

Leaner & Greener Energy

Northern
Ireland
Embrace
a Giant
Spirit



22nd November 2022

TED

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Programme



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4. Leaner & Greener Energy Roadmap

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ENERGY SAVINGS ACTION PLAN				
No.	Action	Responsibility	Deadline	
1	Check temperature in all fridges in kitchen and set to 4 degrees Celsius	Green Manager & Head Chef	30.11.2022	Create sheet fridge was c



Leaner & Greener Roadmap

1. Where are you now?
2. Where do you want to get to?
3. How will you get there?
4. How will you track progress?
5. How will you keep everyone informed?



5. Leaner & Greener 10 Steps



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Top 10 for Energy Management

1 Appoint a Green Team or Green Champion

2 Calculate Annual Units & Cost (Worksheet 1)

3 Establish your benchmark

4 Audit Equipment

5 Audit Lighting

6 Audit Heating

7 Audit Refrigeration

8 Observe staff and visitor behaviour

9 Check where you can switch to renewables

10 Create your Energy Saving Action Plan

Step 1

Green

Team or champion

Leaner & Greener Wisdom

Only when you measure and monitor
can you truly manage energy and save
money

Step 2

Annual units & costs



Measuring Energy

- 1** A **watt** is a unit used to measure power
- 2** 1000 watts = 1 **kilowatt**
- 3** A **kilowatt hour (kWh)** is the equivalent of 1 kilowatt of power for 1 hour.
- 4** **Kilowatt hours (kWh)** are the common currency unit of measurement for all types of energy. All energy sources can be converted to kWh.

A close-up photograph of a yellow kettle with a silver handle and spout. Steam is rising from the spout, creating a soft, white plume against a solid black background. The kettle is positioned in the lower right corner of the frame.

Need to convert
everything to kWh

How to Calculate Energy Use

Electricity and Mains Gas
Bills (kWh)

Gas and Oil: Meters or
Delivery Bills (litres)

Wood: Delivery Bills (kg)

1. Log all your sources of energy
2. Convert usage of all to the common currency kWh
3. Calculate how many kWh each energy source provides
4. Calculate the Average Unit Cost for each energy type

Worksheet 1: Energy Annual Use & Costs

ENERGY ANNUAL USE AND COSTS							
Type of Energy	Unit of Measurement	Annual Units	Annual kWh	Annual Cost ex VAT	Average Unit Price £/kWh	kWh Benchmark	Cost Benchmark
Electricity	kWh		0		#DIV/0!	#DIV/0!	#DIV/0!
Mains Gas	kWh		0		#DIV/0!	#DIV/0!	#DIV/0!
LPG	Litres		0		#DIV/0!	#DIV/0!	#DIV/0!
Oil	Litres		0		#DIV/0!	#DIV/0!	#DIV/0!
Wood Pellets	KG		0		#DIV/0!	#DIV/0!	#DIV/0!
Benchmark							

Worksheet 1: Energy Annual Use & Costs

ENERGY ANNUAL USE AND COSTS								
Type of Energy	Unit of Measurement	Annual Units	Annual kWh	Annual Cost ex VAT	Average Unit Price £/kWh	kWh Benchmark	Cost Benchmark	
Electricity	kWh	30000	30,000	11750	€0.39	#DIV/0!	#DIV/0!	
Mains Gas	kWh	13000	13,000	1850	€0.14	#DIV/0!	#DIV/0!	
LPG	Litres	1200	8,520	850	€0.10	#DIV/0!	#DIV/0!	
Oil	Litres	8000	83,760	10250	€0.12	#DIV/0!	#DIV/0!	
Wood Pellets	KG	800	4,000	380	€0.10	#DIV/0!	#DIV/0!	
Benchmark								

1. ENERGY ANNUAL USE AND COSTS

2. ENERGY EQUIPMENT AUDIT

3. ENERGY SAVINGS ACTIO ...

Step 3

Benchmark

Why benchmark?

Benchmarking allows you to track your own performance over time

Benchmarking allows you to compare your performance against others in the industry



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Part 1: Energy Annual Use & Costs

ENERGY ANNUAL USE AND COSTS							
Type of Energy	Unit of Measurement	Annual Units	Annual kWh	Annual Cost ex VAT	Average Unit Price £/kWh	kWh Benchmark	Cost Benchmark
Electricity	kWh	30000	30,000	11750	€0.39	1.50	0.59
Mains Gas	kWh	13000	13,000	1850	€0.14	0.65	0.09
LPG	Litres	1200	8,520	850	€0.10	0.43	0.04
Oil	Litres	8000	83,760	10250	€0.12	4.19	0.51
Wood Pellets	KG	800	4,000	380	€0.10	0.20	0.02
Benchmark (Restaurant with 20000 covers per year)	20000						

Step 4

Equipment Audit



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Why Conduct an Equipment Audit?

1. Get a clear picture on how much energy each piece of equipment consumes
1. Get a clear picture on how much it costs to run each piece of equipment
2. Use this data to set targets to reduce costs and consumption
3. Use this data to prioritise replacements or alternative systems of use

For each piece of
Equipment...

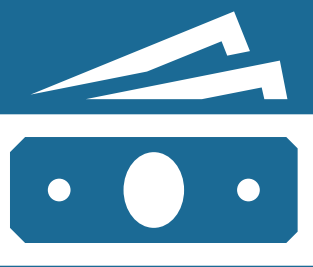
Kilowatt Rating



Hours in use per week



Average Unit Cost
(from Worksheet 1)





Worksheet 2: Energy Equipment Audit

ENERGY EQUIPMENT AUDIT						
Equipment	Rating (kW)	Hours On/Week	Hours On/Year	Annual Use (kWh)	Average Unit Price	Annual Cost
Fridge			0	0		0
Freezer			0	0		0
Air-Conditioning Unit			0	0		0
Extractor Fan			0	0		0
Dishwasher			0	0		0
			0	0		0
			0	0		0
TOTALS				0		0

Worksheet 2: Energy Equipment Audit

ENERGY EQUIPMENT AUDIT						
Equipment	Rating (kW)	Hours On/Week	Hours On/Year	Annual Use (kWh)	Average Unit Price	Annual Cost
Fridge	1	168	8736	8736	0.39	3407
PC	0.1	42	2184	218.4	0.39	85
Air-Conditioning Unit	3	12	624	1872	0.39	730
Extractor Fan	2	60	3120	6240	0.39	2434
Grill	1.5	50	2600	3900	0.39	1521
			0	0		0
			0	0		0
TOTALS				20966.4		8177



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Once you know which equipment and operations use the most energy, you can determine the best ways to cut that use without impacting the business or visitor experience

Step 5

Lighting

Audit

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Lighting Audit

LEDs use 20% of the energy
required by halogen bulbs
to produce same light

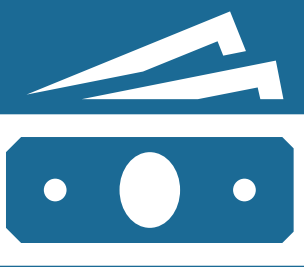
Count Total Number of
Lights



How many are LEDs?



How many are not?



Where could sensors
be useful?



Step 6

Heating Audit

Establish optimum heat setting for each heat source



Compare actual temperature setting to optimum. Changes needed?



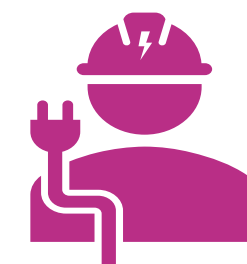
Do a candle test near windows. Any air leaks?



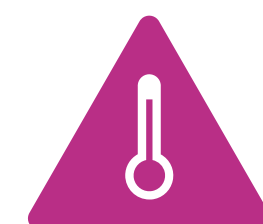
Visit attic on a windy day. Air coming in?



When was your boiler serviced?



Can you switch to a better heating source, even over the longer term?



Heating Audit

Step 7

Refrigeration Audit


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Refrigeration Audit

What temperature is each fridge at (optimum is 3 degrees)? 0.0

Is the seal intact? Any leaks? 

Are there any that could be switched off, even for part of day or night? 

Step 8

Behaviour of staff

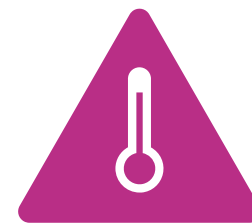
What times are equipment switched on and off?



Who decides when equipment is on and off?



How are thermostats managed?



Are doors or windows open when heat is on?



Is air conditioning on at the same time as heating?



Are hot taps left running?



Staff Behaviour

Audit



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Day-to-day changes in staff behaviour
can save 10-15% on your energy costs

Step 9

Investigate Renewables

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Renewable Options

Renewables	What for?	Payback Time
Solar PV	Transforms energy from the sun into electricity	4-6 years
Solar Thermal Technology	Transforms energy from the sun into hot water	2-5 years
Heatpumps	Extracts naturally occurring heat and upgrades it to a temperature at which it can be used for heating spaces and water	5-8 years
Biomass Boiler	Burns wood or plant matter to generate heat	5-8 years

Benefits

- Generate electricity locally
- Predictable costs
- Minimises carbon taxes
- Reduces carbon emissions
- Return on Investment 4-8 years (and falling)
- After payback time, you effectively generate free energy

Step 10

Action Plan

Analyse the outcomes of your audit

What jumps out as a priority area for attention?

Share outcomes with your team or mentor

Brainstorm solutions

Broadly estimate costs and resources required

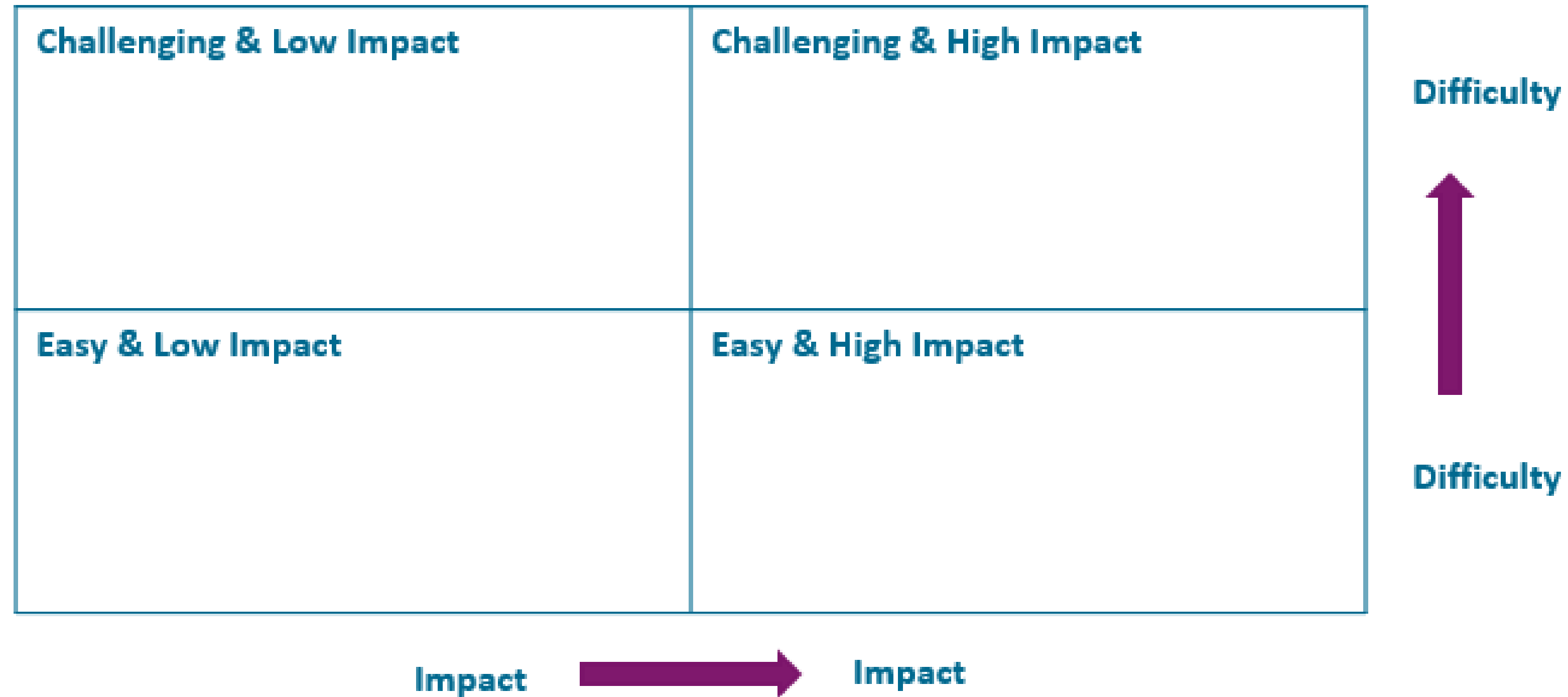
Prioritise!



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First take the actions with the lowest
cost and highest impact

Priority Matrix





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It's only an action plan if it is clear who has to take the action and when that action has to be taken by

6. Takeaway Actions

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Equipment

1. Introduce a strict Switch Off Policy and train your team
2. Display Switch On and Switch Off Times on each piece of equipment
3. Display preferred temperature setting on relevant equipment and train your team
4. Prioritise replacing older equipment with new, more efficient models – think ‘whole of life’ costs

Lighting

1. Install LED lights – replace all halogen and CFL bulbs
2. Install motion and light sensors
3. Eliminate unnecessary light and optimise natural light



Lighting Savings

**Replace with 40 x 12 watt
LED Lights**

**All other things being
equal, cost per year falls to
£2324**

Saving Year 1 of £734

Dining Room has 40 x
50 watt Halogen
Spotlights

In use for 12 hours per
day, 7 days per week

Average Unit Price:
£0.35

Cost per year: £3058



Heating

1. Service your boiler
2. Install thermostats and train staff on operating the controls
3. Reduce the temperature where possible
4. Upgrade the insulation in your building

Heating

Let staff know the costs of heating

A 10% decrease in boiler efficiency will lead to a 20% increase in costs

Close windows and doors

Zone areas for heating and cooling

Seal drafts and flues

Refrigeration

1. Check and maintain door seals
2. Ensure temperature is no more than 3 degrees in fridges and -18 degrees in freezers
3. Install a PVC curtain on large fridges





Staff

1. Invest in communication, training and monitoring – especially of heating systems or new technology
2. Invite ideas for energy-saving from the team
3. Recognise and reward great suggestions and the impact of staff actions on consumption and costs

Renewables

1. Research options thoroughly
2. Work with a reputable supplier and check with others who have availed of their services
3. Calculate the return on investment



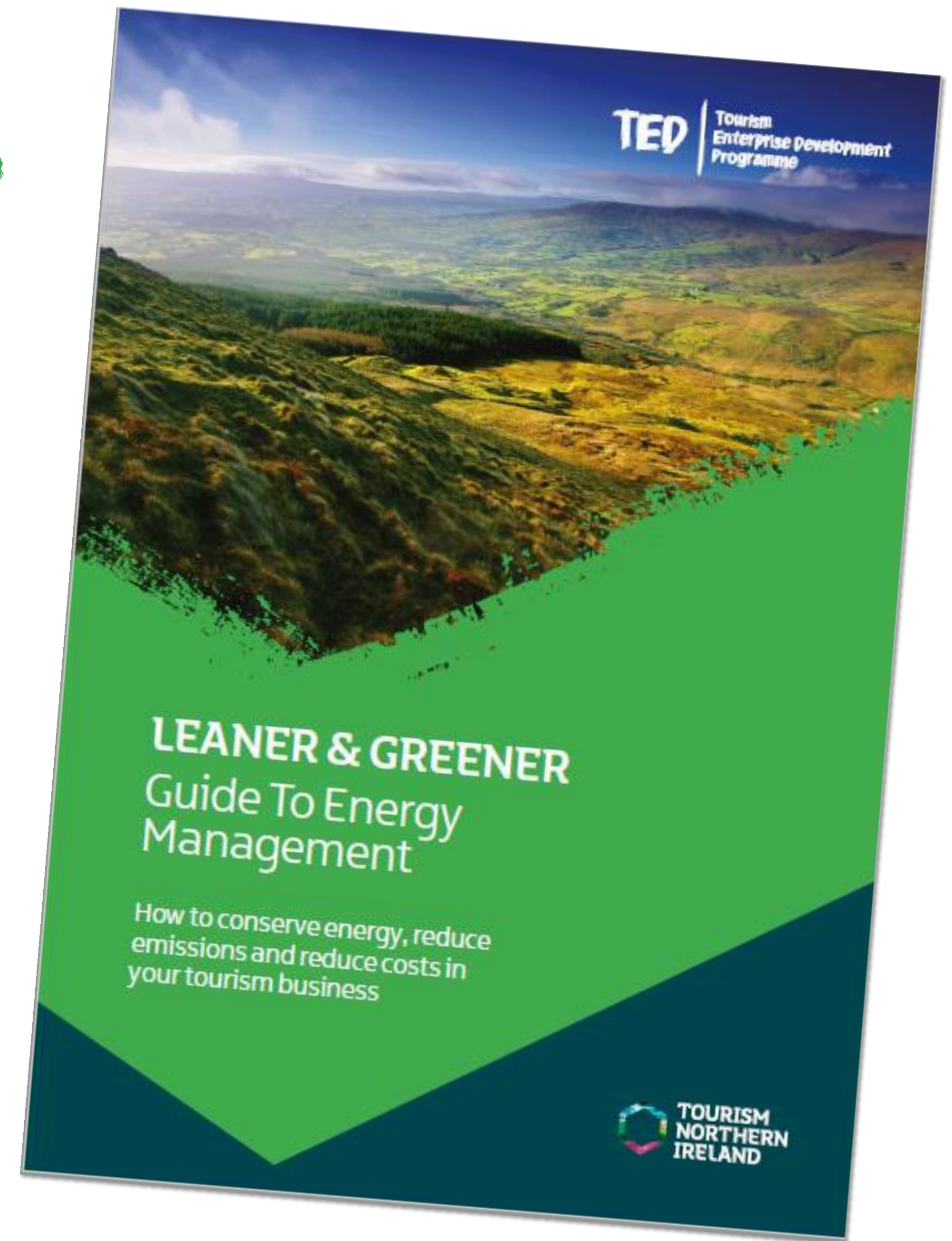
Download the workshop resources

WORKBOOK

1. Leaner & Greener Roadmap
2. Instructions for Worksheet 1 : Annual Units & Costs
3. Instructions for Worksheet 2: Energy Equipment Audit
4. Improvement Action Plan Template
5. Top Actions to save money and energy

SPREADSHEETS

1. Worksheets 1 and 2 above
2. Action Plan Template



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7. Future

Webinars



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Save the Date

Tuesday 24th January, 10am

- Leaner & Greener Water Management

Tuesday 7th February, 10am

- Leaner & Greener Waste Management

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Thank you

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