1/2

1

Carbon Separation and Storage

Science: CO_2 separation from other gases is required prior to storage. High pressure oxy firing (HiPrOx) technology thermally converts hard-to-burn fuels with high pressure and pure oxygen. In the process, this creates a largely pure CO_2 gas stream as waste.

Logistics: Investment into the separation of CO_2 from other hard-burning sources (fossil fuel sources) and transportation to areas suited to storing carbon in porous rock (not Ontario). Investment at Level 1 places Level 2.0 into the player's hand (after time cost).

Effect: 2.0% reduction in GHG emissions/Round.

0 $750,000 AP 3:2 R 8

2.0/2

2

Underground Carbon Storage

Science: Store captured CO_2 underground. Carbon is injected into porous rock under oil fields.

Logistics: investment to store carbon in porous rock elsewhere in Canada (including safe transportation of gas and collaboration with facilities that can sequester it).

Investment at Level 2.0 places cards 2.1/2.2/2.3 into the player's hand (after time cost).

Effect: 1% reduction in GHG emissions/Round.

2 $350,000 AP 3 R 8

2.1/2

3

Carbon Utilization - Fuels and Chemicals

Science: converting waste CO_2 into industrial products like alcohols, polymers, plastics, and fuel.

Logistics: A partnership with companies or investors to incorporate up-cycled carbon into their products and produce on a certain scale. Future investment/renewal improves this infrastructure. Transportation costs are included.

Investment can be renewed at less cost with less AP.

Effect: 1% reduction in GHG emissions/Round.

2

$350,000: $150,000

AP 3:2

R 8

2.2/2

4

Carbon Utilization - Mineralization

Science: this process creates carbonate cement and mortar, recycling or up-cycling trapped carbon for construction materials.

Logistics: With existing connections to industrial partners in the construction industry, this process will go more smoothly. Future investment/renewal improves this infrastructure.

Investment can be renewed at less cost with less AP.

Effect: 1% reduction in GHG emissions/Round.

2

$350,000:
$150,00-

AP 3:2 R 8

2.3/2

5

Carbon Utilization - Bio Products/Algae

Science: Algae bioreactors mix CO_2, wastewater, and sunlight to be further refined into products suitable for consumption like animal feed, supplements, and bio fuel.

Logistics: agricultural partners or proximate industries, pharmaceutical industry connections, as well as fuel subsidiaries or connections as part of oil refinement are all required here and require maintenance. Future investment/renewal improves this infrastructure.

Investment can be renewed at less cost with less AP.

Effect: 1% reduction in GHG emissions/Round.

2

$350,000:
$150,000

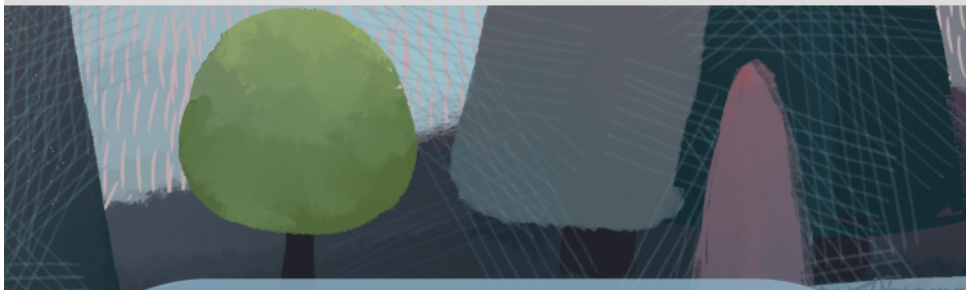
AP 3:2

R 8

1/1

11

Offset: Afforestation



Science: Trees are planted in areas previously not forested. Trees naturally sequester/store carbon.

Logistics: the carbon offset is counted immediately, but there are repeated risks throughout the life of a forest (like forest fires or land disputes). The government insures the investment.

Investment can be renewed at a variable cost and the same AP.

Effect: 1.5% reduction in GHG emissions/Round. For each forest in play a chance roll must be rolled every round.

0 $100,000 AP 2 R 11

1/1

12

Offset: Soil Carbon Storage

Science: Supporting sustainable farming outfits/ practices encourages carbon sequestration in the soil; techniques include no-till farming, crop rotation, and cover cropping

Logistics: organic farming offsets presents a risk of economic failure (due to weather or environmental conditions) that the government insures.

Investment can be renewed at a variable cost and the same AP.

Effect: 1.5% reduction in GHG emissions/Round. For each farm offset in play a chance roll must be rolled every round.

1

$250,000

AP 2

R 10

1/1

19

Increase Production

Grow your business by increasing production. This generates more profit, but increases your emissions.

Logistics: Production increase of 1% = 1% emissions increase/round. Budget also increases by 1%/round.

Effect: +1(%) emissions/round. +1(%) budget per round. For every extra percentage raised in a single play the risk goes up by 2.

2(%)

$350,000 (%)

AP 2(%)

R 8

1/1

20

Decrease Production

Reduce emissions by decreasing production. This also reduces your profit, potentially damaging stakeholder confidence.

Logistics: Reduce emissions by decreasing production. This also reduces your profit, potentially damaging stakeholder confidence.

Effect: –1(%) emissions/round. –1(%) budget per round. For every additional percentage point raised per play, raise risk by 2.

Lorem Ipsum

2(%)

$350,000 (%)

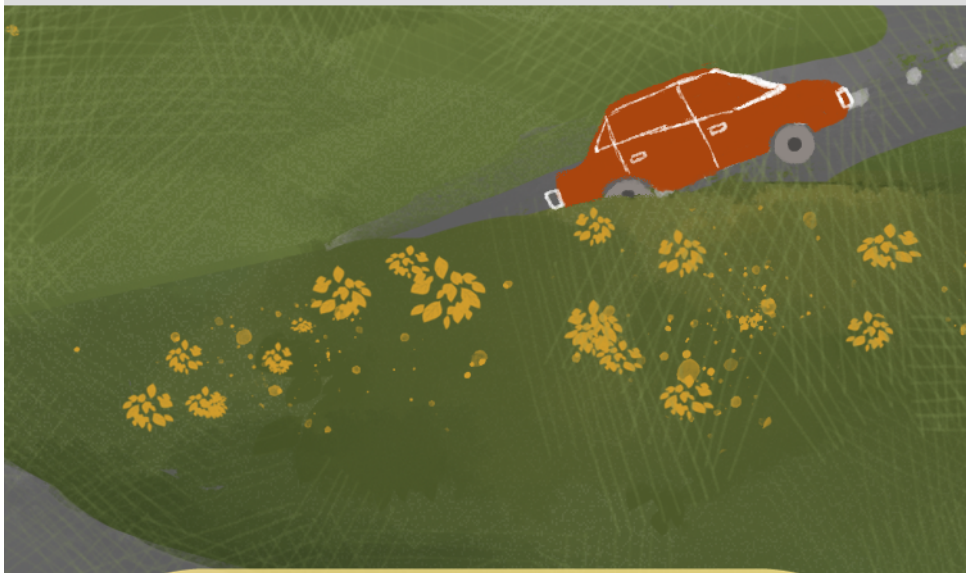
AP 2(%)

R 12

1/1

21

Move Production



Move production to another facility outside of the Province. These emissions are no longer counted.

Logistics: Production move of 1% = 1% emissions decrease/round.

Effect: –1(%) emissions/round. Risk goes up by 3 for every additional percentage moved

2(%)

$100,000 (%)

AP 1(%)

R 7

1/1

22

Buy Emission Credits

Purchase emissions credits from the market to reduce your emissions/round.

Logistics: Price of carbon (CB in $) multiplied by # of tonnes in credit = price of credit

Effect: When sold reduce GHG emissions/round by the credit's amount (in tonnes).

1

-CB (# of tonnes)

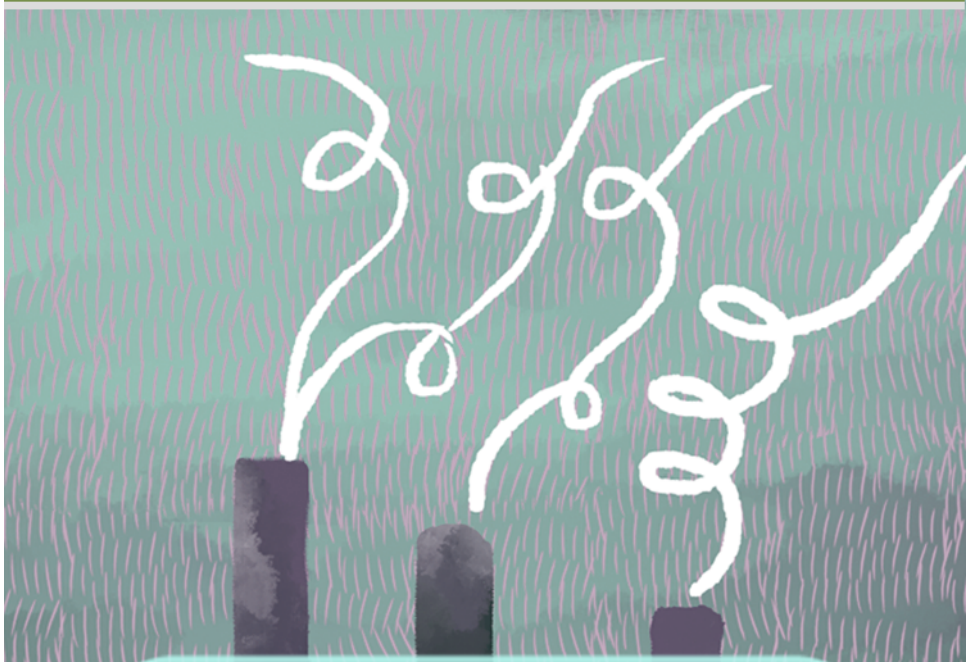
AP 1(#)

R 0

1/1

23

Sell Emission Credits



Sell emission credits to the market. You receive cash, but this will increase your emission reduction target.

Logistics: Price of carbon at time of sale (CB in$) determines sale price ($ X #of tonnes sold)

Effect: When put up for sale add the # of tonnes sold to your emissions/round.

1

+CB(# of tonnes)

AP 1(#)

R 0