**Drawdown Project**

*Problem question: How can global warming be solved at the global, local, and personal level?*

Throughout this project, you will learn about many aspects that contribute to climate change, at a global, local and individual level. Your goal will be to develop an action plan, and help reverse (or “drawdown”) global warming!

**Part 1: Pre-knowledge vs Final Knowledge.** In the chart below fill out the first 2 columns, at each level. Don’t worry too much about getting it right or wrong, just jot down your thoughts on paper. You can think about what causes global warming, what is global warming, and/or what are the effects of global warming.

|  |  |  |
| --- | --- | --- |
| **K (**Know)  What do you KNOW about global warming on each level? | **W** (Want)  What do you WANT to know about global warming? What questions do you have about it? | **L**(Learned)  What have you LEARNED about global warming? (This is for the end of the unit. We will come back to this.) |
| **GLOBAL** level | | |
|  |  |  |
| **SAMMAMISH** level | | |
|  |  |  |
| **INDIVIDUAL** level | | |
|  |  |  |

**Part 2: Selecting a Project Drawdown Solution**

Below are all of the suggested solutions for reversing (or “drawing down”) global warming.

* Read through the list, and identify which of the solutions you have heard of, or can figure out from vocabulary and context.
* Rank what you think are the **top ten** **solutions** (which ones will have the greatest impact on slowing down global warming.)
* After you rank, your teacher will give you a list of solutions that King County is either working on already, or beginning to consider. Highlight each one and write the description.

|  |  |  |  |
| --- | --- | --- | --- |
| **Rank** | **Understand?** | **Solution** | **Description** |
|  |  | **Refrigerant Management** |  |
|  |  | **Wind Turbines (Onshore)** |  |
|  |  | **Reduced Food Waste** |  |
|  |  | **Plant-Rich Diet** |  |
|  |  | **Tropical Forests** |  |
|  |  | **Educating Girls** |  |
|  |  | **Family Planning** |  |
|  |  | **Solar Farms** |  |
|  |  | **Silvopasture** (growing crops and livestock together) |  |
|  |  | **Rooftop Solar** |  |
|  |  | **Regenerative** (restoring) **Agriculture** |  |
|  |  | **Temperate Forests** |  |
|  |  | **Peatlands** |  |
|  |  | **Tropical Staple Trees** |  |
|  |  | **Afforestation** (replanting trees in barren areas) |  |
|  |  | **Conservation Agriculture** |  |
|  |  | **Tree intercropping** |  |
|  |  | **Geothermal** |  |
|  |  | **Managed Grazing** |  |
|  |  | **Nuclear** |  |
|  |  | **Clean Cookstoves** |  |
|  |  | **Wind Turbines (Offshore)** |  |
|  |  | **Farmland Restoration** |  |
|  |  | **Improved Rice Cultivation** |  |
|  |  | **Concentrated Solar** |  |
|  |  | **Electric Vehicles** |  |
|  |  | **District Heating** |  |
|  |  | **Multistrata Agroforestry** |  |
|  |  | **wave and Tidal** |  |
|  |  | **Methane Digesters (Large)** |  |
|  |  | **Insulation** |  |
|  |  | **Ships** |  |
|  |  | **LED Lighting (Household)** |  |
|  |  | **Biomass** |  |
|  |  | **Bamboo** |  |
|  |  | **Alternative Cement** |  |
|  |  | **Mass Transit** |  |
|  |  | **Forest Protection** |  |
|  |  | **Indigenous Peoples' Land Management** |  |
|  |  | **Trucks** |  |
|  |  | **Solar Water** |  |
|  |  | **Heat Pumps** |  |
|  |  | **Airplanes** |  |
|  |  | **LED Lighting (Commercial)** |  |
|  |  | **Building Automation** |  |
|  |  | **Water Saving - Home** |  |
|  |  | **Bioplastic** |  |
|  |  | **In-Stream Hydro** |  |
|  |  | **Cars** |  |
|  |  | **Cogeneration** |  |
|  |  | **Perennial Biomass** |  |
|  |  | **Coastal Wetlands** |  |
|  |  | **System of Rice Intensification** |  |
|  |  | **Walkable Cities** |  |
|  |  | **Household Recycling** |  |
|  |  | **Industrial Recycling** |  |
|  |  | **Smart Thermostats** |  |
|  |  | **Landfill Methane** |  |
|  |  | **Bike Infrastructure** |  |
|  |  | **Composting** |  |
|  |  | **Smart Glass** |  |
|  |  | **Women Smallholders** |  |
|  |  | **Telepresence** |  |
|  |  | **Methane Digesters (Small)** |  |
|  |  | **Nutrient Management** |  |
|  |  | **High-speed Rail** |  |
|  |  | **Farmland Irrigation** |  |
|  |  | **Waste-to-Energy** |  |
|  |  | **Electric Bikes** |  |
|  |  | **Recycled Paper** |  |
|  |  | **Water Distribution** |  |
|  |  | **Biochar** |  |
|  |  | **Green Roofs** |  |
|  |  | **Trains** |  |
|  |  | **Ridesharing** |  |
|  |  | **Micro Wind** |  |
|  |  | **Energy Storage {Distributed)** |  |
|  |  | **Energy Storage (Utilities)** |  |
|  |  | **Grid Flexibility** |  |
|  |  | **Microgrids** |  |
|  |  | **Net Zero Buildings** |  |
|  |  | **Retrofitting** |  |

**Part 2 continued: Select a *Project Drawdown* Solution to study**

Choose one of the King County Drawdown Solutions you highlighted in the list above to research throughout this unit. You may work in partner pairs, or independently.

* Each pair (or each two individuals working separately) will have a different solution
* Ms. Grant will have you draw a number; that number will be your order for selecting a solution. Please have more than one option if you are lower down in the list!

Go to **drawdown.org** to learn more about your solution. Use the information present in class, and on the website to answer the following questions

1. My chosen *Project Drawdown* Solution:
2. What sector is your solution in? Please check ONE

* ELECTRICITY GENERATION
* FOOD
* WOMEN AND GIRLS
* BUILDINGS AND CITIES
* TRANSPORT
* MATERIALS
* LAND USE
* COMING ATTRACTIONS

1. Why did you choose this solution?
2. How will this solution reduce global temperature rise?
3. How much CO₂ is reduced by this solution?
4. How much will it cost to implement this solution?
5. How much money will be saved by implementing this solution?
6. After reading about your solution, use a **different color** to include what you have learned on your KWL chart on page 1.

**Part 3: How a Project Drawdown Solution can make a difference**

Throughout this unit, you have learned about many aspects of the world that impact global climate change. For your final project, you will present the solution you chose to the class

* You will describe the solution, including all information you gathered in Part 2
* You will describe how the solution directly relates to topics we have learned in class

**Research:** Using your notes from class, the information from drawdown.org, and other creditable sources, describe how your solution relates to each of the topics below

**Relationship Between Global Systems and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**(your solution)

How does your solution impact/relate to the **carbon cycle?**

How does your solution impact/relate to the **nitrogen cycle/eutrophication**?

How does your solution impact/relate to the **water cycle/plastics in our water?**

How does your solution impact/relate to the **Greenhouse Gas Effect?**

How does your solution impact/relate to **air quality?**

How does your solution impact/relate to **Global** **Biodiversity**?

**Part 4: Select an EcoChallenge**

1. Visit drawdown.ecochallenge.org. Select the sector that your solution falls under (transport, food, materials, etc.).
2. Read through the challenges. **Select an action/challenge that you can implement**. You do not need to “join.”
   1. Choose a “daily challenge,” as we will be doing this for one week minimum, and you need multiple check-ins within that week
   2. Choose an action that you can ACTUALLY do throughout the week! At the end of the week, your will reflect on your progress, and ability to continue

My chosen EcoChallenge:

My EcoChallenge Description (copied from website):

**Part 3 Continued: Plan to Implement your EcoChallenge:**

List approximately steps that are necessary for your success at implementing your EcoChallenge. In these steps, include any support (help, cooperation, ect.) you may need from your family, teacher, and/or community, in order to be successful.

**Part 3 Continued: EcoChallenge Journal**

Throughout the week, you will reflect on the progress of your EcoChallenge.

* Are you implementing the challenge?
* What are the challenges you face in implementing this challenge?
* Do you feel that you are making a difference towards combating climate change crisis?

You will also check in with one person at your group about their progress. Remember, **you are encouraging them: not grading them!** Be supportive and positive about their progress, **without judgment.**

* Are they implementing it?
* What is one takeaway from their progress so far?

**Check-in #1: Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |
| --- | --- |
| Did I do my EcoChallenge today? | Why or why not? |
| What (if anything) was **challenging** about implementing this EcoChllange? | What (if anything) was **simple** about implementing this EcoChallange? |
| Other thoughts about today’s progress: | Feelings about today’s progress: |

My peer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| Implementation so far? | Take away from progress so far: |

**Check-in #2: Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |
| --- | --- |
| Did I do my EcoChallenge today? | Why or why not? |
| What (if anything) was **challenging** about implementing this EcoChllange? | What (if anything) was **simple** about implementing this EcoChallange? |
| Other thoughts about today’s progress: | Feelings about today’s progress: |

My peer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| Implementation so far? | Take away from progress so far: |

**Check-in #3: Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |  |
| --- | --- |
| Did I do my EcoChallenge today? | Why or why not? |
| What (if anything) was **challenging** about implementing this EcoChllange? | What (if anything) was **simple** about implementing this EcoChallange? |
| Other thoughts about today’s progress: | Feelings about today’s progress: |

My peer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| Implementation so far? | Take away from progress so far: |

**Final Project: Take Action**

You have been researching this solution for a week, and understand the importance of implementing it on a global, local and personal level. You will **design an action plan** to prompt citizens, peers or local governments to take up this solution. You will then present your action plan, and your understanding of this solution, to the class on a **PPT slide and through a 5 minute presentation**

Fill in the answers to the following prompts. You must include this information either in your PowerPoint to the class, or in your action plan. *Use this as a check sheet as you are completing your project!*

* **Solution Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
* **Solution General Information**
  + Solution Rank #: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Solution Sector: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + $$ Cost: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + $$ Savings: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Amount CO2 Reduced: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Solution Impact Summary** 
  + Global Impact of Solution on the water cycle:
  + Global Impact of Solution on the Carbon cycle:
  + Global Impact of Solution on Biodiversity:
* **Picture (use Project Drawdown book as a reference)**
* **Solution Implementation on a Local Level**
  + Choose a city to implement (ex, Sammamish, Issaquah, Seattle) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Describe how is it implemented now.
  + Describe what could be done to better implement it
* **Solution at a personal Level** 
  + What EcoChallenge did you select?
  + Overall, how well did you implement it?
  + What were some successes in implementing it?
  + What were some struggles, and how can you overcome them in the future?

**Take Action Graphic Organizer**

1. What is your solution?
2. What **level** do you want to take action on? Select one

* **State**
* **City (Select one: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)**
* **School**
* **Family**
* **Friends/Peers**

1. What **product** do you plan to use to implement your action plan?

* a letter/email to a city council member
* letter/email to a state senator/representative
* social media campaign
* posters/flyers around the school
* letter/email to a related government agency
* Other :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Why is that product **the best way to access your audience?**

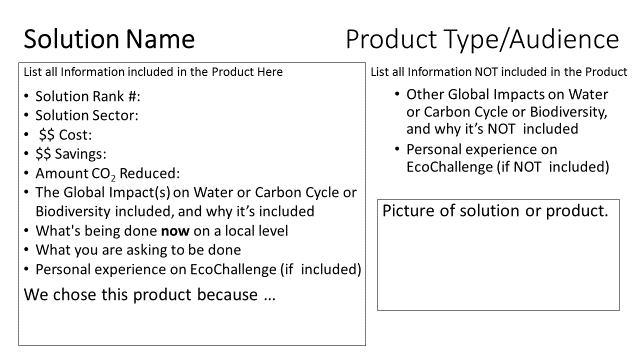
In your product, you must include **all the solution general information,** and **all the Implementation on a local level**. You must also include **minimum 1 piece from the Solution Impact Summery.**

1. Which piece of the Solution Impact Summary will you include, and why?

You may also choose to include your own personal experience in the EcoChallenge, if you think it is helpful.

1. Will you include your Eco Challenge experience? Why or why not?

**Slide Notes:** You get one slide to present all of your research. It should be formatted similar to what you see below, and include all information shown:



**Presentation Notes:** You will have 5 minutes to present your PRODUCT. In that presentation, you will tell the class:

1. What solution you were trying to make happen
2. What audience you were trying to reach
3. What product you made, and why you chose to make that product
4. What information you included in your product, and why.