

EMS – Environmental
Management System
Training Manual

By FSG



The purpose of this toolkit is to provide a learning opportunity to implement an environmental management system at any school, college or business to measure, manage and reduce energy, waste, water & CO₂ and therefore reducing the building's impact on the environment.

Schools & businesses can adopt ALL of the initiatives suggested on this manual by completing the [workbooks provided](#), or they can chose to adopt some initiatives and not others if they are not applicable to their building or organization.

Within this manual you will find clickable links to:

- Download workbooks that will assist you on the implementation of the actions outlined
- Download posters that you can print and place around the building to enhance students & staff awareness of your green programme
- Other clickable links to further learning resources

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Introduction

To achieve net-zero economies, we must all have the ability to measure, manage and reduce our use of natural resources. Fifty Shades Greener exists to empower each one of us to take responsibility for our own carbon emissions. We strive for this through high quality; action-based learning that imparts the knowledge, understanding and skill set to successfully reduce individual, organisational, national and global carbon emissions.

The earlier we engage people in environmental education, the more embedded it will become into their daily lives as adults.

This training manual, has been designed to assist schools, colleges and businesses in the implementation of an environmental management system within their own building. The ambition is to reduce their carbon emissions and kick start their journey to carbon neutrality.

This project requires the involvement and collaboration of an appointed Green Leader or Sustainability officer, as well as staff and students, to develop a culture of sustainability for the environment, which involves the entire organisation. Therefore allowing us to create a genuine carbon conscious society that is essential for real Climate Action.



This training manual will guide you through the process of implementing the environmental management system that is required as a starting point to Carbon Neutrality. Sustainability is not a race to the end, it is a process of continued improvement and so we expect all organisations to move forward at their own pace, and in a way that makes sense to all participants.

Organisations need to create strong green teams, and then choose to tackle one area at a time if their Green Team comprises of only a few members. Alternatively, they can implement the entire programme at once for larger teams.



A Culture of Sustainability

Sustainability means many different things to various people. It is a term that is used quite often to describe an array of situations and so can become confusing due to the complexity of its meaning.

This manual, concentrates on **environmental sustainability**, which simply defined, means to reduce our environmental impact, so that future generations are not affected by the actions of today.

It is no secret that Climate Change is one of the largest threats to humanity, and that our current Green House Gas Emissions are unsustainable as they are. Governments around the world are in a race to reduce emissions to NetZero by 2050.

What remains a large threat against the fight for Climate Justice is society continuing to think that Climate Change is someone else's problem. Many feel helpless and that there is nothing they can do about our governments allowing oil or gas extractions for example. Eco anxiety is a very real concept affecting a large proportion of society, who feel helpless in terms of reducing our carbon emissions or fixing our global waste problem.

I think we can all do something, however small, however insignificant it might seem at first.

Every single day in our daily lives, we make choices that might affect the planet.

This could be purchasing single use plastics that damage the planet.

Leaving equipment on unnecessarily affects the planet.

Having taps running and not conserving water, affects the planet.

It comes down to personal responsibility. The only person that can successfully change your behaviour is yourself. We only have ourselves to answer for.

This is the mind-set that is needed going forward. You have the power to make changes and decisions that will have a positive effect on our planet and those around you.

You also have the power to continue learning after this programme is completed. We all need to keep thinking of ways to reduce our impact on the environment, at work, at home and during our educational journey.

What you do with that power is up to you.

In order to implement a Green programme, your full commitment is necessary, the green programme is not a side project, and green actions must become embedded into our daily routine, so that it becomes the ethos of the organisation.

Positive reinforcement to your team and/or students is paramount and at all levels, it is important to recognise and champion those that rise to the challenge with the implementation of the green programme.

There is nothing negative that can come from embedding green actions into our daily operations, only benefits, a positive mindset is required at all times so that the programme is not viewed as a chore.

Please do not let the team or yourself become bogged down by negativity from other colleagues or students and stakeholders. There will always be people that refuse to change. The best advice I can give you, is listen to them. Do not toss them to the side as negative people but actually try to understand why they do not want to adopt these green initiatives.

Possible issues for them could be a lack of time - are they too busy or overworked to complete the actions or engage with the programme?

It could also be fear of change - they could be afraid of changes to their routine or habits and may need further guidance and explanation on the positives of the programme.

Trying to understand why people behave the way they do, will give you an opportunity to change their behavior in a positive way.

Humans affect the planet in many different ways, but three things we can concentrate on as a starting point are: **The energy and water we use and the waste we produce.** Reducing those three resources, will reduce your environmental impact.

It is easy to forget that natural resources are LIMITED. Water for example; it comes out of our taps anytime we want it in many countries. It is not the same in other parts of the world. It is easy to forget about the waste we produce because we put it in the bin and it disappears on to waste collection truck. However, every bit of waste we produce, down to the smallest piece, may remain in the environment for hundreds of years, well after we are gone.

Our current systems are broken, there is no question about it, and yes, we need governments and world leaders to take action, but every individual on the planet also has to take action within their own lives, at work and at home, and so it all comes down to awareness to effect behavioral change.

A sustainable mindset starts by creating that awareness within ourselves.

The next time you turn on the tap or have a shower, remind yourself you are using water, a precious natural resource, that is all, this is the first step.

The next time you put a piece of waste in the bin, remind yourself there are nearly 8 Billion people in the planet doing the exact same thing today and that waste has to end up somewhere.

The next time you turn a light on, remember fossil fuels have to burn to provide you with the privilege of electricity and that other people around the world, may not even have that privilege.

This is the first step towards reducing our environmental impact, awareness of the impact of our actions.

This does not mean we should suffer from thirst or live in the dark. It simply means that if every human on earth made a collective effort to only use the energy and water they need to operate daily and reduce the amount of waste they generate in a conscious way, we would reduce the strain we are putting on the planet.

That is the intention with which this manual has been written, to give you a framework to be able to measure, manage and reduce your environmental impact from the built environment, in the hope you will feel empowered to make changes that will support the development of a carbon conscious society, building a greener future for **Generation Tomorrow.**



Forming a Green Team

Many hands make light work! Every project requires a leader and a strong team behind it, environmental sustainability is no different. A Green Leader has to be appointed to oversee the overall implementation of the programme, with a strong team behind them.

So what are the important characteristics of a Green Leader?

- They must have a keen interest in sustainability, be motivated and a positive attitude is one of the most important factors for a successful green leader.
- Ideally, this person is good at working with numbers and utility bills, we will show you how to analyse bills on this programme, but a strong affinity with numbers would be a plus.
- A good delegator that is able to look at the overall goals of the project and assign tasks and responsibilities to team members.

Once the best candidate for the green leader is chosen, you will also need to form a team, which can be made out of employees, teachers, and/or students. The Green Team will have 3 sub teams:



Energy



Water



Waste

Each sub team will have a leader and as many other members as the organisation wants

Once your team members are chosen, they will all be allocated different responsibilities to complete the implementation of the programme. All members should meet regularly and conduct green meetings to keep everyone informed of the progress of the green project.

[Download Poster](#)

Green Meetings

Meetings are a great way to communicate with your team. However, we all have been on those endless meetings where discussions on one item go on forever between two people, causing the rest of the team to become disinterested and disengaged.

Team members can view meetings as a boring chore that takes them away from their “real” job and time.

To start your green journey in a positive way, there are some things you can plan for to make your green meetings more enjoyable:

- Always write an agenda prior to the meeting, what items will be discussed, who is expected to update the group on the different areas of implementation of the programme, what time will the meeting start and most importantly, what time will it end. Your team need to know how much of their time will be taken by the meeting, so they can plan. You can circulate the agenda well ahead of time and ask team members if they want to add any items to it.
- Once at the meeting, make sure you start on time, if not everyone is there on time, start regardless.
- Assign someone at the start of the meeting to take notes, it is important that the notes reflect all items discussed. If you are assigning new green actions to implement during the coming weeks, write down on the notes who is responsible to complete each action and by when.
- Stick to the agenda, if discussions between two people are taking too long, ask them to stay back at the end of the meeting to make their decision, but move on with the rest of the agenda so that other members of the team can finish on item.
- After the meeting, sign off on the notes taken, and send the final meeting notes to everyone, which should be the basis of your Green Action Plan to be implemented over the coming weeks.

SAMPLE AGENDA GREEN MEETING

| Date | | Start Time | | End Time | |
|----------|--|------------|--|----------|--|
| Location | | | | | |

We welcome any additional items for the agenda. To add an item, please email XX by (Date)

1. Welcome
2. Confirmation of outcomes of previous meeting. Read previous meeting minutes and cross check all actions have been implemented, if they have not, why not? Set new dates for completion.
3. Green Leader update: Benchmark report on utilities, how are we doing compared to previous month.
4. Updates from teams and Q&A as relevant. Water, waste and energy.
5. Green Leader: What are we doing in the next X weeks? Assign green actions to different teams.
6. AOB

MINUTES OF MEETING TEMPLATE

| | | | | | |
|-------------------|--|-------------------|--|-----------------|--|
| Date | | Start Time | | End Time | |
| Attendees: | | | | | |
| Apologies: | | | | | |

| Item | By Whom | By When |
|--|---------|---------|
| Review previous meeting minutes, amendments or additions; outline any actions that need to be completed in the next X weeks. Action 1 Action 2 Action 3 | | |
| Benchmark report explained by Green Manager Water consumption comparison Waste production comparison Energy consumption comparison | | |
| Water team update | | |
| Water team update | | |
| Water team update | | |
| Green Manager, what needs to happen in the next X weeks until the next meeting Action 1 Action 2 Action 3 | | |
| Any Other business | | |
| Date, time and location of next meeting | | |

The FSG Method – Environmental Management

The FSG Method is the foundation of all FSG programmes, and the easiest way to manage and reduce your building's carbon emissions. It all starts here and it is a necessary step in the process of running a greener operation.

The FSG Method has 4 phases: Measurement, Observation, Implementation and Monitoring & Reporting. Let's go through them so we can understand why they are important.

The Measurement phase: It simply means taking stock of where we are right now in terms of our energy, waste and water utilities, as they all have an environmental impact. It is the very first step on any green journey, and it will help us establish our building's Green Key Performance Indicators. These are the figures we will use in the future to compare and ensure they are indeed reducing overtime.

The Observation phase: Once we have a clear measurement of our current utilities, we need to start observing how we actually use those utilities.

For large premises, it is important that we observe each individual department or area, where and when we use energy and water, and where and what waste are we producing.

Implementation Phase: With the combined results of the measuring and observation phases, we come to the implementation phase which simply means writing a Green Action Plan of activities we commit to performing over the coming weeks and months.

Green Action Plans will vary from building to building, as we all work in different operational environments.

Monitoring & Reporting Phase: The last phase is obvious; we need to continue monitoring our Green KPIs to ensure our green actions are working and to be able to report to the green team and all stakeholders of the organisation.

The FSG method might sound complicated to begin with, but this programme will break down some activities you can complete to implement each phase of the method to your building utilities.



STEP 1: Measurement Phase

Why?

Only when you measure something, can you manage it.

The measurement phase will simply allow you to set the starting point of the green programme, it is simply your current impact on the environment, or the impact of your building on the environment.

Simply put this is your building's current carbon emissions. To calculate carbon emissions, first we need to know our numbers, our Green Key performance indicators which are:

- The energy we use per person
- The waste we produce per person
- And the water we use per person

Calculating and monitoring your Green Key performance indicators will in the future, be one of the most important activities you will need to perform as a Green Leader.

Data is very powerful. Without this type of data, how would you ever be able to say with certainty that you have reduced your building's impact on the environment?

Data will allow you to demonstrate if your environmental programme is working or not.

And finally, data will allow you to spread your green message to all stake holders, work colleagues and everyone around you.



Keeping Records – Your Green Folder

You need to create a physical or digital **Green Folder** and always keep it at your desk or PC.

I say physical or digital because it depends on how your organisation receives utility bills, you might get them in the post (physical folder), or if you receive them by email or can download them from the organisation's utility company accounts, you can then keep digital records (create a folder on your PC and download them there).

You need to find all your electricity, gas, oil, waste and water bills for last year. If you are doing this programme in 2023, we would recommend you use the 2022 bills as your starting point.

Your office team or accounts department should have copies of these bills/invoices; they are your first port of call.

Place all invoices in the folder, by type order and date order, with the newest bill at the front.

You should end up with a folder that has a section for 12 monthly electricity bills with the newest at the front and the oldest at the back, same for oil, same for gas, waste, and water bills.

Mark this folder on the front and side as your 2022 Green Folder, or whichever year the bills are for and always keep it at your desk. Then get a second folder, and start placing bills for this current year, depending what month you are starting, you will have many or a few bills. Mark this as your current year Green Folder and set up a system with your administration team so that when new bills arrive, a copy is taken for their records and a copy is given to you and placed in your Green Folder.

That is it! The first action of your Green Journey has been completed.

The FSG Data Portal

The data portal is going to become your reference point to refer back to in the future. It is going to help you:

- Establish your baselines, the starting points of your Green journey,
- How much energy your building uses per person per day
- How much waste your building produces per person per day and
- How much water your building uses per person per day
- It will also help you calculate your building's direct carbon emissions.

This is not an easy challenge, however if you do not measure your consumption, how can you ever know if you are doing better or worse than in previous months or years? How could you say with certainty that your energy consumption is decreasing for example?

The portal is easy to use, you just need to commit to spending half an hour every month to keep them running smoothly as soon as you receive your utility bills or read your meters.

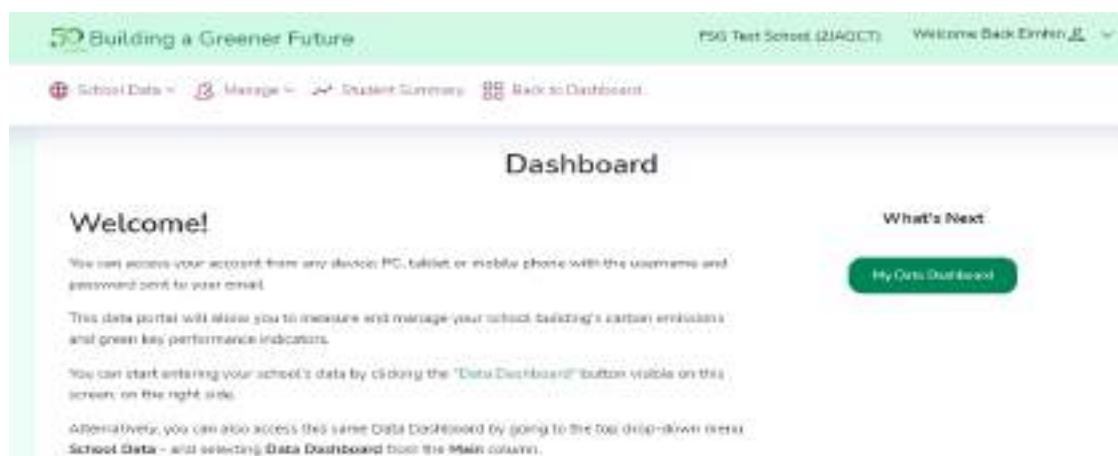
Logging on to the FSG portal

You can log on to this portal from any device: PC, laptop, tablet and mobile phone.

Once you are ready to start using the portal, send us an email on info@fiftyshadesgreener.ie and we will create your personal account.

Navigating the Dashboard

The first page you are brought to explains what you can do with your access.



There is a brief welcome message with short instructions on the portal and how to use it as well as a short 5 minute video also explaining how to use the portal at the end of the 'Welcome' page.

My Carbon Data Dashboard

“My Carbon Data Dashboard” can be accessed the following ways:

- By selecting the green ‘My Data Dashboard’ button.



- Or under the dropdown option “School Data”, select “- Data Dashboard” from the ‘Main’ column.



Establishing Green KPIs – Your baseline or starting point

To begin entering data for your school's building – go to your ‘My Data Dashboard’ page and begin with your ‘People Data’.

For the People Data it is important to note the following:

You should only enter “People Data” figures in the months that you are entering utility data for. Also, you will not be able to enter utility data in months you do not have people figures entered for.

School Data - Manage - Student Summary - Back to Dashboard

My Carbon Data Dashboard

Year: 2022 Total CO₂ Kg per Person / Day: 0.06

Number of People Days: 0

Energy Data People Data

| Type | Units | Total Consumption | Total kWh | kWh per Person / Day | CO ₂ Kg | Cost (£) |
|-------------|-------|-------------------|-----------|----------------------|--------------------|----------|
| Electricity | kWh | 0.00 | 0.00 | 0 | 0.00 | 0.00 |
| Oil | Litre | 0.00 | 0.00 | 0 | 0.00 | 0.00 |
| Gas | kWh | 0.00 | 0.00 | 0 | 0.00 | 0.00 |

- Select the year you wish to enter data and
- Enter the number of people who have been at the building each month and
- The total number of days the building was in use each month.

This information should be available to you from your accounts department/office administrator who should have the student attendance, teacher attendance and/or staff attendance for each day.

Year: 2022

IMPORTANT INFORMATION +

| Month | Days | Students | Teachers | Staff | Total |
|----------|--------------------------------|----------------------|----------------------|----------------------|-------|
| January | <input type="text" value="0"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| February | <input type="text" value="0"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| March | <input type="text" value="0"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| April | <input type="text" value="0"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| May | <input type="text" value="0"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |
| June | <input type="text" value="0"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | |

If you click the + **button** for the “**Important Information**” section, you can read how to use this page or watch the video which explains how to enter the data on this page also.

People Data

Year: 2022

IMPORTANT INFORMATION +

The reason we need to record the number of people at the building, is because we are going to measure our utilities not as a total, but per person.

Why do we do this?

The more people within a building in a given period, the more energy, waste and water that will be used. For example, if you have 300 people at the building in 1 month, and the next month you have 600 people, your water consumption for the month with 600 people will be higher than the previous month. So, to be able to properly compare your water use, we need to calculate the amount of cubic metres per person, so you are comparing like for like.

Don't forget to click the **“Save & Exit”** or **“Save”** button before you leave the page or the data you have entered will be lost.



Entering Environmental Data

Each utility field on the portal has the following has an **“Important Information”** dropdown option.

This is a dropdown section at the top of each page. There is text and sometimes video explanations here to help you enter or check the data of the utility page you are on. Click the dropdown arrow to view this information. Example:



On the main ‘My Carbon Data Dashboard’ page, click the green button of the utility page you wish to add or edit data on. For example, if you want to enter electricity data, click on the **“Electricity”** green button on the left side of the page.



Enter or edit data in the fields. **Remember you can only enter data in the utility fields for the month's you have People Data entered for.** If the fields are marked out in grey this means that you need to return to the “People Data” page and enter in the people figures for that month for the school. You can then return to their utility page and enter utility data in the fields.

and don't forget to click "**Save & Exit**" once you have completed your changes.



Follow the same instructions and select each utility page you wish to enter your data for. Each utility page lies under the dropdown "**School Data**".

There are "**Energy Data**", "**Waste Data**" and "**Water Data**" options.

You only need to enter the data for the utility you use at your building.

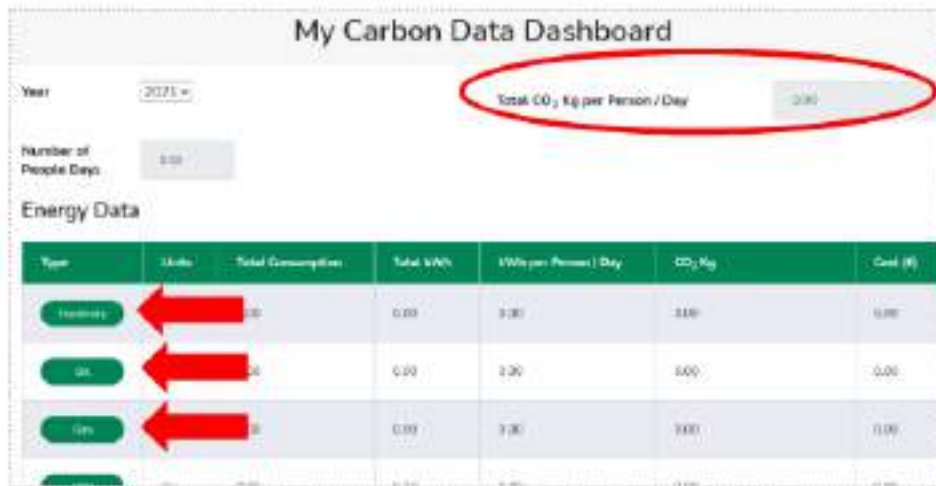
For example, if you use gas, only enter data on the "**Gas**" page. **(Red Arrow)**

If you do not use oil, you do not need to enter data on the "**Oil**" page.



Once you have entered all your data you can see your data totals on "**My Carbon Data Dashboard**".

As already highlighted, you can add and edit your building's data on "**My Carbon Data Dashboard**" by clicking on any of the green buttons of the utility page you wish to view/edit **(red arrows)**. Also, on this page you will see your "**Total Co2 Kg Person/Day**" figure **(red circle)**. This is the figure you will hope to see reduce over time.



So that's it! That's how the FSG Data Portal works. It might look slightly intimidating to start with, but it is really easy to use, the hardest part is to learn how to extract the information you need from your bills or meter readings so let's look into that.

Set Your Electricity Starting Point

Now that you have organised your bills, and learned how to use the FSG Data Portal, lets calculate your electricity use starting point or KPI.

The goal is to be able to calculate how many kWh of electricity does the building use every month.

You might be able to obtain this figure in two ways:

- If you receive monthly electricity bills, the kWh or units might appear on the bill
- If you do not receive electricity bills, there might be an electricity meter installed in the building.

Once you have found out the kWh usage of electricity with your bills, we can enter the monthly figures on the FSG Data Portal. This is the start of your Energy Journey and the point you will use in the future to compare against, so you can determine if your actions are indeed decreasing your electricity usage.

Terminology

Kilowatt is a basic unit of electricity.

kWh is the number of Kilowatts used per hour.

Unit Day are the kWh used during daytime

Unit Night are the kWh used during night time



Set Your Oil/Gas Starting Point

If your building uses Kerosene oil or gas follow the below instructions, if you do not use oil or gas you can skip this section.

There are two methods you can use to calculate your oil/gas usage:

Consumption v Metering

By Meter: If you have a gas/oil meter in your tank the most accurate way to calculate your monthly consumption is by reading the meter at the start and end of the month. Then you need to subtract the 1st of the month reading from the end of the month reading and remember you might have had deliveries during the month, and you need to take into account those deliveries to calculate your consumption accurately.

The final number is your consumption that month. For example:

My oil tank meter reading on the 1st of January was 539 litres, I also have a bill from an oil delivery of 1500 litres on January 10th.

My oil meter reading for 1st of February is 425 litres.

$$425 - 539 + 1500 = 1,386 \text{ litres}$$

My oil consumption for January was 1,386 litres.

If the cost of a litre of oil is €0.68, my January oil cost was: €942.48.

By Delivery: If you do not have meters installed in your tanks you do not need to go buy them immediately, you can also base your calculations by the number of litres of oil/gas delivered to your building each month. Remember, this data will not be as accurate as having a meter, but the key is to use the same method of calculation month by month, year by year - your consumption will go up and down accurately over the year.

To calculate your consumption by delivery, simply take your green folder with last year's bills, head over to the oil/gas bills, total up the amount of litres of oil/gas that have been delivered to your building in a given month, and the total cost each month.

What method will you use? The decision is simple, if you have a meter, then you can start recording the usage right now from the meter, assign someone in the energy team to read the meter on the first of the month and the last of the month from now on. Get them a notebook to record their monthly results and to let you know if consumption does seem different (higher or lower) in any given month.

If you do not have meters installed, then you will use the delivery method. As you already have all your bills in your green folder, you can start adding up the litres of oil/gas you received in a given month.

Add them up by month and enter the results in the FSG Data Portal (Oil or Gas tables). All you need to fill in are the total litres per month and the total cost per month.





Set Your Waste Starting Point

When it comes to waste, you may or may not segregate your waste on to different streams. The most common ones are: General waste, recycling waste and Food waste.

The goal here is to try and find out the **Kg of each type of waste the organisation generates every month.**

Waste invoices from waste collectors: If your organisation has an arrangement with a waste collector, check with them if they weight the waste when they collect it and they might be able to share the information with you

If you are in a country where local authorities collect your waste instead of private companies, you may not be able to complete this task, as you might not receive any waste bills. The only way then to measure your waste production and establish your waste KPI - is to actually weigh your waste before it is taken away. You do not need to weigh your waste every day, that would be a huge task, however I would assign maybe one week

every three months to weigh your waste. This is so you can keep an eye on it and ensure it is not increasing.

When it comes to this programme and our other teachings, these actions and tasks are a self-commitment. We do not expect you to apply all of the actions we are giving you. It is completely up to you if something is too laborious; for example weighing waste, you can always skip this part for the moment, but continue with the programme, and consider tackling waste at a different time.

Set Your Water Starting Point

Similarly to calculating your oil and gas usage, there are also two methods that we can use to calculate our water consumption; by bill or by meter.

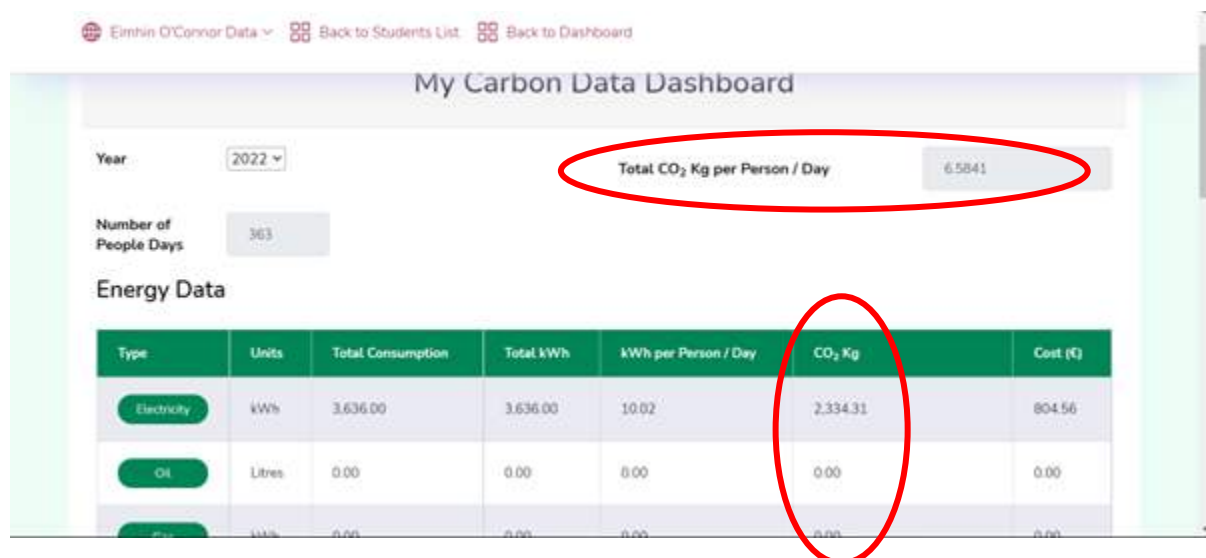
In some countries, water bills will tell you the number of cubic metres used by your building covered in the billing period, and the price of this consumption.

Open your **FSG Data Portal** on the water table, take your cubic metre consumption from the water bill and enter the monthly figures on the charts.

If you do not have water bills, but there is a water meter in the building (inside or outside), start reading the meter on a monthly basis and take note of the consumption in the water table on the portal. You might need your maintenance person to help with this task, at the very least to show you or the water leader where the meter is.

Calculating your Carbon Emissions

Once you have entered data in all of the tables of the portal, including the People table, go back to the **Data Dashboard**. You will see the tables are populating data, based on the figures you have entered on the other tables.



You have now established your organisation's **Green Key Performance Indicators**, it is the green manager or sustainability leader's responsibility now to monitor these KPIs and ensure they are reducing over time.



Steps 2 & 3: Observation & Implementation

Water Management

Observation

When it comes to water, one of the first things we need to figure out is the water flow rate of our devices.

First of all, what do we mean exactly by your **Water Flow Rate**? It is simply the speed at which water runs out of your taps, showers and cisterns and it is calculated in litres per minute. Why is this important? Because your water flow rate will directly influence your water consumption.

Let's look into what it is considered a good flow rate for water. The optimal flow rate standard for Green buildings are as follows:

- 8 litres per minute from your taps.
- 10 litres per minute from your showers.
- 6 litres in your toilet's cisterns.

These are considered good practice standards, some buildings will use more and that is fine, and some buildings use even less.

How does your water flow rate compare to these good standards?

To answer that we need to find out what your water flow rate currently is.

Here is what you need to do, just a little time consuming at the start but well worth it:

- Use a wide-necked bottle or bucket.
- Turn on the tap or shower at full force.
- Let the water fill the bucket or bottle for 10 seconds.
- Measure how much water is in the bucket or bottle.
- Multiply this by 6 to get your figure for litres used per minute.

You can use this exact same action for your showers by simply placing the bowl or bucket under your shower and turning it on for 10 seconds to collect the water.

Click on image to play video demonstration



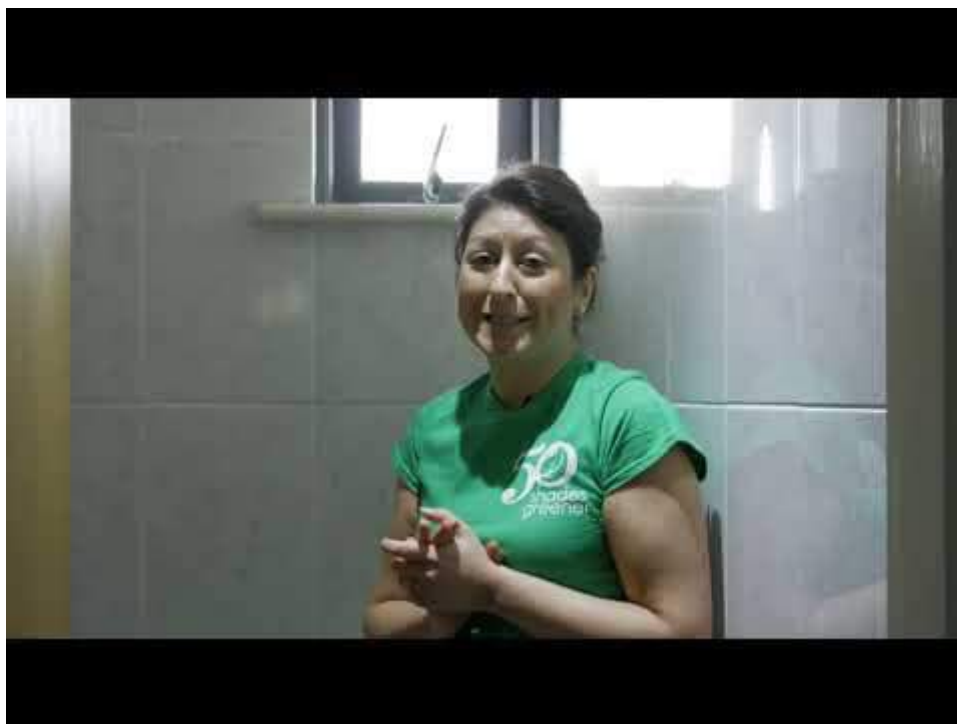
Now let's dive in to calculating the water flow rate of your cisterns.

The first thing to do is check if your cistern has a label on the back of it, side or even inside. If there is a label with the cistern's information, this might contain its capacity in litres. If there is no label, then we need to calculate it manually.

Open the top of the cistern, you will see there is a line inside to where the water stops filling. Next, we are going to flush the toilet, while holding the lever or ball-cock that will prevent the cistern from filling up again. Once the cistern is empty, we need to manually fill it with water. You can use several 2 or 5 litre bottles of water, until the cistern is full to the line again.

Then we simply calculate how much water we have used to fill the cistern, as that is the amount of water that the cistern uses every time it flushes. We can record the results in the [Water Workbook](#) provided and compare it to good practice standards.

Click on image to play video demonstration



Now that we have the know how, it is time to take action. Depending on the size of your building you will need to get help from the water team.

Assign each of them an area of the building for them to check the water flow rate of taps, showers and cisterns, and take note of their result.

Once everyone has completed their area gather all the results into one central sheet on your workbook.

Review the list to see which taps, showers or toilets that are not operating at the **Optimal Water Flow Standards** and highlight those that are causing the biggest problem, i.e. Those that are way above good practice standards.

Ensure the water team calculates the flow rate of ALL water devices in your building. Take your time, as I said before environmental sustainability is not a race, it is a journey of continued improvement so go at your own pace. The water team could dedicate 30 minutes per week to this task until it is completed for example, or even less if time does not allow. The key is to establish a routine so that green actions are implemented over time.

Implementation

From the observation phase, we know what the water flow rate of our devices are, and how they compare to good practice standards. We should have also highlighted in our **Water Flow Rate Table**, which taps, showers or cisterns are way above those standards, and they will be the ones to tackle first.

If all of your taps and showers are way above the good practice standards, perhaps you could talk to your maintenance person or plumber to reduce the water pressure in the entire building. With one quick action, you could be reducing the amount of water used throughout the entire building.

If you do decide to do this, make sure to run the Water Flow Rate test again once the pressure is reduced, to see what your new water flow rate is in all devices.

If you prefer to not reduce the water pressure of the building, you can also work on reducing some of the devices.

For taps and showers, we can use aerators. For cisterns, we can use hippo bags.



So, what are aerators?

They are small pieces of equipment that can be screwed onto the tap head and limit the water flow coming through, that's it, they are quite simple pieces of equipment.

Aerators deliver a mixture of water and air through the tap head once they are installed. By adding air, less water is used, while the pressure of the water flow stays the same.

In hot water taps, using less water will also mean we are saving energy to heat that water, so it is a double bonus in terms of savings and reduction of utilities.

Aerators come in different sizes, so it is important to speak to a plumber or maintenance person before purchasing them. They can advise you on the right size to order for each tap or shower head, they might even take on the task to buy and install them for you.

If you are not in a position to buy aerators for all of your taps and showers right now that is ok too. Ask your plumber to make you a list of aerators to buy with their size, get pricing from a couple of companies and make a plan to buy them over a period of time.

Once again the important thing is that you have measured your water use, you are aware of those devices that are overusing water, and you are working on a plan to reduce their flow. There is an aerators installation page in your workbook to complete a plan of action for future installation and allow you to calculate possible water reductions.

Hippo Bags.

As the name describes, they are simply plastic bags that we can insert into our cisterns, to reduce their capacity.

This is a hippo bag and it is as straightforward as it looks! Your Hippo bag might be in a different colour but essentially, it is the same, a plastic bag/box shape, with an opening at the top. The front of the bag will tell you how many litres you can save per flush, one or two litres is the norm.

It will also have installation instructions located at the back of it, telling you to open it and push the corners out to create a box.

You can then place it in the cisterns and immerse it in water so that the cistern ball-cock sits inside the open end.

The water now contained inside the bag will not flush down your toilet and you will start saving water with the next flush.

It is important also to test it (flush after installation) and ensure everything is still working, and we should regularly check that they are still in place.

If you can not purchase hippo bags, you can always take a full plastic bottle of water of 1 litres and place it inside the cistern. It will have the exact same effect because the cistern will only fill in to the space available, so by inserting a 1 litre bottle of water we are reducing its capacity by 1 litre.



Let's look at a quick case study:

- We have observed that our toilet cisterns use 10 litres of water per flush.
- We have 2 sets of public toilets with 5 cubicles each, a total of 10 cisterns.
- It is estimated that 485 people use the toilets every day. And we assume each person will use the toilet once.
- That means in one day our public toilet cisterns are going to use 4,850 litres of water.
- We buy 10 hippo bags that will reduce the water use of each cistern by 2 litres.
- This small action will reduce water consumption by 970 litres per day, which equates to 354,000 litres of water in one year.

1 building, 10 cisterns, 354,000 litres of water per year!

There is a hippo bags installation page on your workbook to complete a plan of action for future installation and allow you to calculate possible water reductions.



So what else can we do to ensure we are not wasting water unnecessarily? We need to address the possibility that our building might have an undetected water leak underground.

An obvious leak might show signs of wet walls, ceilings, etc. These leaks are easy to identify as they are visible to us. It might be a good idea to do a walk around your building, look at the walls, corners and ceilings and watch out for wet patches.

However, underground leaks are not visible to the human eye and the only way to detect an underground leak is while the building is closed, and water is not being used.

For a school or business, this might be in the late evening or early mornings before the building opens, once we can confirm that nobody is inside and using water.

Assign a water team member to read your water meter once your building is closed. All they need to do is read and note the numbers on the meter wait for 30 minutes and read the meter again. If the numbers have changed, water has been used during that period and more than likely you have an underground leak.

While finding where it is coming from will not be an easy task, the only way to address a problem is figuring out that we have it in the first place.

If you discover the building is leaking water, contact a plumber and/or your water utility supplier so you can find out the options to address the problem.

On the contrary, if you discover that you do not have an undetected leak currently, it is also important to set up a leak detection system that will allow you to ensure you can address possible problems in the future.

A leak detection system is easy to implement, you have two options: a manual system, or smart metering.

A manual system simply involves someone from the water team, or your maintenance person, to read the water meter on a regular basis, monthly would suffice. Ask them to start recording your water meter readings, around the same time of the day, the morning for example, on the 1st of every month.

Provide this person with a water book that will be kept in the same place at all times, they can take it out with them when they are reading the meter, note the meter numbers and date, and return it back to its place until the next reading.

To analyse the water consumption from one month to another, all you have to do is subtract the latest meter reading for the previous one. This will give you the total consumption for that month. Once you are doing this for a few months, you will clearly see a pattern of the amount of water your school normally uses.

Always remember that the more people in the building on a given month, the more water you will use, and this is why we calculated our water KPI as a per person figure during the measurement phase with the FSG Data Portal.

Once you start recording your water meter monthly, you can also continue to update the Data Portal water table every month.

Ensure every month you compare your per person result and that the figure either reduces or stays the same, if your consumption increases all of a sudden you could have a leak!

Reading a water meter might seem like a small thing to do, but it can avoid a lot of unnecessary wastage of a natural resource like water.

Another way to have a leak detection system is technology, it can be of great assistance in our fight to reduce our environmental impact. There are more and more products coming on to the market to help us monitor water use in a digital way. Smart meters can give you real time data about your water consumption. Some can even connect to your phone and set up alarms if water use all of a sudden increases, allowing you to identify straight away that there might be a problem.

Through implementation of the steps mentioned in the Water Management part of this manual, we have created a system to measure, manage and reduce water usage at your building. But we must also remember that our own behaviour can affect the amount of water we use in school, at work and also in our homes.

Behavioural change is one of the most difficult things to achieve, we are so used to our own routines and habits. So much so that they are embedded into our lives and can be difficult to change.

Being aware of the changes we need to make is the first step, but you will still need to make an extra effort to train yourself to remember these new changes.

The theory is simple, the implementation not so much.

What I need you to do is always take a couple of seconds to think when you are about to use water. Just take a second and remind yourself EVERY DROP COUNTS.

Let's look at some possible changes you can make:

- **Brushing teeth** – Do you normally leave the tap running when you are brushing your teeth? Let's just say that you live in a house of 4 people and your bathroom tap uses 10 litres of water per minute. Every member of your household is used to leaving the tap running while brushing their teeth and we are estimating it takes them about 1 minute. This means that if each member of the family brushes their teeth twice a day, you are using 80 litres of water a day for the simple task of brushing their teeth. Over the space of a year, your household uses 29,200 litres of water. If everyone in your home was to turn off the bathroom tap while brushing your teeth, that small action will reduce your family's water use by 29,000 litres in one year. Now imagine if that could happen in every household in the world, and the potential water savings we could achieve as a society.
- **Shower Time** – How long do you stay in the shower for? I am not saying you can't have a shower, I simply want you to think if you can reduce your shower time by a couple of minutes. According to board-certified dermatologist Dr. Edidiong Kaminska, MD, the recommended maximum shower time is about 5 to 10 minutes. This is enough time to cleanse and hydrate the skin without overdoing it. In fact, longer than this time in a hot shower will cause damage to your skin and hair overtime.
- **Dishwashers and washing machines:** Both of these devices use water and the rule is simple here, only turn them on when they are full. Putting the dishwasher on when it is only half full will use double the amount of water than it needs to.
- **Fix dripping taps:** Very often taps or showers can start dripping and might simply need to be readjusted. If your building has one tap leaking at a (very typical) rate of ten drips per minute, that one tap is wasting 3 litres of water per day, or 1,095 litres of water in one year.
- **If you have a garden** and you water your plants and flowers, try using a watering can and aim for the roots of each plant, rather than using a hose that will undoubtedly make you use more water than you need to.

- **Reuse water where possible.** For example, if you have water left over in a glass that you are not going to drink, you can throw it down the sink - or you can reuse that water to water your plants. The same applies to water used to rinse fruit and vegetables. Put a bowl under the colander that you are washing the food in to collect it and reuse it for plants.

The principle always remains the same, **AWARENESS**. Be aware of the water you are using and always think if you are using it efficiently.

For those that want to go a step further in the fight to conserve water, we also need to consider the possibility of reusing water that is available from nature itself, like rainwater.

Installing a rainwater-harvesting tank, might be easier than you think and there are many options on the market. Tanks come in all shapes and sizes and you can start with a small standalone tank, simply placed under your building's gutters to allow you to collect rainwater. Alternatively, you could install a large tank underground to collect thousands of litres of water.

The first thing to consider before making any decisions on the size of tank you might need, is what are you going to use the water for.

Is it maybe to water your garden? Then a smaller tank would work, with a tap at the bottom of it, so you can connect a hose to it to extract the water from it once full.

However, if the tank was underground and large, with a pump connected to your pipes - you could use rainwater to flush your toilets and urinals. That would mean that your organisation would be able to say with confidence that you are not using mains water at all, and that your water use is as sustainable as it can be, because it uses the natural water cycles of rainwater.

That is the top of the pyramid when it comes to water conservation, the goal we should all aim to get to at some point.

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Water Action Plan

To summarise, there are 9 actions we can now implement through the water team members that will allow us manage our water consumption better. The water action plan can be completed over a period of time that suits the organisation and the water team.

| Action | By Whom | By When |
|--|---------|---------|
| Calculate water KPI with the Data Portal | | |
| Calculate water flow rates of taps & showers | | |
| Calculate cisterns capacity | | |
| Make a plan to install aerators | | |
| Make a plan to install Hippo bags | | |
| Check if there is a current water leak undetected | | |
| Ask someone to read the water meter every month | | |
| Research water harvesting project | | |
| Research smart water metering systems | | |
| Educate staff and everyone in the building to reduce their own water use | | |

Waste Management

Observation

The waste observation phase will allow you to identify **where** and **what** type of waste you are generating from your organisation's building. This is what you could call the less glamorous part of a green journey, but it is a really important step on the fight to reduce waste.

Gather your waste team and allocate different areas of the building to each person where waste is generated. If the building is not large, one person alone could be in charge of this task.

The action is to observe ALL waste bins for a week. The aim is to learn what kind of waste is being generated the most.

If you are already segregating waste into landfill, food and recycling, you will need to observe closely two types of waste: landfill & recycling, and identify what the two top most disposed of items are. For example, you might find that by observing the recycling bin, that plastic bottles of water are one of the most disposed of items. Plastic bottles then become one of your top waste challenges. The same applies to landfill/general waste.

I completely understand this is not a necessarily enjoyable task, but without having a full understanding of what type of waste you are generating, you will never be able to reduce it.

You can find a table in your [waste workbook](#) to note your results on the **waste observation page**. This waste observation phase can be completed every single year, or even twice a year, to allow you to keep improving and identifying waste challenges that you can work to abolishing completely or reducing.



We will observe food waste later on.

Waste Segregation

A very important step in our fight against waste and its polluting effects on the environment is to segregate it properly as we can reduce the environmental impact of each type of waste as long as it is separated and treated according to its type.

- Landfill or general waste will end up incinerated or buried into designated areas around the country.
- Recycling waste will get to be reused to create other materials, for example tins or metal will be recycled into becoming other tins, plastic for example can be recycled to make cement.
- Food waste can become compost or if using an anaerobic treatment, it can be made into energy or fertilizer.

As a society, we need to ensure that we segregate our own waste as much as possible, to ensure it can be treated in a way that is less damaging to the planet.

Mixing different types of waste into one bin can be very harmful to the environment. Food going into landfill waste generates methane gas, a greenhouse emission that is 23 times stronger than CO₂. When plastic ends up in landfill, there is a high chance that it will be incinerated, producing dioxin, which is extremely toxic to animals and humans.

If your organisation is not segregating waste, today is the time to start. You can create “waste segregation stations” with clearly labeled bins for General, Recycling and Food waste. Adding visual images on each bin type with the items that should be placed in each bin will assist your team to learn what should be placed where.

If your organization is already segregating waste, the waste team should observe if the right bins are placed in the right areas.

People are creatures of habit, and when it comes to the disposal of waste, we tend to go for the closest bin available to us. Having the correct bins in the right places, will allow everyone in the organisation to segregate waste more efficiently.

For example, if you only have a general waste bin outside where people go out of the building, they are more than likely going to put all their waste items including plastic bottles there, rather than look for a recycling bin.

Having waste segregation stations is crucial to improve waste segregation.

Ask one or two members of the waste team to walk around the building, identify what bins are currently available and where:

- **Are they in the right place to serve their purpose?**
- **Are there any areas of the building with only general waste bins available?**
- **Are there any areas with no bins at all but waste is generated regularly?**

Having the answers to all those questions, will allow you to identify if you need to invest some time and resources to increase your waste segregation stations.

You could also ask the students and or your staff! After all they spend most of their day in the building. Run a poll, get everyone involved and ask what they think about your building's waste segregation facilities:

- **Is there enough waste stations for them to segregate properly?**
- **Do they know how to segregate waste properly?**
- **Do they feel there are areas they normally use but there are no bins available there?**

Involving everyone in your team will help them realise that waste management is important to the senior staff and the organization itself.

There is a **Waste Segregation page** on your workbook to help you keep note of your waste segregation areas observation and the bins you might need to purchase in the coming weeks to improve segregation and waste management at your building.

There is one more thing we need to observe regarding waste, but this is only for buildings that have a canteen or dining area where people can eat food to consume during their breaks. If your organisation does not have these facilities, you can skip to the next step.

When it comes to food waste, we need to identify the main source of the waste, and typically they are:

- **Preparation waste**
- **Food scraps from plates**
- **Unserviced food/leftovers**

Preparation waste means the food waste that is produced while the kitchen team are preparing the food; this is of course only applicable if you have chefs preparing food.

Food scraps from plates concerns the food that is served in the dining area, but that has come back on plates unconsumed.

Unserviced food/leftovers is food that is intended for use, but for one reason or another, it did not get used. This might be food that is out of date or spoiled in your stores and fridges.

If you do have a kitchen, it is important that the waste team observes and identifies the biggest food waste challenges from all three streams above. To complete this phase, they will need the assistance of the kitchen team.

Preparation Waste: Ask the chefs to keep buckets beside them when preparing food, one bucket per chef for a full day. At the end of the day, they can weigh their individual buckets and take note of its contents.

What food type generated most waste?

Was the potential there to use it to make other dishes? For example using vegetable trimmings for soups or stock.

Did all chefs generate similar amounts of food waste? Chef training on food prep is important, as they must understand that when it comes to food – zero or the bare minimum should be wasted.

Observing all of these behaviours will allow you to establish if training is required to reduce food waste at the preparation stage.

Unserviced food: Request chefs to remember that if food is spoiled in fridges or stores, rather than just placing it in the bin, to start using a spoilage book. This is where they can take note of the item & its quantity. Keeping track of what food is spoiled, will allow the head chef or purchasing person to plan better in the future and not over order food.

Food scraps from plates: The last observation for food waste is the Food Bucket Challenge!

This is one of my favourite activities as it's so insightful.

What we are trying to do here, is find out exactly what food items come back from our service areas to our bins regularly.

Pick a regular day of the week to complete this challenge, not your busiest but not the quietest either. You want this action to show you a real reflection of the food that comes back to your bins on a regular day.

Get some buckets and place them in your dishwashing area, or the area where your team scrapes the food off the plates into your bin.

Ask your team to separate the different items into the different buckets, all carrots in the same bucket, all beef in the same bucket, etc.

Ask them to ensure all food is placed in the buckets instead of the bin. You might need several buckets if you have a large menu offering during that service.

Oversee the food bucket challenge to ensure everything is done correctly or assign a member of your kitchen team to oversee the rest of the team.

At the end of service, review all of the buckets, you will be able to identify which food item has been returned the most from all the contents of the bucket. In Ireland for example, I find that we love serving loads of mashed potatoes with meals. Therefore, this is one of the items I see returned the most when applying the food bucket challenge. Mashed potatoes are also a very heavy food item so it will certainly rack up your food waste bill!

There could really be many different reasons why these items have been returned.

- The portions served might be too large for the diners.
- The food returned might not taste nice! I know it is not what anyone wants to hear but it is a possibility.
- That particular side dish did not compliment the mains well.
- Or the diner could have changed their mind after ordering.

Click on image below to watch a video demonstration



There is a **Food Bucket Challenge** page on your **workbook** to help you note the results of your challenge once completed.

Implementation

Having observed our current waste segregation systems and our bins to identify our top waste challenges, it is time to start thinking of actions that might assist us to reduce our waste production. Of course, depending on what items are your top waste challenges, actions to abolish them or reduce them will vary.

The first question you need to ask yourself is: **How can I abolish X?** (X been one of your top waste items).

For example, let's say you have identified that plastic bottles are one of your most disposed of items in the recycling bin. Students and/or staff might bring minerals or bottled water into the building and discard the single use bottles during the day into bins.

When it comes to any type of waste, landfill/general, recycling or food, the aim is to REDUCE & REUSE, which simply means producing less waste of any type, by reusing items and abolishing single use. Recycling should always be the last option.

Some simple measures the organization can adopt to reduce plastic waste is to provide our people with reusable keep water bottles and keep cups. There are many companies providing reusables that can be branded with your organisation's logo. For example, you could provide a reusable bag, keep water bottle, keep cup, lunch box, etc. to all students and or staff. Of course, there as a financial investment required, but your waste production will decrease (and therefore your waste cost will reduce) plus it is a fantastic and effective way to raise awareness to all stakeholders about the organisation's green programme and your commitment to reducing single use items.

The more items you can provide that are reusable rather than single use, the more you will reduce waste at the building, also reducing the organisation's carbon emissions.

Reusables are a win/win for society and we should strive to abolish all single use items from our workplaces, lives and communities at all times. You should also consider the life cycle of the new reusables, for example, if you are providing students and or staff with keep water bottles, they will also need somewhere to refill their water bottles.

A zero-waste life is possible, it is difficult in today's society, but it is possible. I would recommend you take a couple of minutes to watch this TedTalk.

Click on image below to watch video



The very first thing to consider for a zero waste life is abolishing all single use items, you will need to know and note all single use items you can identify in the building, find reusable alternatives and make it a policy to use those new reusable items.

There is a table on your waste workbook to help you note any single use items in each area of the building.

Food waste reduction

If the organization does not provide food, you can skip this section.

With the observation phase of food waste, your waste team & kitchen team should have identified your top food waste challenges. Let's recap on the 3 possible streams:

Food Preparation: Does the kitchen team need extra training to re-use trimmings and peels from food prep? Can menus be designed in a way that would allow us to reduce waste?

Spoilage Book: If your kitchen team is recording the food items that get spoiled in your stores and fridges, a system needs to be implemented where someone is responsible to check the spoilage book on a weekly or monthly basis and speak to the person that places food orders regularly to ensure less food ends up in the bin. It could be a case that items are over ordered and not cooked on time, before they pass their sell by date.

Food Bucket Challenge: If food is coming back from the dining areas into the kitchen uneaten we need to revise areas like:

Portion sizes, are they too big?

Serving tools and plates, are they too big?

A meeting of the minds would be a great place to start between the kitchen team (even if it is outside catering they need to be involved) and the waste team, to discuss ideas and solutions to reduce food waste from the building's canteen and kitchen.

Waste Action Plan

To summarize, there are 9 clear steps you can implement for a better waste management system at your organisation:

| Action | By Whom | By When |
|--|---------|---------|
| Measure waste KPI with the Data Portal and weighing your bins | | |
| Observe landfill waste – identify top challenges | | |
| Observe recycling waste – identify top challenges | | |
| Observe food waste – identify top challenges | | |
| Observe waste segregation – identify if more bins are needed | | |
| Purchase more bins, label all bins properly and address waste segregation training needs | | |
| Implement food waste spoilage book in the kitchen | | |
| Abolish single use items and purchase re-usable | | |
| Adress food waste reduction plan with the kitchen and waste teams | | |

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Energy Management

Observation

The energy observation phase will allow you to identify **where** and **when** your building is using energy. There are 2 things that consumer the majority of your energy use:

- **Lighting**
- **Equipment**

Therefore, we need to observe them individually to address each area properly.

Lighting

The second largest source of energy usage at your building is more than likely your light bulbs.

If you already have LEDs or energy saving bulbs in all your fixtures you can skip this step, you are already doing everything you can do to minimise your energy consumption from your light fixtures. If you are unsure if all your bulbs are energy saving, you need to conduct a lighting audit.



LED & energy saving bulbs consume a fraction of the energy that regular bulbs do. I know you are probably thinking replacing all your current bulbs with LEDs or energy saving bulbs can be very costly, but I promise you the pay back will be faster than you might originally think.

To help you find out, we have prepared a **Light Audit** Page on your [workbook](#). What we need to complete here is the **Current Bulbs** section of the chart.

- On the lighting chart, there are 6 greyed-out columns you need to fill in:
- The location of the light fixture.
- The bulb type.
- Amount of wattage used by that particular bulb.
- The number of bulbs in case it is a lamp with 3 or 4 bulbs of the same kind.
- Then you will need to estimate the amount of hours it is in use for a year, for example, if you know your hallway lights come on at 8am and go off at 5pm you are using those bulbs for 9 hours a day, multiplied by 195 days (estimated opening days per year) equals 1,755 hours a year.
- The last bit of information you need to enter is your average unit cost of electricity. You can find your average unit price on your electricity bills.

Once you enter all the information in your lighting chart, you will see the annual cost of running each light fixture at your building on the **Total Current Annual** cost column.

So, to get started, print the chart, or as many copies as you need, you can divide the work by giving your energy team a copy each and ask them to inspect all the current bulbs in specific areas and enter the information needed, to start completing your lighting audit.

Some bulbs will be more accessible than others and your energy team might require the assistance of your maintenance person to figure out the wattage of ceiling lights that are not easily accessible. Once again take your time, ask for help from the right people and just make sure you complete the audit over time.

Equipment:

Having a clear picture of what equipment you have and how much energy each piece uses, is key to being able to start reducing energy consumption.

Open the **workbook** on the **Equipment page**. We are looking to enter the following information for all of our major energy usage equipment.

The information you need to fill in is:

- The name of the machine.
- Where it is located.
- What type of energy it uses.
- How many kWh per hour it uses (you should be able to find this information on the actual machine, sometimes there is a sticker that will tell you the kWh hour usage, or if you find the make and model of the machine you can google it and find out there).
- Lastly estimate how many hours is that machine in use per day, if you are reviewing your kitchen equipment you might need the help of your chef or kitchen team to find out some of this information.

Once the table is complete, the “**Annual Energy Usage**” column will populate automatically, and you will be able to identify which equipment uses the most energy at your school every year.

Review the chart and highlight those pieces of equipment that consume the most energy annually. It could be because their kWh per hour is higher than the rest or because they are used for the longer periods of time.

Some equipment might be quite old and it might be time to replace it, but with this information in hand, you can make an informed decision whether to replace an old piece of equipment or perhaps try to use it a lot less.

And that is your equipment audit completed! Take your time, do it at your own pace and get your energy team and maintenance person to help compile this chart data.

Implementation

Well done for completing the observation phase! I know some of the activities take a long time and it is not easy to add to your already busy schedules, but measurement and observation are KEY to establishing your current environmental impact.

Now we come to the implementation phase, which simply means we need to take stock of our results from the observation phase, and implement “green actions” that will allow us to improve in our utility consumption.

Lighting: You should have completed the light bulb audit with the energy workbook we provided, the next step is now to look at all your light bulbs on the chart and identify if any of them are not energy saving or LED bulbs. If you start filling the “**replacement bulbs**” columns, you will be able to see the potential annual savings from replacing those bulbs. Buying bulbs may not be cheap and maybe you are not in a position to replace all bulbs immediately, but it is still important that you are aware which bulbs need to be replaced first, particularly those that are in use for longer periods.

Spend a bit of time or ask your energy team to research possible funding or lighting upgrades in your local area or country.

You could also consider automation to reduce human errors, like sensor lighting in bathrooms and corridors and timers for outside lights. Has it ever happened that someone has forgotten to turn lights off in a corridor for example on a Friday? Say if you have 10 bulbs using 40 watts of electricity per hour each, leaving them on unnecessarily for 48 hours would use 19.2 kWh of electricity for no reason at all.

Just because electricity is readily available to all of us, it does not mean we need to waste it, regardless of its origin! Green electricity is made from renewables, but we need to understand that even renewables are limited sources of energy to some point.

While on the subject of green electricity, it is important to highlight that switching your electricity provider to a green energy provider is a big step to reduce emissions. It supports the renewables economy and the more demand for this type of energy the more investment on renewables will be provided in your country.

Equipment: After completing your equipment audit you may have identified possible pieces of equipment that can be left off for longer periods of time, to reduce their energy use. The next step would be to speak to the people that are normally in charge to switch equipment on and off. Establish what the new standards of procedures are for using each piece of equipment, and ensure those standards are adhere to from now on. The energy team could do weekly spot checks to ensure the new procedures are happening.

It is also helpful to place large stickers on to equipment including their kWh rating and their on and off times, this increases awareness for people to becoming energy efficient.

There might also be pieces of equipment that do not need to be on all the time, vending machines for example. To reduce human error, you could also look into purchasing on/off date timers. These are simple timers that are plugged directly into the electricity socket, and then the machine gets plugged into the timer. You can set what dates of the week the machine should be on (Monday to Friday for example) and the time it will come on and off, it will then switch off automatically on the set date and time.

The more you can automate lights and equipment, the more efficient you will become with your energy use.

[Download Poster 1](#)

[Download Poster 2](#)



Energy Action Plan

| Action | By Whom | By When |
|--|---------|---------|
| Measure your energy KPI with your bills and the Data Portal | | |
| Conduct a light bulb audit | | |
| Conduct an equipment audit | | |
| Outline a plan to replace all bulbs to energy savings or LED | | |
| Research funding for energy reduction in your local area | | |
| Switch to a green electricity provider | | |
| Research electricity smart metering | | |
| Write a standard of procedure manual of equipment on/off | | |
| Add labels to equipment with new SOP | | |
| Research date & time timers for equipment | | |



Step 4: Monitoring in the future

Monitoring regularly is a crucial element of a proper Environmental Management System. It simply means that we need to continuously monitor our green KPIs and CO2 emissions on the Data portal every month at least, to ensure everything we have implemented is working and that our utilities are reducing over time. If you discover that one of your Green KPIs is increasing, then you need to go back to the observation phase of that particular utility to see what has changed since you last performed this task.

We can very easily monitor our resource usage by continuously updating the FSG Data Portal. Once you know utility bills have arrived, dedicate 15 minutes to enter your figures on the charts, and compare your green KPIs with the previous month, year, etc.

If you have invested in smart metering, you do not even need to wait for your utility bills to arrive; you can get this information from your PC or phone and enter it on the data portal.

Reductions or increase of utilities might seem small when you are looking at per person figures, but even a 0.1 reduction, could mean quite a lot of savings.

For example, if your **Water Start point** last year was 0.66 Cubic metres of water per person per month, as there are 1000 litres in a cubic metre, the Starting Point is 660 litres per person.

Your water consumption this year might be 0.63 cubic metres per person, or 630 litres per person.

How you calculate the % reduction achieved is

$$\text{If } 0.66 = 100\%$$

$$\text{Then } 0.63 = X\%$$

This is a simple mathematical rule used to find out the % an amount is from a different amount

The mathematical formula tells us that X equals 100 times 0.63 divided by 0.66

$$\text{If } 0.66 \text{ is } 100\%$$

$$\text{Then } 0.63 \text{ equals } 95\%$$

Which means we have achieved a 5% reduction of water use per person this year so far, compared to your Starting point.

The same applies to energy and waste, a small 0.1 reduction per person, can mean a much larger % reduction overall. The same applies to a small increase on consumption of 0.1, this can mean a huge extra cost to your organisation, and an increase of your carbon footprint.

Start practicing how to make these calculations with your baseline and current year figures. While you might not need to produce a monthly report, it is important that you are used to working with your figures, and produce reports for your Green Meetings, so you can tell the Green Team if actions are working or not.

When you are updating your Green Team at your next Green Meeting, have your figures well worked out, highlight the actions that were implemented since the previous meeting and the consumption results achieved.

If your consumption increases over the next few months, rather than decrease, this quite possibly means green actions have not been properly implemented, so monitoring and reporting is the best tool you have to ensure systems and processes are working as they should.

Green Procurement

Another area that can reduce the building's indirect carbon emissions is purchasing, and while your organisation can be not directly responsible for its suppliers' emissions, there are steps we can take to ensure we are encouraging green procurement as much as possible.

So how does environmental sustainability relate to purchasing? The two are highly interrelated. The products we buy and sell matter on many different levels, as they boost economies and have a large environmental impact.

Green Purchasing is defined as the procurement of products and services that have a reduced effect on human health and the environment when compared with competing products or services that serve the same purpose.

Let's look at some examples and differences between regular purchasing and green purchasing:

Regular

Purchases products from everywhere

Does not take packaging into consideration

Purchases single use items

Produces Plastic

Uses hazardous chemicals

Green

Favours locally sourced products

Favours products with sustainable packaging and finds way to reduce it

Abolishes single use items (reusables)

Favours Biodegradable materials

Eco cleaning products

Green Purchasing is an area where the different terminologies can boggle the mind. Here are some simple explanations of what some of the most commonly used terms mean:

Locally sourced: Locally purchased products which have the least travel miles. There is no standard definition of what represents a local catchment area. Good practice is to support your nearest suppliers and producers as much as you can.

Locally grown: Locally grown products with the least travel miles.

Fair Trade: Products made with respect for people and the planet. The Fair Trade label represents a movement whose goal is to help producers in developing countries to get a fair price for their products to reduce poverty, provide for the ethical treatment of workers and farmers, and promote environmentally sustainable practices.

Recycled: Products using recycled materials, reused items or “upcycled” by revamping old items.

Eco friendly: Products that have been designed to do the least possible damage to the environment.

Organic: Products produced (or involving production) without the use of chemical fertilisers, pesticides, or other artificial chemicals.

Having a green purchasing policy, plan and commitment does not necessarily mean it is going to cost more, it simply means you are going to evaluate the current processes & system for purchasing products, and commit to make changes that will reduce the organisation’s environmental impact in whatever way you can.

In order to achieve this, we can apply the same method of measurement, observation, implementation and monitoring and reporting, as we did with energy, waste, water and CO2.

The measurement phase is going to establish the starting point of your Green Purchasing journey, and create that baseline of data you can use to compare in the future.

If you do not measure something, you cannot manage it.

The two things we can measure are:

What % of our purchases are local, national or international? The location of origin of your products matters when it comes to CO2 in terms of air miles emissions.

What % of our purchases are considered Eco or green products? The way the products have been made, will also have a significant environmental impact. Looking at these two reference points, please open your [excel workbook](#) on the “**Origin of products**” page. Filling the table with the origin of your purchases will help you define the % of our suppliers by their origin. Check your weekly purchases and select your top 20 suppliers, if you have more than 20 major suppliers, you can duplicate the page to continue entering data.

You only need to enter data in the greyed out cells of the charts. You will see 4 columns to enter data in: **Local, Regional, National & International**. If the supplier is local, enter a number 1 on the “local column” and 0 in the other 3 columns. If the supplier is in the same country as you but not local, enter a number 1 in the “national column” and 0 on the other ones.

Continue filling the table until you have entered your 20 top suppliers.

Once you have filled in the charts, the % of each type of supplier will appear at the end of the table.

Now you know exactly what % of your suppliers are local or not, the task in hand for the coming months and years is to set a clear goal to increase local and regional suppliers and reduce national and international.

You should set yourself clear goals that are time bound. For example:

In the next 6 months we will increase our local and regional suppliers by 10% and reduce our international purchases by 10%

That is a measurable goal (10%) that is time bound (in the next 6 months)

In the same workbook, “**Green Products**” page , you can define the % of products that are “green”. We can consider green products, as those that are either fair trade, organic, recycled or eco products

Use this table in the exact same way as the previous one; once again, your goal here is to increase your green product % over a period of time.

Measuring your current purchasing status in terms of local suppliers or eco products will allow you to compare in the future and say with certainty that you have improved your supply chain.

Once you complete the measurement phase, you will have a much clearer picture now as to what your top challenges are, and you probably have already started to think of ways to change some of your purchases to reduce your environmental impact.

It is time now to write down and implement a comprehensive action plan for the next year, lastly you will monitor your progress regularly against that plan and the goals you have set for yourself.

Start by re-analysing your measurement results with the excel charts you completed in the workbook.

What is most important to you now in terms of goals? The more specific you get, the more chances of success. If you try to do everything in one go, it will become much more difficult and discouraging so it is a good idea to break it down into small do-able steps and goals.

For example, you might decide that you want to tackle the origin of your purchases as a first step, and that in the next year your goal is to ensure 50% of the products and produce your school/business buys, is from local suppliers. This is a clear goal and by choosing something like this you know you will need to concentrate your efforts to find local suppliers to replace some of your international purchases.

Get into a routine where you might for example, work on your green purchasing plan every 1st of the month for 1 hour, or whatever day/time suits you best. If you dedicate a weekly/monthly space to your greening, it will soon become part of your routine and you can guarantee you will progress over time.

Here are some suggested projects you could consider including in your plan, but these are only suggestions, and you should always start with those projects that would be most beneficial to you:

- Increase the % of locally purchased products
- Increase the % of eco products
- Reduce as much as possible single use or packaged item.
- Engage with supplier deliveries to reduce packaging. In fact, you could email ALL suppliers of the organisation, outline your new green purchasing plans and ask them how they can assist you in terms of buying some products in bulk, reducing their own packaging for deliveries or even the possibility that they might take their packaging away with them post-delivery? Engaging with your suppliers is a great step to help them get on to their own green journeys.
- Cleaning chemicals, in terms of environmental impact, chemicals are highly damaging not only to the wastewater but also to the health of staff and/or students. Seek for eco-cleaning products, and always request data from those

suppliers to identify how really eco-friendly they are. Ensure they are not Eco just by name.

How about school/staff uniforms? Are they made locally? Or could they be if you changed your current supplier? If international, do you know if they are a fair-trade company? What material are the uniforms made of and would you consider a company that might use recycled materials to make clothes?

The number of things you can do are endless to reduce your environmental impact through your purchasing, the trick is to have a clear plan of action, broken down into small weekly steps that are achievable and realistic with your work situation.

Your Environmental Policy

Now that you have a clear understanding of what environmental sustainability is, and how we can implement an environmental management system in our buildings to measure, manage and reduce energy, waste & water, it is time to meet your Green Team and agree what the organisation's environmental policy should be.

Many organisations write their Environmental Policy before they work on implementing an environmental management system. The problem here is that at that point of the green journey you might not know enough about what it is you are trying to achieve.

A policy without a plan, are simply words written on a piece of paper, and so we like to start with the plan, which should be the basis of your policy.

Your environmental policy is simply a statement of intent, to let people know what your goals are, what your achievements to date are and your commitment to lessen your impact on the environment.

This is a document that should reflect your organisation's vision, it does not have to be boring, you can make it quirky, funny, amusing – it should mirror the spirit of your organisation and its people.

So here are some guidelines:

- Keep it simple, easy to understand and communicate.
- Insert your organisation's logo at the top and always write the year the policy is for at the very top.
- Write a paragraph to outline your overall Green Programme's mission.
- Enumerate your achievements to date. For example, **“so far, we have reduced our landfill waste by 8%, our energy use by 5% and our water use by 10% in the first 6 months of this year.”**
- Make sure you always outline your achievements with real data, % reductions, don't be vague by saying “we have reduced energy use”, tell them exactly by how much, however little it is, it is an improvement.

- Outline your goals of the next period of time, for example “in the next 6 months, we plan to reduce our landfill waste by a further 7 %, bringing our total reduction for year one to 15%”

Sign and date the policy at the end of the document.

Your environmental policy should be a working document that is updated at least once a year, outlining you new goals for the following 12 months and the achievements of the past year.

Clarity and transparency is key when it comes to Climate Action. Publishing your green KPIs and carbon emissions, together with your policy, on your website is a really good way to raise awareness to other stake holders, and it shows you are committed to play your part and care for the environment.



The Road to NetZero

Once you have worked on all the actions outlined in this training manual, you should have a proper environmental management system implemented within your building.

The next thing you should consider is how to achieve carbon neutrality or NetZero.

Well the good news is that you have already started this process. The bad news is that there is no quick fix to becoming carbon neutral.

Carbon Neutral accreditation bodies will require you to:

- Show you have measured and monitored your carbon emissions for a minimum period of 3 years (this programme has started you on your journey and now you just need to continue monitoring your emissions with the Data Portal).
- Demonstrate you have been reducing these emissions over time (the actions you implement with this programme are your starting point to reducing emissions).
- Demonstrate you have tried as much as possible to move away from fossil fuels.
- Demonstrate you have also made efforts to green your supply chain and all activities your organisation provides.

Once you have achieved all those points, the last step of the process is to offset the carbon emissions you cannot avoid to reach NetZero.

If you are seeking carbon neutral status, try and find tree planting projects within your own locality or at least your own country, so that at least you have a chance to visit the site and ensure trees are indeed been planted on your behalf.

You could also create projects within your own building's grounds that will assist with carbon offsetting, like gardens, bee keeping or enhancement of biodiversity.

Projects like this are not only good for the planet, they are good for mental health of the people involved, they provoke collaboration and comradery amongst participants, it gives people a sense of responsibility for the project they are working on and it raises awareness of care for the planet and nature.

You can also involve neighbours and members of the community. I totally understand projects like this can be time consuming and not everyone is in a position to start them and complete them, but remember that many hands make light work. There is a great cohort of people within your team, community and other stakeholders that can help develop biodiversity projects that can be a benefit to everyone involved.

Of course, not every organisation's building has space for gardens to complete outdoor projects, but there are many different technologies coming into the market to find alternative solutions, one such solution are vertical farms.

Vertical farms will allow you to create a kitchen garden indoors and in areas with limited space. They will also allow to grow your own herbs and micro greens all year around. Creating "grow your own" teams & challenges amongst your students/staff will give them a sense of achievement as they will be able to see the process of food production to plate.

Moving away from fossil fuels at all levels, is the fastest step in reducing carbon emissions and achieving carbon neutrality. We already spoke about switching to green electricity on this programme, but what about installing solar panels to generate electricity for your building?

Solar Panels: Can produce electricity to supply your building's needs. If you consider solar panels, ensure you enquire about batteries to store the energy that is not used.

Investing in capital projects will not be possible for everyone. However, knowing the options available, being aware of what we need to improve on for the path to carbon neutrality, should be a minimum requirement for all companies, schools, colleges, training centres and community buildings at the very least, if we want to reach our targets as nations and societies, and ensure we are building a greener future.



What Next?

Well done! I am delighted you have taken the time to follow this training manual till the end, and I hope it has helped you have a better understanding of your organisation's environmental impact.

If you want to get recognition for all the work you have done, FSG has an eco-label digital badge that you can use on your website and social media channels.

In order to receive the badge, we will need to conduct a desk evaluation of your work, and so we require you to send us your completed workbooks from this programme. Not everything needs to be implemented for you to achieve your badge, as long as you have completed the measurement and observation phases of the programme, and you have an action plan to implement new activities, you will be eligible for the badge. After revising your paperwork, we may require for a 30-minute video call to confirm some of the steps and actions you have implemented.

Whether you decide to apply for the badge or not, the important thing is that you have started your organisation's green programme, and no matter how slow/fast you complete the steps given on this training, you have all committed to reduce the environmental impact of the building, its suppliers and all stakeholders.

Your most important role as a sustainability officer or green manager, is to continue measuring your energy, waste and water on the data portal, ensuring your use or production is not increasing any given time, only reducing. Ensure green meetings happen regularly and that you involve as many people as possible on your school's green journey.

Well done!

Raquel and the FSG Team.