*EECCOA **Waste** Challenge*

Project Builder Workbook

January 2021

About the EECCOA Challenge: This challenge provides students the opportunity to research, design and implement sustainability project proposals to reduce their homes's utilities costs as well as their environmental footprint. This document was created to help students or teams develop and potentially implement projects focusing on reducing the waste production of their homes. We hope you are up for the challenge!

The MERITO Foundation, sponsors, and partners will award cash or in kind prizes to the students authors of the best 3 projects for each tier (energy efficiency, water conservation, waste reduction, or outreach regarding ocean acidification) in the Spring of 2021, and might include funds, gifts, or additional support to help with the implementation costs of the most cost-effective project proposals.

This project builder workbook is for the *WASTE REDUCTION tier: To design and propose a tangible method to reduce production of consumptive waste of your home.*

The deadline to present your project proposal is April 9, 2021
EECCOA Challenge Award Ceremony is: April 30, 2021
Below are the challenge guidelines to help you develop your project proposals in **6 STEPS** and worksheets to help you outline your project idea and methods. Additional, more detailed worksheets will be made available by you teacher. The more your project proposal becomes an executed project, the more points you will receive, and you will have a better chance to win.

You will find additional links to information and resources in the last page of this document.

STEP 1. Project and Student Name (5 Points): For the EECCOA Virtual Challenge 2021, you will be working on project proposals to reduce waste production in your home, so you will be allowed to submit project proposals as an individual. Fill in the box below to start your project proposal.

Before you get started, check out this introductory video on the EECCOA Challenge and the resources available to you online:
https://www.youtube.com/watch?v=Lh2e4T4LX2M&list=PLy8PMsb7nt-tvQbUjp2iMfuMu8cSha2KS

Student Name:	
Project proposal name:	
Tier (Project Goal)	**To reduce the waste production of my home**
School name:	
Grade:	
Teacher's name	

STEP 2. Conduct a WASTE assessment (also known as waste audit) of your home *(20 possible points).* *To conduct the audit follow the guidelines and steps below and on the EECCOA Activity Guide's Waste Audit Worksheet Ver.Jan2021' (provided by your teacher). Complete the Waste Audit worksheet and then summarize in the table below. You should also make graphs or pie charts of your data to visualize it and to include in your proposal. The aim of the waste audit is to measure the weight and types of waste produced in your home in one day, one month and one year. This is an integral part of a proposal since it supports and justifies the objectives and measures you will propose for your project. The data collected will also serve as a baseline to help you measure the effectiveness of your project after the solutions have been implemented. You will need to carry out another waste audit after the measures are in place in order to evaluate (Step 5) if the waste reduction levels set in your objectives (Step 3) have been achieved.*

If you need help organizing and visualizing your data, watch this short tutorial on the topic (*move ahead to 0:58 second to skip the intro*):
https://www.youtube.com/watch?v=2DTt5bhvnTw&list=PLy8PMsb7nt-tvQbUjp2iMfuMu8cSha2KS&index=5

Materials Needed for a Waste Audit

- Trash from your home for a full day or week
- Recycle bins and trash bags
- Spring or digital scale
- Ground Sheet such as a tarp or plastic sheet where you can spread out the waste
- Rubber gloves

Procedure for a home's waste audit:

1. Collect the trash and recycling produced in your home in one day or one week. Just make sure you know what time period the trash collected represents (1,2,3 days), so you can calculate the amount of trash produced by your family for different time periods such as a whole month or a year.
2. Complete the *'Waste Audit Worksheet'* and enter the data in the Google table table provided. The worksheet and spreadsheet will be provided by your teacher. Make sure you watch the video above on how to clean up your data, visualize it, and interpret it.

   You can watch this video to learn how to make simple graphs in Google Sheets:
   https://www.youtube.com/watch?v=HZj2AaS3yBE

3. Analyze the results and report the findings to the members of your household.
4. Formulate an action plan and be sure to monitor and evaluate along the way (Steps 4 and 5).
5. Report this information and present graphs on your final EECCOA Challenge proposal. You can also use this information to support requests for awards, and to communicate effectively with your community about the importance of waste reduction (Step 6).

Note: Proposals that show graphs of the data collected with averages, maximum and minimum waste production receive extra points.

Summarize the results from your Home Waste Assessment/Audit Worksheet in the table below:

Material	Total (lbs) per day	Total (lbs) per week	Total (lbs) per year (365 days or 52 weeks)	% of each Material
White paper				
Contaminated trash				
Cardboard				
Plastics				
Metal				
Glass				
Food Waste				
Other (i.e. Styrofoam)				
TOTAL				**100 %**

NOTES:

STEP 3. Choose your project's SMART objective(s) 'THE WHAT': *(20 possible points)*

Now that you have an assessment of the waste produced in your home and understand the present condition, ask yourself, **What do you want to modify? 'How much waste can we reduce or prevent from going to the landfills? By when? Then ask yourself, is it doable? The answers to these questions in one or a few sentences are your objectives!** Your project proposal can have one or multiple objectives and must be specific and realistic.

This tutorial walks you through writing a SMART objective (*move ahead to 0:58 second to skip the intro*): https://www.youtube.com/watch?v=8yS3yUM4or4&list=PLy8PMsb7nt-tvQbUjp2iMfuMu8cSha2KS&index=2

Examples of SMART objectives:

a. To reduce the plastic waste production in my home by X plastic bottles per week by installing a water filter in the kitchen and giving points for prizes to household members for using reusable water bottles by month X, 2021
b. To reduce organic waste from kitchen scraps by X% by compositing 100% of vegetable (non-animal) waste using a home vermicomposting system obtained through the City of Ventura's discount program by month X, 2021
c. To reduce by X% the waste production of my home by implementing a recycling system at home to ensure X, Y, & X types of recyclable waste is rinsed and recycled by month X, 2021.

Write below your objectives to be specific on what you want to change, how much, how and by when. These are called SMART Objectives!

SMART Objectives:	Are sentences that say what you want to modify. They are **S**pecific (i.e. how much plastic, solid waste or food waste). They are also **M**easurable (i.e it says how much waste is produced and propose to reduce and of what kind? How many pounds per day, week, month or year); They are **A**ttainable; Is it doable? Can it be done?; They are **R**elevant to the goal of reducing **waste**? And are **T**ime bound. That is, if the proposal is to be implemented, by when?
#1	
#2	

Your project proposal can have one or multiple SMART objectives.

STEP 4. Design your project's METHODS. This is 'THE HOW' *(25 possible points)*

The project methods is **how** you or your team proposes to reach your project goal to reduce the waste production of your home assessed in STEP 2, to make the specific change of what, how much, and by when as described in your objectives in STEP 3. Now think and describe HOW (step-by-step) you propose to make the change(s) happen. Provide as much detail as possible about your recommended approach, methods, materials, and costs. Including a budget is very important!

Waste reduction project example:
Sample Goal*: To reduce the school's waste production*
Sample Objective: *To reduce the plastic waste production in my home by X plastic bottles per week by installing a water filter in the kitchen and giving points for prizes to household members for using reusable water bottles*

Sample methods:

- Calculate how many plastic water bottles are disposed of in your home per day, per week, and per year from the result of the waste audit. Calculate what percentage of the total waste are plastic bottles (in weight and/or number), and how many plastic bottles are used by all members of your household every year.
- Find out if reducing the volume of trash/landfill and recycling in your home will save your household money in waste collection fees (ej. from Standard Service to Minimum Service from E.J. Harrison), how

many pounds or or gallons would you have to reduce to make this change. Find out if you can make money by selling recyclables through the recycle buy-back program in your city.

- Calculate how many plastic water bottles would not be used and bought if a filter was available and how much money this would save. Then, find out what different filters cost and how long it will last. Subtract the cost of filters from the amount that would have been spent by buying plastic water bottles. Decide what is the most cost-effective filter to buy, the filter that saves the most money..
- Calculate how much money would be saved every month and every year.
- If some plastic water bottles and other plastic containers will still be used by family members, find out how much you can make by selling them
- Decide what incentives you will give family members for using reusable bottles.
- Keep family members updated by using family chats or social media, present all the information collected and new information, make it a competition, etc.

Be as specific as possible in your methods. You may want to include materials and supplies needed, estimated costs of materials, estimated costs of installation; where to buy materials...

Note: The above is an example, not a real proposal for energy savings at home. Your proposal should be more specific and include more details.

For help and more examples for this step, go to (*move ahead to 0:58 second to skip the intro*): https://www.youtube.com/watch?v=05lUoYpcoA0&list=PLy8PMsb7nt-tvQbUjp2iMfuMu8cSha2KS&index=3

In the table below, write the methods you propose for your project designed and implemented. Be as detailed as possible.

Step	**Cost ($) of change**	**Reduction in pounds, gallons or quantity**
Example: Switch from buying bottle water to refilling a reusable bottle	$32 for a faucet water filter (changed every 3 months) $10 for a reusable bottle	1 plastic bottle per family member =4*365 days = 1460 plastic bottle/year*$0.60 = $876-($32 filter*4/year)-$40 bottles = **$708 in savings**

STEP 5. Figure out how to measure your project's effectiveness. This is called project EVALUATION *(15 possible points)*

This is where you describe how to determine the success or impact of your project proposal after it is carried out. Imagine it happens, that all the measures you propose are implemented. How would you measure the changes that result from the actions you proposed in the methods section (STEP 4)?

In the first part of this video, you can learn more about ways you can evaluate the success of your methods (*move ahead to 0:58 second to skip the intro*):
https://www.youtube.com/watch?v=5RO5xcvfWk8&list=PLy8PMsb7nt-tvQbUjp2iMfuMu8cSha2KS&index=4

Example:

	Write here how would you be able to see or measure that X less plastic bottles ended up in the trash or recycling after implementing your proposed ideas
Examples of evaluation measures	-We will know our proposal works by seeing a reduction of X of plastic water bottles during a waste assessments conducted one month after the filter is installed -Another measure of success would be less money used to buy disposable water bottles for the members of my family
Write your evaluation measures here	

You can have more than one evaluation measure. Having more than one measurement of your results is more reliable and convincing which adds value to your proposal.

STEP 6. Outline a COMMUNICATION plan for your proposal to let others know of your project, actions, and/or to persuade your audience, community, or household members to change certain behaviors *(15 possible points maximum).*

Examples:

- Present your proposal at a meeting of your family (5 points)
- Create a website, newsletter article, Facebook account, or other social media to share your ideas and your project, the impacts of plastics on wildlife, or be more adventurous and cite information authored by credible sources on impacts of plastics on public health. (15-10 points)
- Indicate in your proposal that you will report the average volume of plastic bottles reduced and money savings to your family members or your audience/community (5-10 points)

- Come up with a game to keep track of good energy efficiency habits by the member of your household (5 points).

Check out this video tutorial for more details and examples (this section start at minute 2:00):
https://www.youtube.com/watch?v=5RO5xcvfWk8&list=PLy8PMsb7nt-tvQbUjp2iMfuMu8cSha2KS&index=4

	Write here how would you communicate to a community (school district board, school campus, or a whole town) about the success of your projects (when implemented)
Method #1:	
Method #2:	

You do not need to reinvent the wheel! Below are on-line resources with examples or for inspiration.

Additional Resources

Reducing Waste: What Can You Do
https://www.epa.gov/recycle/reducing-waste-what-you-can-do

9 Simple Ways To Reduce Waste in your Home from HuffPost
https://www.huffpost.com/entry/reduce-home-waste_n_57912d0be4b0fc06ec5c4b56

Waste Prevention at Home from CalRecycle
https://www.calrecycle.ca.gov/reducewaste/home

Check our other EECCOA students' projects winners of prizes at
https://www.youtube.com/user/MERITOAcademy/playlists

PROJECT PROPOSAL FORMAT: The project proposals should be submitted by using PowerPoint, Sway, or Google Drive to create a presentation that includes all the steps from this project builder as well as images to enhance your proposal. Submit the ppt or pdf to your teacher on the date provided by her/him/them. Students are encouraged to produce their own videos explaining their proposals. This is an opportunity to explain to judges what you are proposing and use visuals to help them understand. You can get up to 5 extra points for recording your own video. TIP: embed the slides into the video.

A successful project proposal needs to include all 6 steps above described. This how much each step is worth:

1. Project summary with name of team, project title, authors (students names), school name, and teacher's name: 5 points
2. Assessment/audit results: 20 points
3. Objective(s): 20 points
4. Methods (including any costs and budgets): 25 points
5. Evaluation method(s): 15 points
6. Communication plan: 15 points

For guidance on the use of the energy audit materials, please contact info@meritofoundation.org