition remains the same. If you meet the Win Condition you are a “WINNER”.
- If you are able to store all your Green GW Tokens in your Region you are an “EXPERT WINNER”.
- If you are an EXPERT WINNER, your remaining Money is your “WINNING SCORE”.

# 9. Background Information

In the final version of the rules a FAQ will be added explaining the background of all the Energy Concepts in the game.