



Climate Action Programme 2024

16th July

Materials and Procurement



WELCOME



Housekeeping

- Autocaptioning
- Chat and Q&A functions
- Feedback on session
- Recording and slides available post webinar on Arts Council climate action webpage

<https://www.artscouncil.ie/ArtsinIreland/Climateaction/ArtsCouncilresourcesandsupports/>





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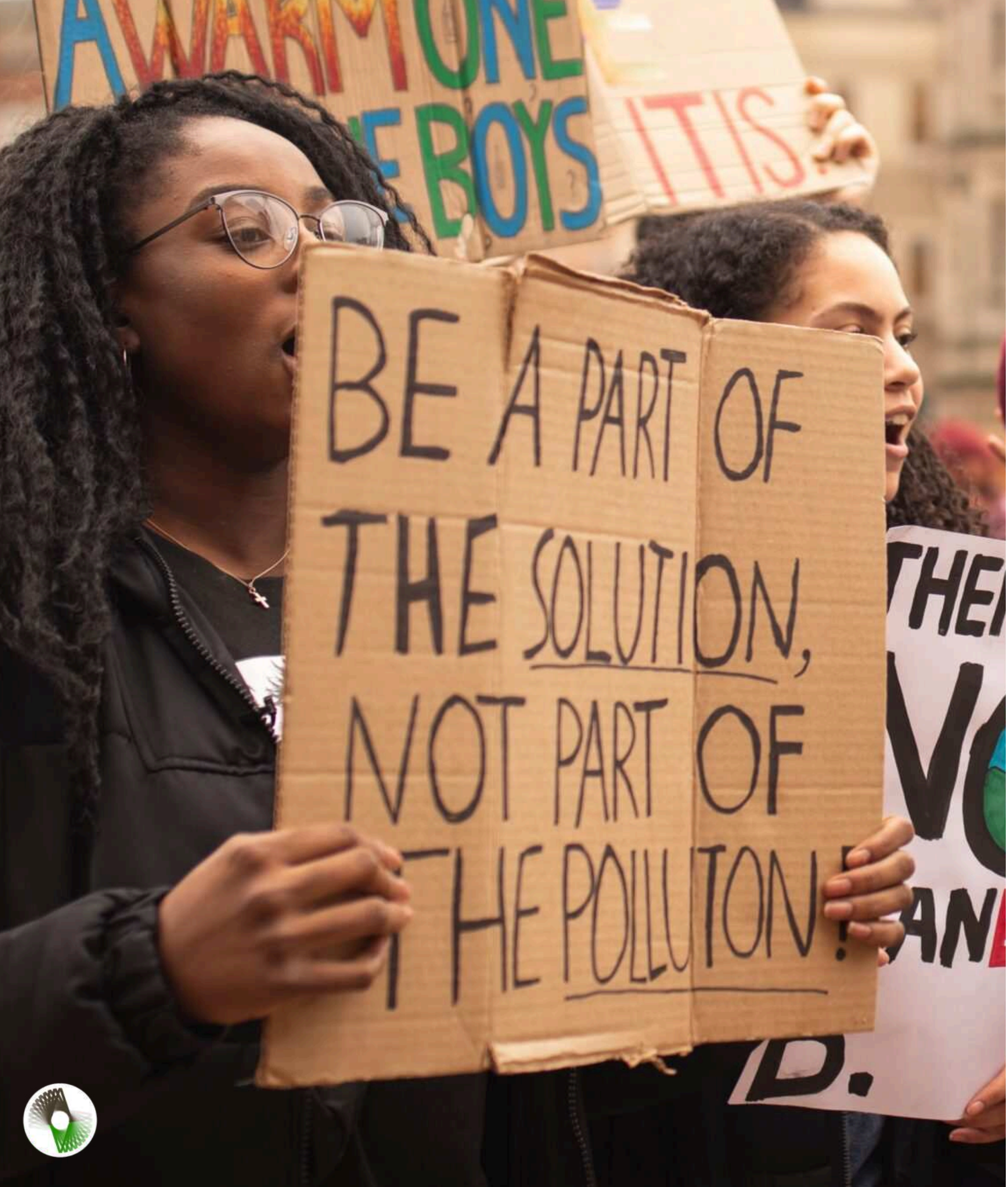
Materials and Procurement

Julie's Bicycle EU



Julie's Bicycle
CREATIVE • CLIMATE • ACTION





Our team today

Megan Best



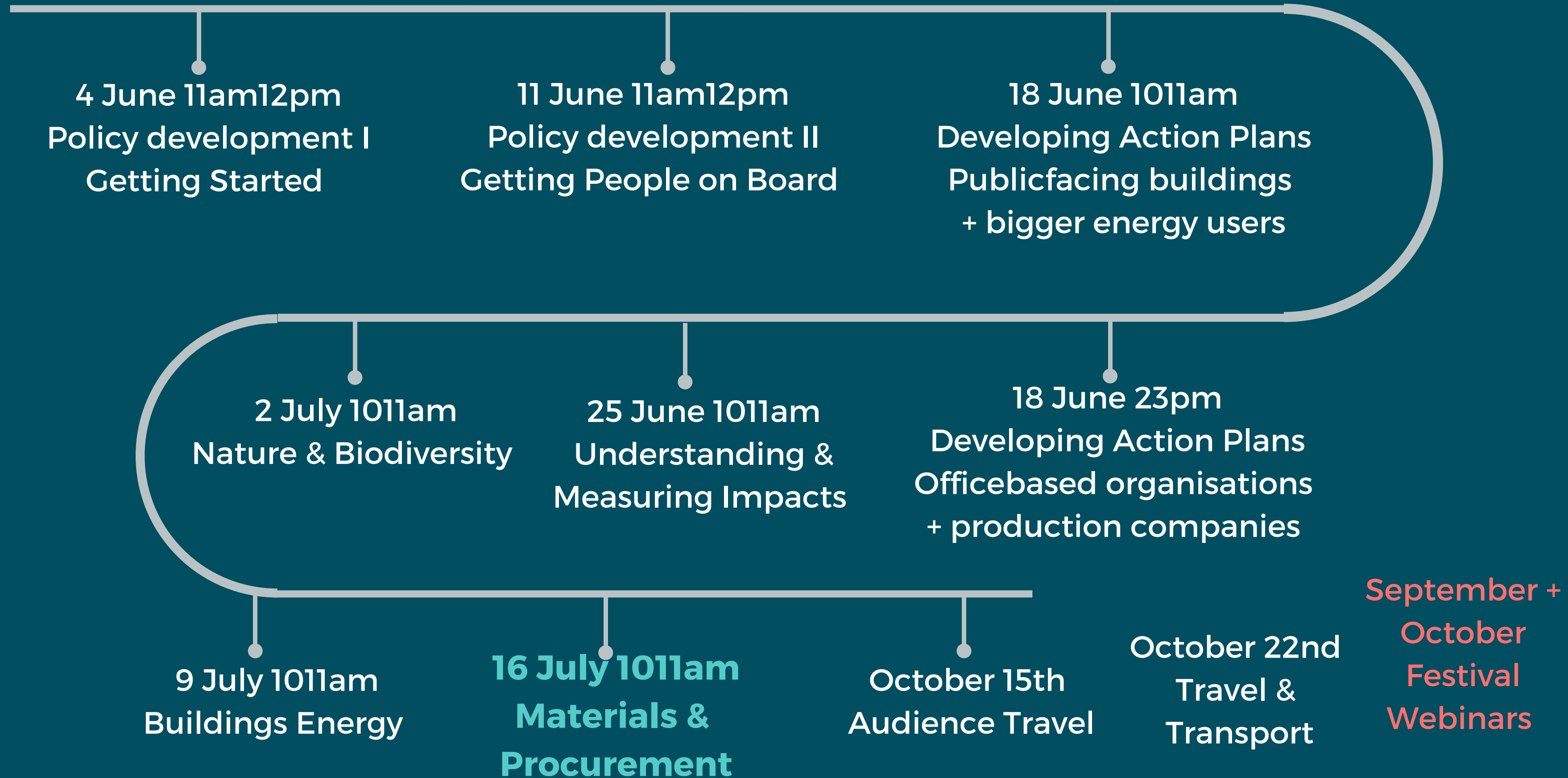
Noreen Lucey



Brecken Byron



Training webinars



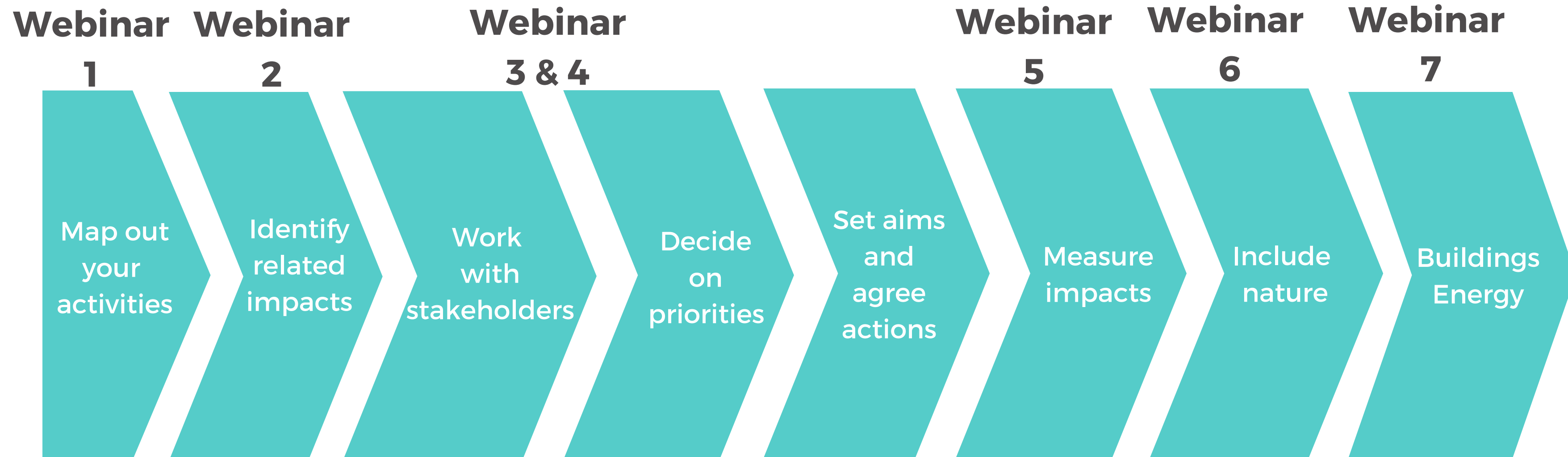
If you didn't join the previous sessions you can access the recordings and slides at:

<https://www.artscouncil.ie/ArtsinIreland/Climateaction/ArtsCouncilresourcesandsupports/>



The sessions so far should have given you an understanding of:

- What an environmental policy and action plan should cover
- What to focus on in your policy and plan
- How to go about developing them
- Who to involve in the process and how
- How to measure your impact
- Activities impact on biodiversity and the impact area of energy



How are you feeling now about creating your environmental policy and action plan?

- We have already started
- We have been attending the webinars or watching the recordings and are ready to start
- We plan to start working on this after the funding application deadline in September
- We plan to start working on this after all the sessions complete in October





What is the focus of today's session?



What will we cover?

- **The Story of Stuff**
- **Principles of the Circular Economy**
- **Examples of the materials you use within your organisation**
- **Designing and implementing a sustainable procurement policy**
- **Best practice and examples**
- **Do's and Dont's**
- **Q and A**



What are the aims of this session?

- To set the scene and explore the “story of stuff”, where our materials come from and how the composition of our materials makes disposal of and reuse of materials complicated
- Consider the different use of materials across different organisations
- Explore the possibilities of applying the circular economy to our use of materials
- Green Procurement and the decision making process
- Share best practices and examples to inspire us and get us started



The Story of Stuff

The Story of Stuff is a narrative that explores the lifecycle of the materials and products we use in our daily lives.

Where raw materials come from

- The environmental degradation caused by extraction activities, including deforestation, habitat destruction, and pollution.

Production and Manufacturing

- Industrial Processes
- Energy and Resource Use

Distribution and Consumption

- Global Supply Chains
- Consumer Culture

Disposal and Waste

- Waste Generation
- Recycling and Reuse

Impact and Solutions

- Environmental and Social Consequences
- Sustainable Alternatives



Before the industrial revolution, the materials used in everyday life were typically natural and locally sourced.

Wood was one of the most prevalent materials.

- Used for building homes, furniture, tools, and transportation (e.g., carts, ships).
- Easily accessible, renewable, and relatively easy to work with using simple tools.

Stone was a primary material for construction (e.g., buildings, bridges, roads).

- Used in various forms such as limestone, granite, and marble.
- Durable and weather-resistant, making it ideal for longlasting structures.

Metals like iron, copper, and bronze were used for tools, weapons, and basic machinery.

- Process of smelting and forging laborintensive but crucial for creating durable tools and implements.
- Limited to basic applications due to the lack of advanced metallurgical techniques.

Use of single materials in construction and manufacturing, making recycling and reuse easier.

- A wooden chair was made entirely of wood, a stone house was constructed from blocks of stone.
- When combining materials, the process was straightforward and often involved simple joinery or fastening techniques.
- A wooden handle attached to a metal axe head, stone walls reinforced with wooden beams.

But the industrial revolution from 1760 to 1840 introduced new materials and methods that drastically changed production and consumption patterns.



The Industrial Revolution marked a significant turning point in history. It originated in Britain and eventually spread across Europe and North America, transforming economies and societies.

Before the Industrial Revolution:

- **Production was predominantly handcrafted, involving skilled artisans who created goods in small workshops or homes.**

During and After the Industrial Revolution:

- **Introduction of machinery and factories revolutionized the production process.**
- **Innovations like the spinning jenny, power loom, and steam engine enabled mass production of goods.**
- **Factories centralised production, increasing efficiency and output while reducing the need for skilled manual labor.**

Environmental Impact:

- **Increased demand for raw materials (coal, iron, cotton) led to intensified extraction activities.**
- **Significant environmental degradation, including deforestation, mining, and pollution.**
- **Factories release large amounts of pollutants into the air and water.**
- **Early industrial cities were characterized by poor air quality and contaminated waterways.**

The Industrial Revolution set the stage for the modern industrialized world.

- **It introduced a paradigm shift in how materials are produced and consumed.**

Understanding this historical context is crucial for addressing contemporary challenges in material sustainability and environmental impact.





The Industrial Revolution not only transformed production methods but also introduced a range of new materials that revolutionized various industries.

These new materials included plastics, synthetic fibers, and advanced metals, which offered unique properties and advantages over traditional materials.

The first synthetic plastic, Bakelite, was invented in 1907 by Leo Baekeland.

Plastics are polymers made from petroleum-based chemicals, offering flexibility, durability, and moldability.



The first synthetic fiber, nylon, was developed by DuPont in 1935.

Other synthetic fibers include polyester, acrylic, and spandex.

Synthetic fibers offer benefits such as strength, elasticity, resistance to moisture and pests, and ease of maintenance.

Widely used in clothing, upholstery, and industrial applications.



Introduction of advanced metal alloys such as stainless steel, aluminum alloys, and titanium alloys.

Alloys are created by combining two or more metals to enhance properties like strength, corrosion resistance, and weight.

Stainless steel (invented in the early 20th century) is used in construction, medical devices, and household items due to its corrosion resistance.

Aluminum alloys, lightweight and strong, are used in the automotive, aerospace, and packaging industries.

The introduction of new materials significantly increased the variety and availability of raw materials for manufacturing.

Manufacturers could now customize materials to achieve desired properties, leading to innovation in product design and functionality.

Environmental Considerations:

- **While these materials brought significant benefits, they also posed environmental challenges.**
- **The need for responsible material management and recycling practices became more critical.**



Modern products are composed of a wide array of materials that are combined to achieve specific properties and functionalities. The complexity of these materials is driven by technological advancements and the need for high performance, durable, and multifunctional products.

Smartphones are a prime example of complex modern products. They contain a multitude of materials, including metals, plastics, glass, and ceramics.

Key components include the screen, battery, circuit board, casing, and various sensors.

- **Rare Earth Metals:** Elements like neodymium, terbium, and dysprosium are used in the speakers, microphones, and vibration motors.
- **Precious Metals:** Gold, silver, and palladium are used in the circuit boards for their excellent conductivity.
- **Lithium:** Used in the batteries to provide long-lasting power.
- Rare earth metals are primarily mined in China, which holds the majority of the world's supply.
- Precious metals are extracted from mines in countries like South Africa, Russia, and Canada.
- Lithium is sourced from countries with large lithium reserves such as Australia, Chile, Argentina, and soon, the Ukraine and Botswana

Challenges of Recycling and Disassembly of Smartphones:

- The intricate design and miniaturization of components make disassembly and recycling challenging.
- Different materials are often tightly integrated, making separation difficult without specialized equipment.



Mixed-material packaging combines different materials to enhance functionality, such as durability, barrier properties, and aesthetics.

Common examples include plastic-coated paper, multilayered plastic films, and metalized packaging.

Hidden Components:

- **Polymers:** Different types of plastics like polyethylene, polypropylene, and PET are used for flexibility, strength, and transparency.
- **Aluminium Foil:** Provides an effective barrier against light, oxygen, and moisture, extending the shelf life of products.
- **Various adhesives** are used to bond different layers of materials together.

So even something as simple as the plastic-coated cover on our programme booklets has a more complicated story to tell!

Mixed-Material Packaging Recycling is complicated by the need to separate different materials, which is often not feasible with current recycling technologies.

Many mixed-material packaging products - including tetra pack - end up in landfills due to the difficulty of efficient recycling.



LINEAR ECONOMY

The linear economy model is a traditional economic system characterized by a straightforward flow of materials and products.

It follows a "take-make-dispose" sequence:

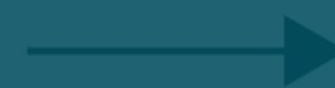
- **Take:** Extract raw materials from the environment.
- **Make:** Manufacture products from these materials.
- **Dispose:** Discard products after use, often resulting in waste.

RESOURCES

TAKE



MAKE



DISPOSE

WASTE



Material extraction is a critical part of the linear economy model. While it provides the raw materials necessary for production, it also leads to significant environmental degradation.

Deforestation is the large-scale removal of forests, primarily for logging, agriculture, and mining. It leads to habitat loss, reduced biodiversity, and disruptions in the water cycle.

Pollution:

- **Material extraction processes release pollutants into the air, contributing to poor air quality and health issues.**
- **Water Pollution: Extraction activities often contaminate water sources with chemicals, heavy metals, and sediment.**
- **Soil Pollution**

Extraction activities often occur on or near lands inhabited by local communities, leading to displacement, health issues, and loss of livelihoods.

Example:

Dalradian, a Canadian gold-mining company applied for planning permission in 2009 to build a goldmine in the Sperrins Area of Outstanding Natural Beauty. Local people have objected strongly, to date 50,000 objections have been lodged, but the planning application is still under review

- **While extraction can generate significant economic gains, the benefits are often unevenly distributed, exacerbating economic inequalities.**
- **Profits typically go to large corporations, while local communities bear the environmental and health costs.**



Manufacturing is a critical phase in the lifecycle of materials and products.

- **Manufacturing processes such as smelting, forging, molding, and assembly are highly energy-intensive.**
- **The manufacturing sector accounts for a significant portion of global energy consumption, second only to the transportation sector.**
- **Manufacturing requires vast quantities of raw materials such as metals, minerals, water, and chemicals.**
- **Producing one ton of steel can require up to 2.5 tons of iron ore and 1.6 tons of coal.**
- **Water is crucial for cooling, washing, and as a raw material in certain chemical processes.**
- **Manufacturing is one of the largest industrial consumers of freshwater, contributing to water scarcity issues in some regions.**
- **Manufacturing processes often generate significant waste, including scrap materials, defective products, and industrial effluents.**
- **Fossil fuels (coal, oil, and natural gas) are the primary energy sources for manufacturing due to their high energy density and availability. They are used directly in production processes and indirectly to generate electricity and heat.**



A MORE REPRESENTATIVE VIEW OF THE CONTEXT IN WHICH FACTORIES AND COMPANIES WORK

Modern manufacturing and distribution rely on complex global supply chains to source raw materials, produce goods, and deliver them to consumers worldwide.

Supply chains often involve multiple tiers of suppliers and subcontractors, each contributing different components or services.

Components and raw materials are sourced globally, often crossing multiple borders before reaching the final assembly location.

A smartphone might include components from over 50 different countries.

Example:

An iPhone 11 has an estimated 80kgs of embodied carbon, the Fairphone 4 just 35kgs.

If everyone who owns a smartphone, that's 7.21 billion people, were to switch to a Fairphone, we could save 324,450,000 tonnes of CO2 emissions



It certainly is **complex**. But it is **not unsolvable**.



Consumer culture refers to a societal focus on the acquisition of goods and services, driven by the desire for personal satisfaction and social status.

The rise of consumer culture has been significantly influenced by advertising and marketing strategies that promote constant consumption.

Advertising creates demand by tapping into emotions and aspirations, convincing consumers that purchasing certain products will enhance their lives.

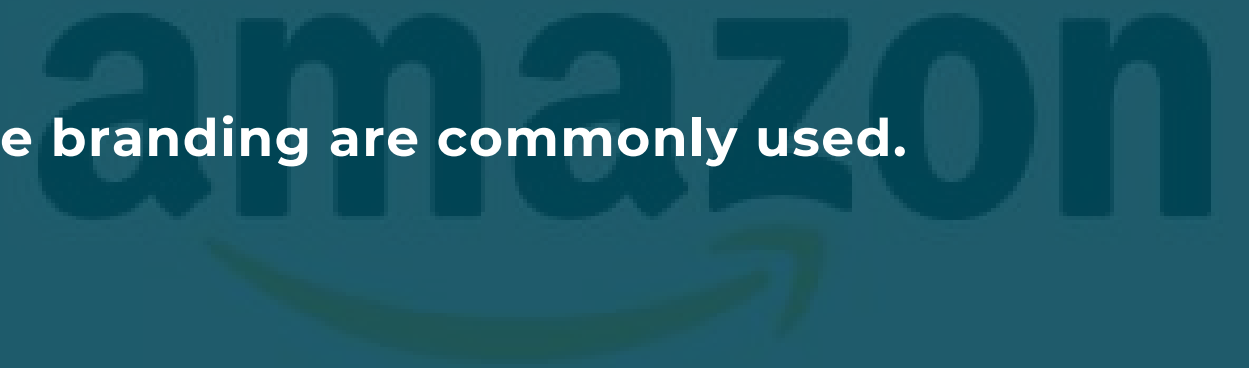
Techniques such as celebrity endorsements, emotional appeals, and lifestyle branding are commonly used.

Planned Obsolescence:

Products are designed with limited lifespans or built-in obsolescence to encourage repeat purchases.

Consumer culture promotes the idea that personal identity and social status are closely tied to material possessions.

Western society, including Ireland, is particularly susceptible to this as our society has been programming us this way for the past 80 years. We think we're immune but we're not



Modern consumer habits lead to the generation of massive amounts of waste. Waste management has become a critical environmental issue due to the volume and complexity of the waste produced.

- **Municipal Solid Waste (MSW):** Includes everyday items discarded by households and businesses, such as food scraps, packaging, paper, and plastics.
- **Electronic Waste (E-Waste):** Discarded electronic devices like smartphones, computers, and televisions. Contains hazardous materials like lead, mercury, and cadmium.
- **Industrial Waste:** Waste generated by manufacturing and industrial processes. Includes chemicals, metals, and by-products of production.
- **Construction and Demolition Waste:** Debris from building and infrastructure projects. Includes concrete, wood, metals, and plastics.



Plastics:

- **The durability of plastics, which makes them useful, also means they persist in the environment for hundreds of years. Mismanaged plastic waste ends up in oceans, rivers, and landfills, causing widespread pollution.**
- **Microplastics: Larger plastic items break down into smaller pieces called microplastics, which contaminate water sources and enter the food chain.**
- **Microplastics have been found in marine life, drinking water, and even human tissues.**
- **Certain chemicals in plastics, such as bisphenol A (BPA) and phthalates, are linked to health issues like endocrine disruption and cancer.**

Check out:

- **The Ocean Cleanup Project - An initiative aimed at removing plastic waste from the ocean using specially designed systems. The project's Interceptor device collects plastic waste from rivers before it reaches the ocean.**
- **Guide to Plastic-Free Festivals and Events**



Textiles

The first synthetic fiber, rayon, was developed in the late 19th century as a silk substitute. In 1935, nylon was invented by DuPont, marking the beginning of the synthetic fibre revolution. The mid-20th century saw the development of other synthetic fibres such as polyester, acrylic, and spandex. Synthetic fibres offered advantages like durability, elasticity, and resistance to wrinkles and shrinkage.

Environmental Impact of Textile Production:

- Intensive use of water and pesticides in cotton farming.
- It takes about 2,700 litres of water to produce one cotton t-shirt
- Silk requires mulberry leaves for silkworms, leading to deforestation in some regions.

Synthetic Fibre Production:

- Synthetic fibres are derived from petroleum
- Polyester production relies on fossil fuels and generates significant greenhouse gas emissions.
- Production processes for synthetic fibers involve toxic chemicals that can pollute air and water.
- Nylon production releases nitrous oxide, a potent greenhouse gas.

Both natural and synthetic fiber production are energy-intensive processes.



Electronics

Modern electronic devices, such as smartphones, laptops, tablets, and household appliances, are integral to everyday life. These devices are complex, composed of multiple materials and intricate components that enhance functionality but complicate recycling efforts.

Many electronic components contain hazardous substances such as lead, mercury, cadmium, and brominated flame retardants.

Improper handling can release these toxins into the environment, posing health risks.

The growing demand for electronics contributes to the depletion of natural resources, including rare earth elements and precious metals.

Example: Mining for materials like cobalt in the Democratic Republic of Congo often involves hazardous working conditions and environmental destruction.



Construction

Construction relies heavily on materials like concrete, steel, and timber due to their durability, versatility, and availability. These materials are fundamental to building infrastructure, sets, props

Timber is a natural, renewable material. Used in construction for framing, flooring, roofing, and finishing. Trees absorb CO2 as they grow, and timber structures can act as carbon sinks, storing carbon for the lifespan of the building. Certification programs like FSC (Forest Stewardship Council) promote sustainable forest management. Timber from old buildings can be repurposed for new construction projects, reducing the need for new wood.

Material Efficiency:

Designing infrastructure to use materials efficiently and reduce waste. Modular construction techniques minimise material waste.

Lifecycle Assessment (LCA):

Evaluating the environmental impact of materials from extraction to disposal to make informed choices. Comparing the embodied energy and carbon footprint of different materials.







What Is the Circular Economy?

SHIFTING TOWARDS A CIRCULAR ECONOMY



Share



Watch on



YouTube

What materials do you / your organisation regularly use?

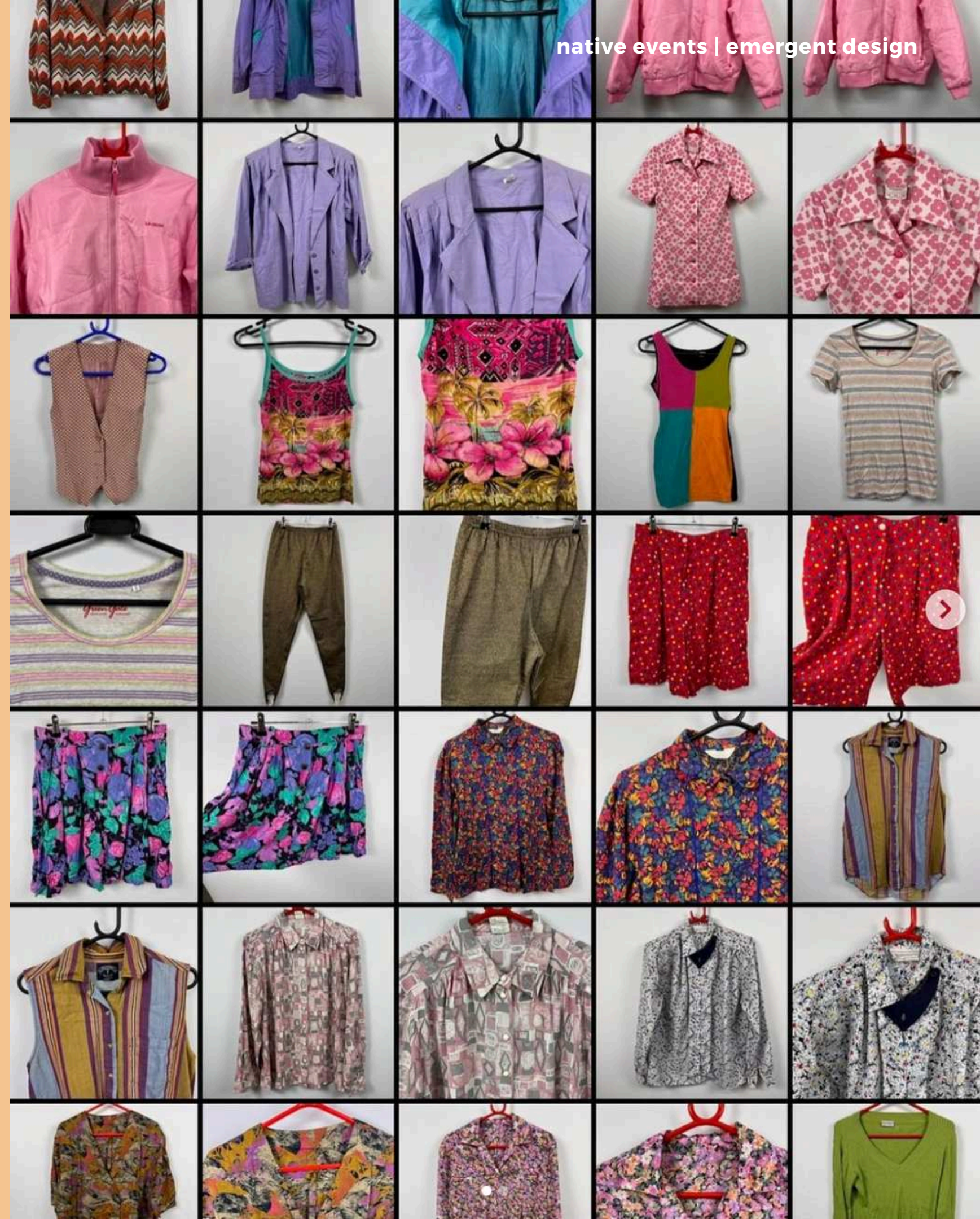
- Paper
- Plastics
- Packaging
- Textiles
- Electronics
- Timber
- Steel
- Paints
- Adhesives
- All of the above and many more besides.....







THE BIGGER THE HIVE, THE SWEETER THE HONEY



native events | emergent design





TRASH MAMMOTH

BY NED LEDDY

LIGHTING
RECYCLING





Case Study Furthr Conference Circular Stand Build



Case Study

Body & Soul Festival



Material Bank



Case Study

Production Resources Ireland



Production Resources Ireland

+ Invite

**Hi there could anyone help me out
I'm looking for an old reel to reel tape
machine if you can pm me please**



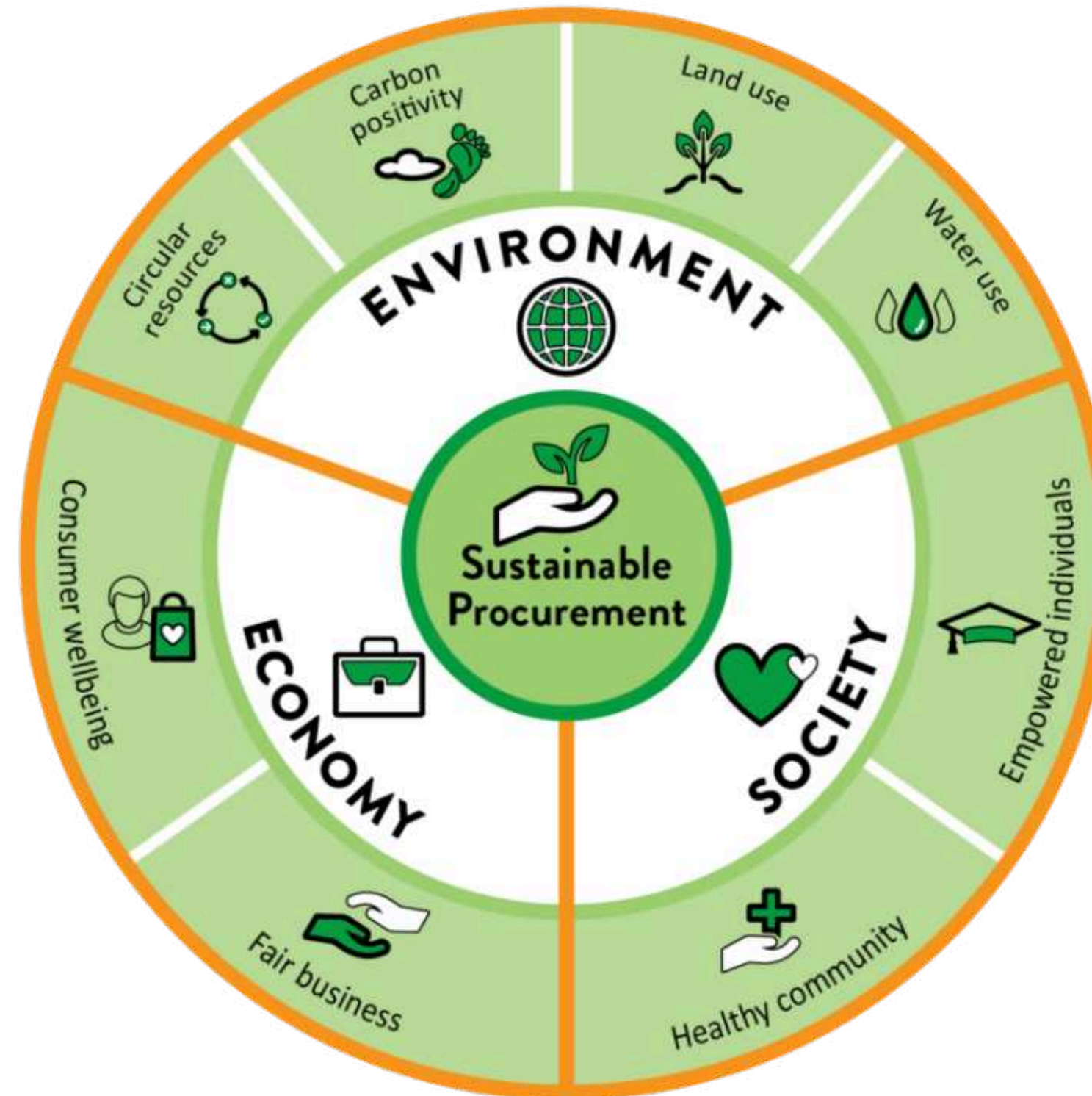


What, on average, of your total funding, is your organisation's annual spend on materials?

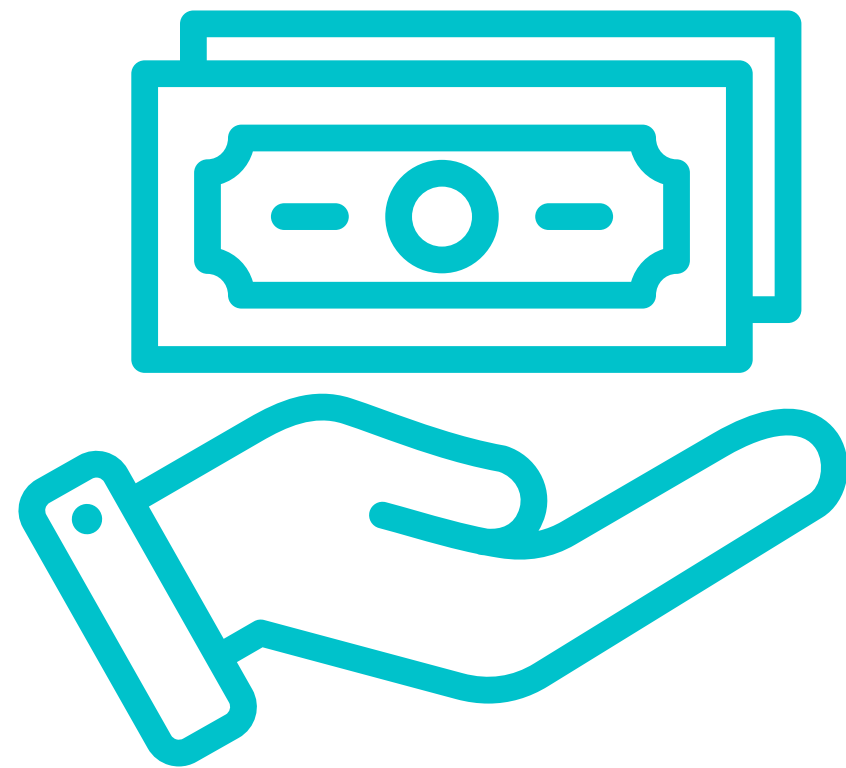
- Up to 10%
- 10% 15%
- 15%20%
- 20%25%
- 25%30%
- 30% or more



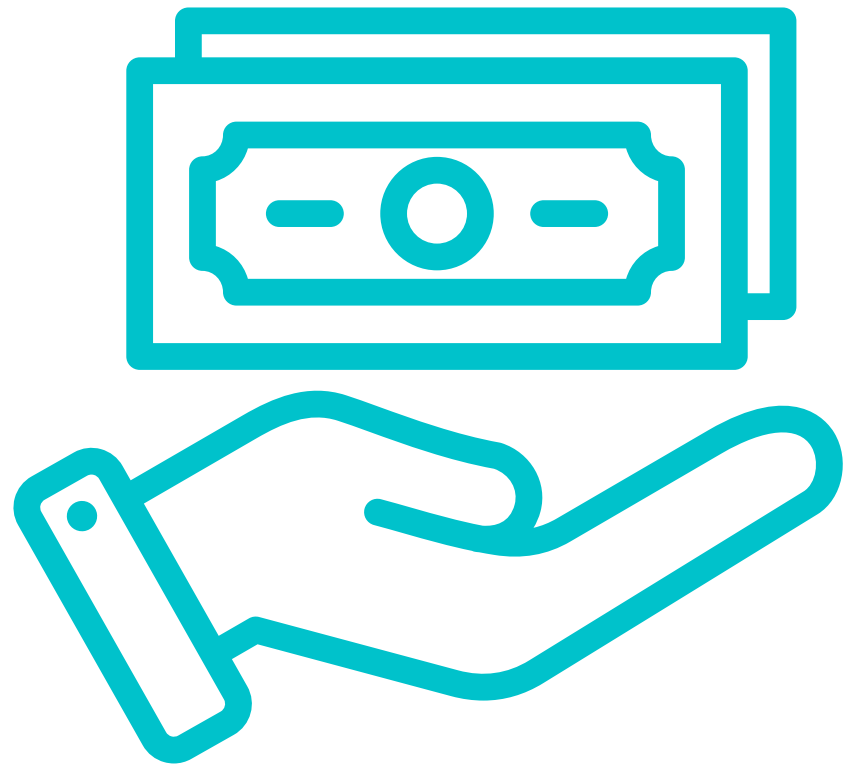
The case for Sustainable / Green Procurement



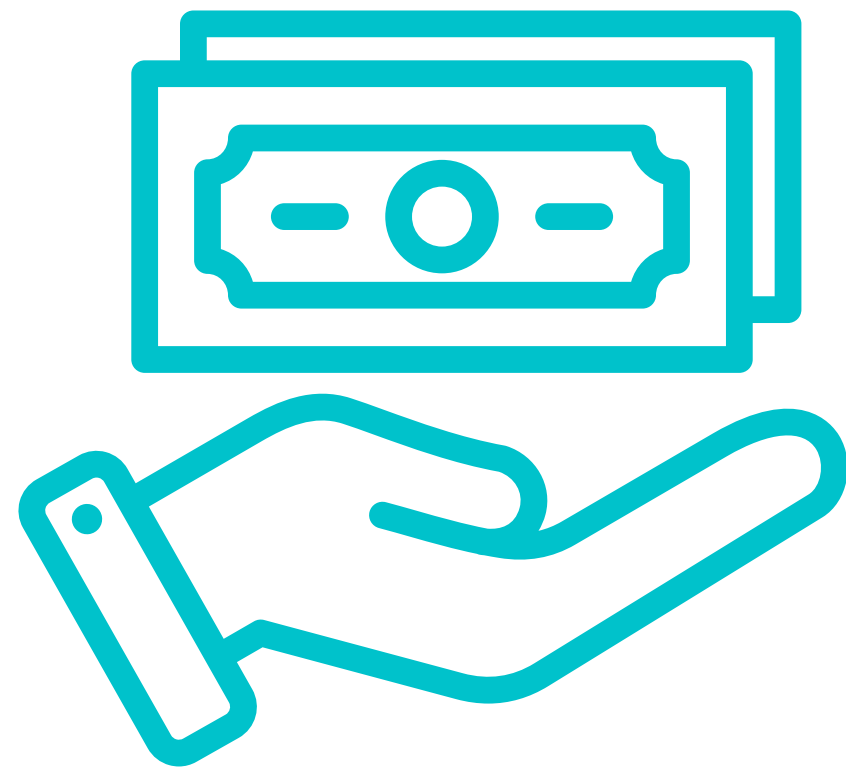
The case for Sustainable / Green Procurement



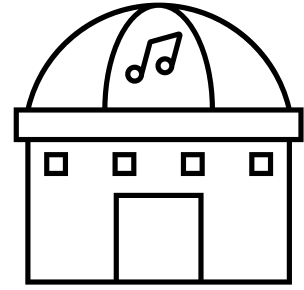
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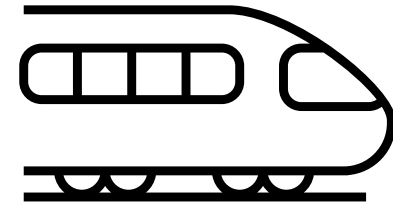
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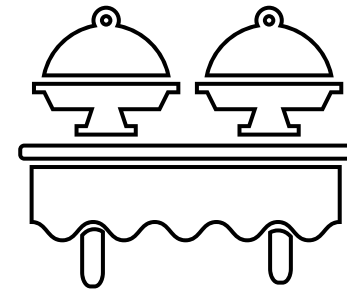
The case for Sustainable / Green Procurement



Building fabric,
management and
services



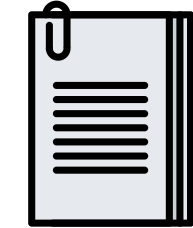
Travel and Transport



Catering and food



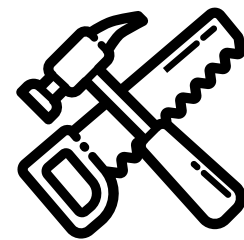
Electronic equipment
Digital



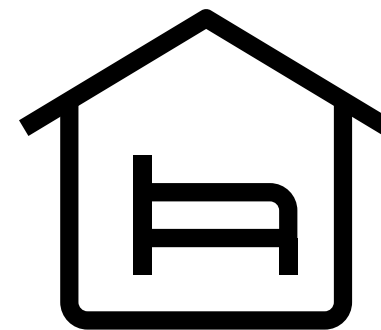
Printed materials



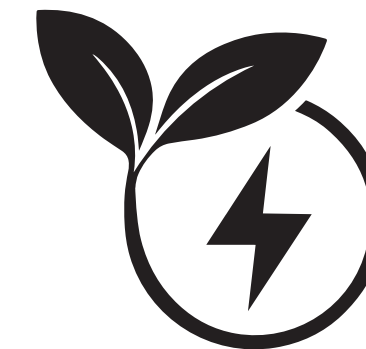
Cleaning and
maintenance products



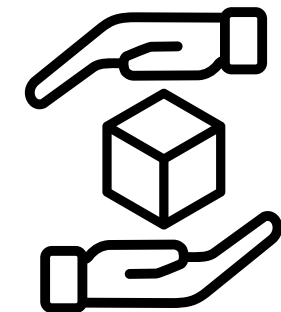
Set building



Accommodation



Energy and
heating



Materials



Starting out / First principles of sustainable procurement

Make a list of the things you buy, your suppliers and your annual spend

Examine your buying systems and decisionmaking processes by asking the following questions:



Do you have an ordering system in place that considers environmental sustainability?



Is there an opportunity for staff to suggest more environmentally sustainable alternatives?



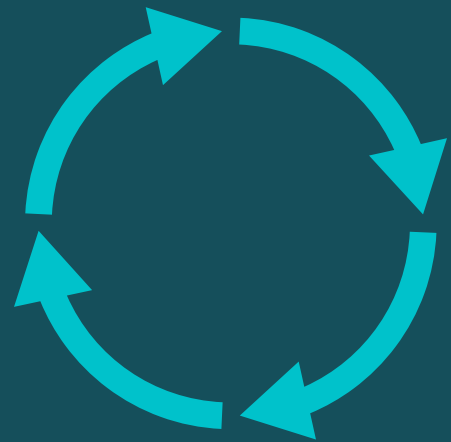
Who decides how much and of what is bought?



Are you frequently making lastminute buying decisions?



Starting out / First principles of sustainable procurement



Consider the entire life cycle of the goods and services you buy



Engage with suppliers to understand the environmental and socioeconomic performance from the point of manufacture to final delivery and ultimate disposal of a product or service.



Know your contracts. Which (if any) are coming up for renewal, or which ones are temporary.



What environmental or social criteria matter most to your organisation, and which will you be able to incorporate into procurement questions or contracts.



Developing a Sustainable Procurement Policy

- As an organisation, agree on your minimum “green” requirements for different suppliers, products and services
- Include the decisionmaking process to be followed for each purchase. Use the policy as a reference document for any staff making purchases.
- Keep the format of the document clear, simple and straight to the point, and make it practical for your organisation and team in decision making
- Create targets and goals as part of your environmental policy and action plan.
- Communicate your commitments to existing and new suppliers, and ask them to comply or join you in making a commitment to sustainability.



Example: Green procurement criteria for theatres

Walk through a preproduction, production and post production process to identify all the possible green procurement goods and services



Lighting: When replacing lighting, choose LED

Energy: Choose a Green tariff from your existing suppliers or explore alternative options

Sets: Repurpose materials for sets using FSC wood for set construction

Paints: Research the use of lowVOC (volatile organic compounds) paints and finishes to reduce harmful emissions

Costumes and props: Research costumes and prop sharing or recycled or second hand fabrics

Water conservation: Install low flow fixtures and water harvesting

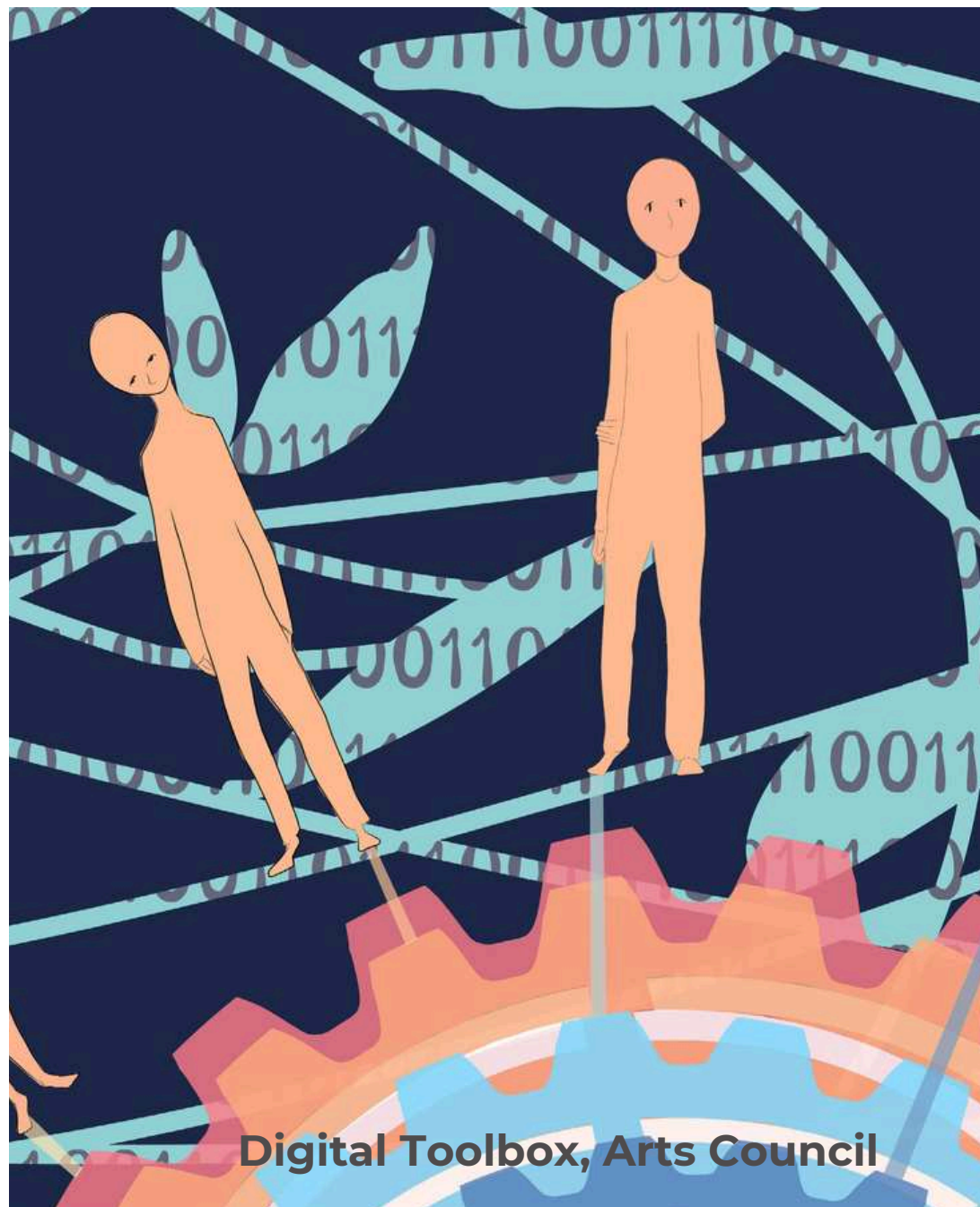
Transportation: Include public transportation as a business travel criteria when possible

Paper: Optimise Sustainable printing and recycled paper use

Cleaning: Require eco and green cleaning products



Example: Green procurement criteria for resource organisations



Office Supplies: Switch to 100% recycled paper and ecofriendly stationery

Office equipment: Replace with energy efficient equipment such as photocopiers when required

Transportation: Include public transportation as a business travel criteria when possible

Cleaning: Use green cleaning services that utilise biodegradable and nontoxic products

Event Management: Hire event planners who specialise in sustainable practices, such as zerowaste events. Choose catering services that use local, organic, and sustainably sourced food.

Printing and marketing: Use digital programming and marketing materials to reduce paper waste



Example: Green procurement criteria for production company



- **PreProduction:**

Materials Sourcing: Use responsibly sourced and salvaged materials for set construction.

Costume Design: Choose ecofriendly fabrics and secondhand costumes.

Technical Equipment: Install LED lighting and energyefficient sound and AV equipment.

- **Production:**

Recycling and Waste: Provide recycling and compost bins on set and backstage.

Catering: Select caterers that offer organic and locally sourced food, with minimal packaging waste.

Transportation: Encourage the use of public transportation and car sharing

- **PostProduction:**

Set and Costume Reuse: Repurpose or donate sets, props, and costumes to other production groups

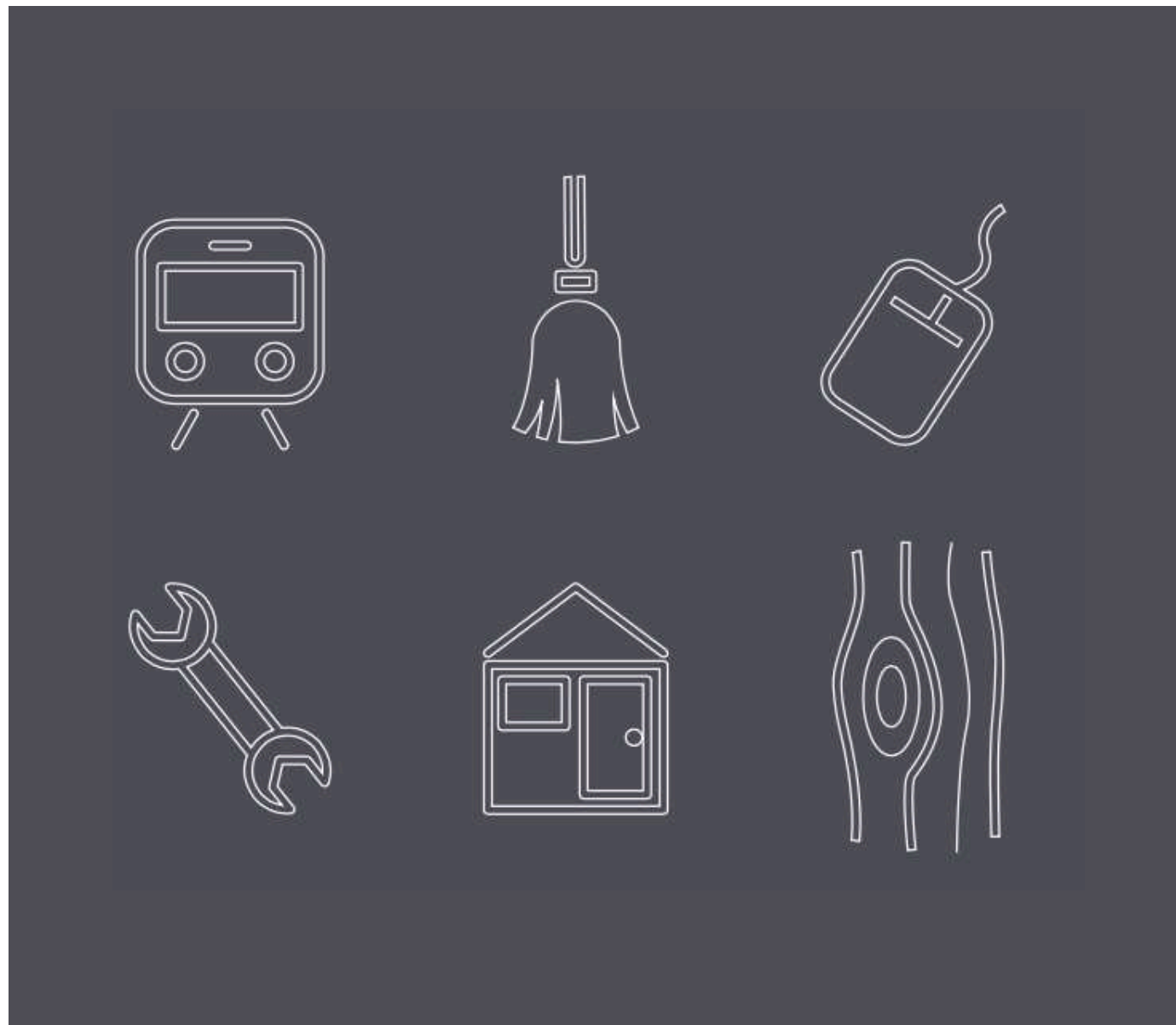
Energy Management: Carry out a postproduction energy audit to identify further efficiency improvements.

Marketing: Use digital channels for marketing and distribution of programs and promotional materials.



Julie's Bicycle Sustainable Procurement Guide

Covers the basic principles of procurement decision processes, sustainability procurement policies and liaising with suppliers, as well as specific buying advice for common products and services and aimed at anyone who makes buying decisions at your organisation



- Developing a sustainable procurement policy
- Choosing and liaising with suppliers
- Procurement and Waste
- Contracting and Tendering
- Buying with Environmental Sustainability in mind
- Resources



Butler Gallery: Ecological approaches to art making processes and materials use



- Kitchen Chemistry: Painting and Drawing with pH scales with Eileen Hutton
- Sculpture Making with Biobased Materials by Eileen Hutton
- Ceramics: Biodiversity Tiles with Mollie Anna King
- Tools to Nourish Ourselves with Maura Brennan
- Plantbased alternatives to photographic processes:



Butler Gallery: Ecological approaches to art making processes and materials use



Eamon Colman, Twenty Eight Acres

Eamon Colman Twenty Eight Acres (June 10 – July 23, 2023)

Twenty eight acres and the site that inspired Eamon Colman is located in north County Kilkenny in a former iron ore and mining area

The *Twenty Eight Acres* site was used as a slag heap for spoils from the coal mines but has, over time, transformed itself into a meadow that is infused with wildflowers such as Irish orchids.

Sustainable living is extremely important to Colman who is a proponent of rewilding gardens.

The artist makes his own paint using raw organic pigment and his own paper “Momigami” paper which is a “kneaded paper” in Japanese

Colman uses paper as a way of sharing the fragility of the landscape (and of himself), revealing its holes and its jagged edges. Colman wants his paintings to have a beauty, but also admitting that “all beauty is damaged in some way”. The tension between Culture and Nature lies at the heart of the work.



Lyric Theatre Belfast



- Solar thermal panels on the roof to heat water
- Every space is naturally ventilated with the exception of the two performing spaces
- Constant improvements to lighting, installing LED lighting in two large spaces in the theatre
- Installed a new Building Management System, giving greater control over heating, ventilation and energy use, and enabling them to achieve their energy saving targets
- Moved to paperless within the Finance and Admin departments
- Changed recycling supplier to ensure that waste is managed more sustainably
- Promote a culture of sustainability led by the Green Team
- The Creative Learning Department have toured a production for primary schools – a brand new, devised project highlighting environmental issues affecting life in Northern Ireland.



Lyric Theatre Belfast



Scenic Construction Manager

We recently created a new creative post at the Lyric Scenic Construction Manager which aims to make the Lyric more resilient for the future and to improve our environmental sustainability practices.

Scenic construction is not only an integral part of the creative process, but it also represents one of the most significant areas of cost and potential for waste. As a fulltime producing theatre, we create up to 15 inhouse productions every year. Our Scenic Construction team is committed to minimising the adverse environmental effects caused as a result of what we do, reducing the use of raw materials in our sets, and reusing materials where possible.



Do



Don't

Don't create your procurement policy alone speak to all your team and suppliers first.

Don't leave purchases to the last minute plan ahead as much as you can.

Don't repeat purchases year on year review what has been purchased, what was not needed and revise purchasing list annually.

Don't leave green procurement decisions to one person, such as finance, play an active part in researching and sourcing alternative materials with them.



What's next

Feedback form

Mid programme feedback survey

Further resources

Overview of sustainable suppliers

Peer to Peer sessions



Training webinars

4 June 11am-12pm
Policy development I
Getting Started

11 June 11am-12pm
Policy development II
Getting People on Board

18 June 10-11am
Developing Action Plans
Publicfacing buildings
+ bigger energy users

2 July 10-11am
Nature & Biodiversity

25 June 10-11am
Understanding &
Measuring Impacts

18 June 2-3pm
Developing Action Plans
Officebased organisations
+ production companies

9 July 10-11am
Buildings Energy

16 July 10-11am
Materials & Procurement

October 15th
Audience Travel

October 22nd
Travel &
Transport

September +
October
Festival
Webinars



Q&A
See you in Autumn!

