

Net Zero Isle of Man – preparing businesses for a low-carbon future

Introduction & objectives

Background

Quiz

Local initiatives & discussions

Practical steps to lowering emissions

Business opportunities, skill sets & risks



Welcome to everyone, including:

Adventurous Experiences

Atla Group

BB Consulting

Blue Island

Cains

Capital

Conister Bank

Curtis Associates

Hansard

HSBC

IoM Government

IoM Post Office

IoM Today

IOMFSA

KPMG

Lloyds

Luminaires

Manx Radio

Manx Utilities

Marbral Advisory

Manx National Heritage

Nedbank

Oxford Energy

PWC

Ravenscroft

RS Marketing & PR

Siemens Energy

Standard Bank

Swagelok

Zurich International

ESC – Island-focused **research & training** to support net zero commitments

- To foster engagement & collaboration, develop ideas, provide guidance & advice*
- Workshops, film, competition, knowledge hub, think tank, objective information
- Independent source of expertise & inspiration + IoM-focussed on-Island training
- Research affiliation with DTU agreement to be pursued with Durham Energy Institute

Seeking way to work with UCM

Technical University of Denmark



In World University Research Rankings 2020 DTU is ranked:

No. 1 in the Nordic region
No. 1 in Europe
No. 2 in the world

DTU Wind	Solar DTU	DTU Energy
DTU Sustainability	DTU Aqua	DTU Space
Energy Economics & System Analysis DTU		
DTU Renewable Energy Policy Planning & Integration		
VILLUM Center for Sustainable Fuels & Chemicals		

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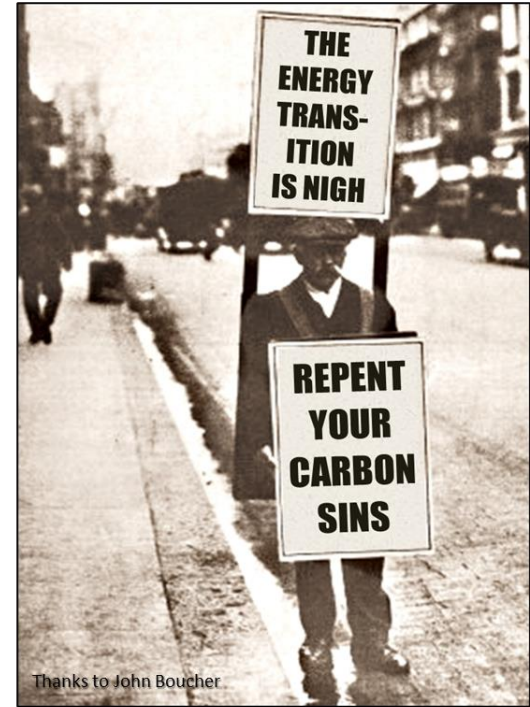
Working closely with industry both local businesses and international companies but entirely non-partisan (per project funding)



*e.g. Papers on climate change, low carbon power, emissions & carbon offsetting (+ links to Government websites?)

Objectives of workshop

- Inform on current situation
 - Climate change
 - Business as usual no longer an option
 - But IoM strategy is still to be decided
 - What to do, when to act & is it viable?
- Provide guidance & practical solutions
- Facilitate collaboration & exchange ideas
- Encourage decision-makers on enabling policies
- Offer research & training



Background

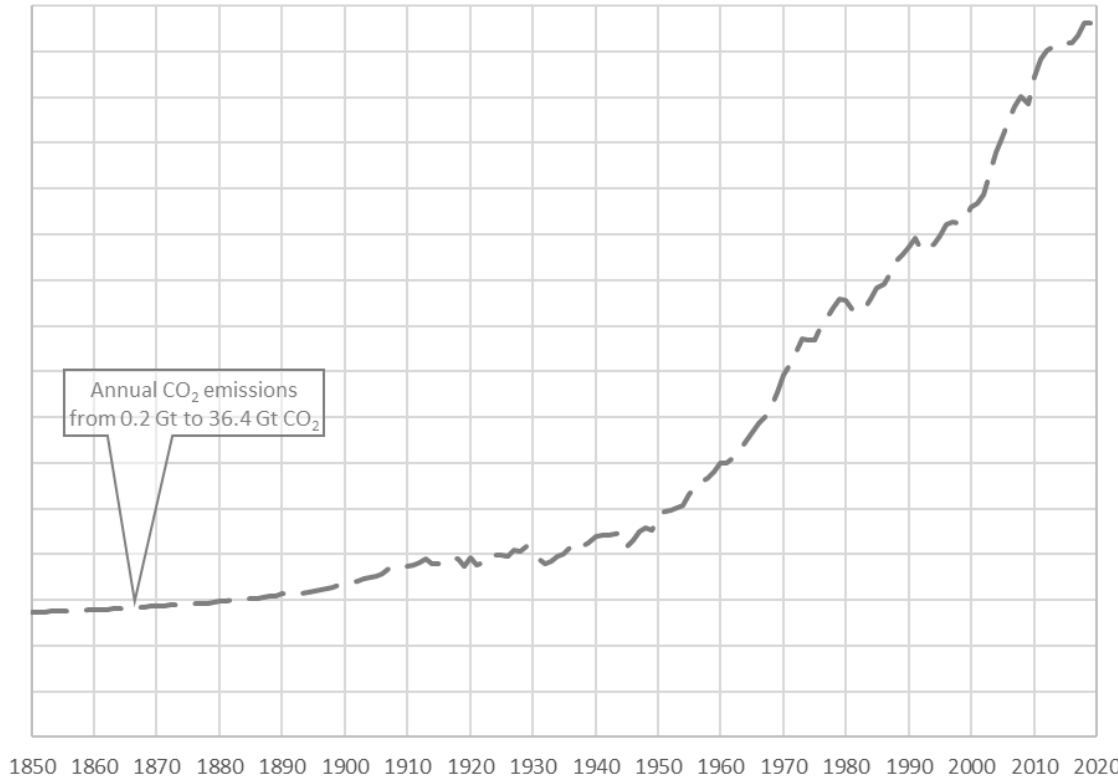


Copenhagen, 2 July 2011
(150 mm rain in 3 hours)



- If only we weren't fossil fuel-dependent**
- Can we blame geology, Texas or Henry Ford?
 - Easy, cheapest path is not always the right one

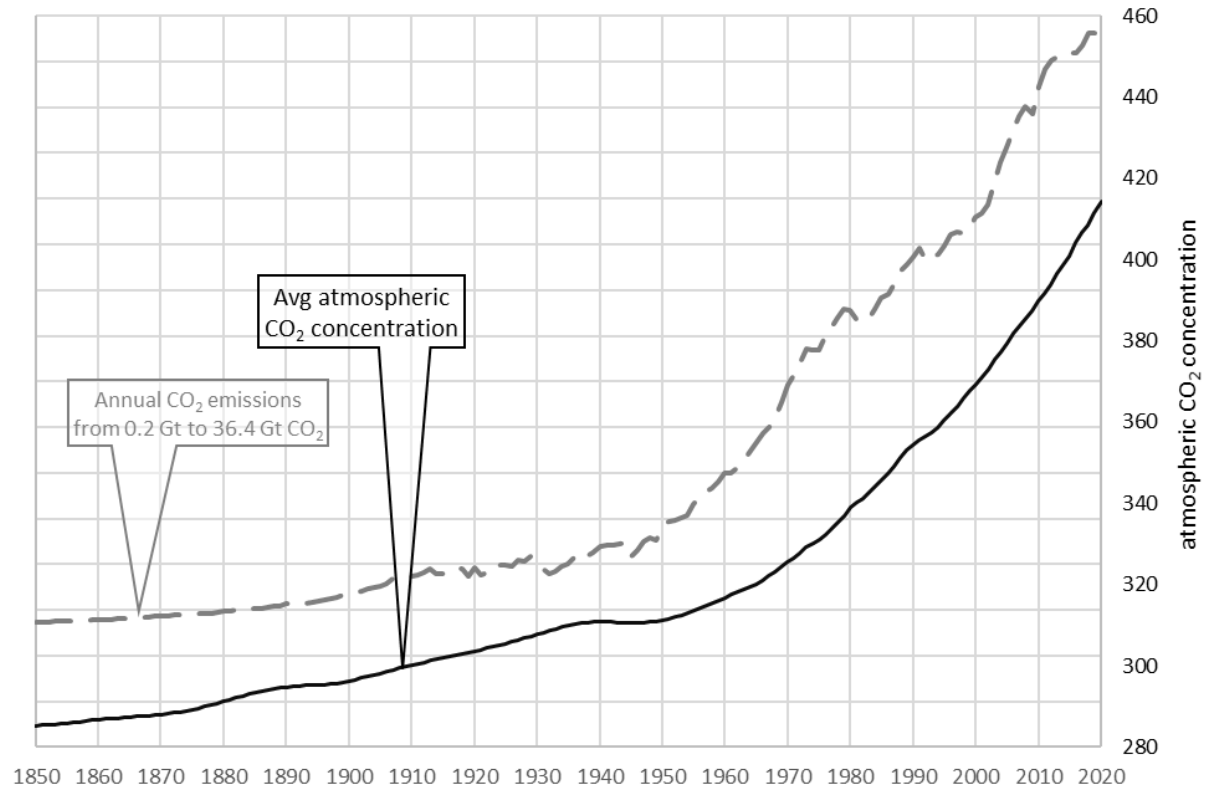
Annual carbon dioxide emissions (59 Gt CO₂e CH₄, NO_x, FC's)



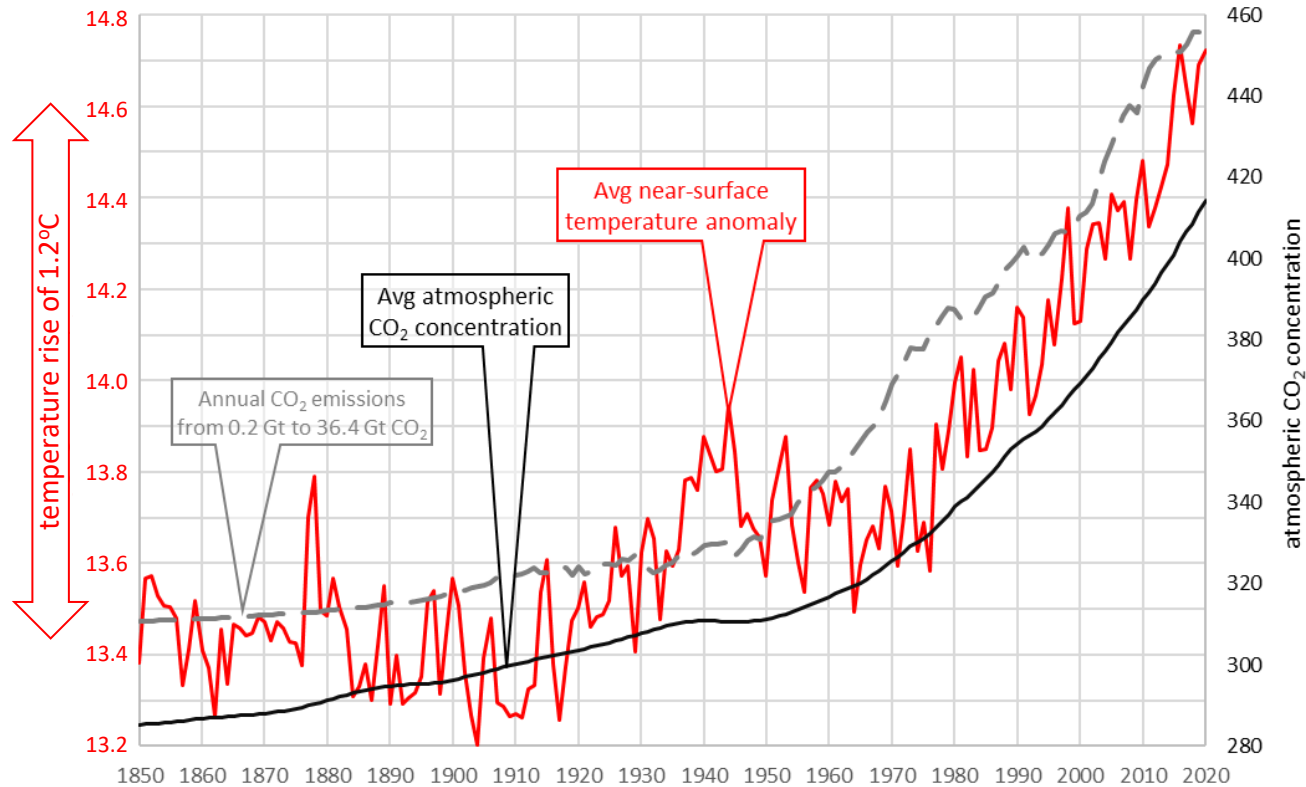
38 gigatonnes CO₂ (Gt, billion t) or 59 Gt CO₂e (carbon dioxide equivalent), incl. methane (CH₄), nitrous oxides (N_xO) & fluoro-carbons in 2019

CH₄ is 80x stronger, N_xO is 260x stronger greenhouse gas

CO₂ emissions → atmosphere

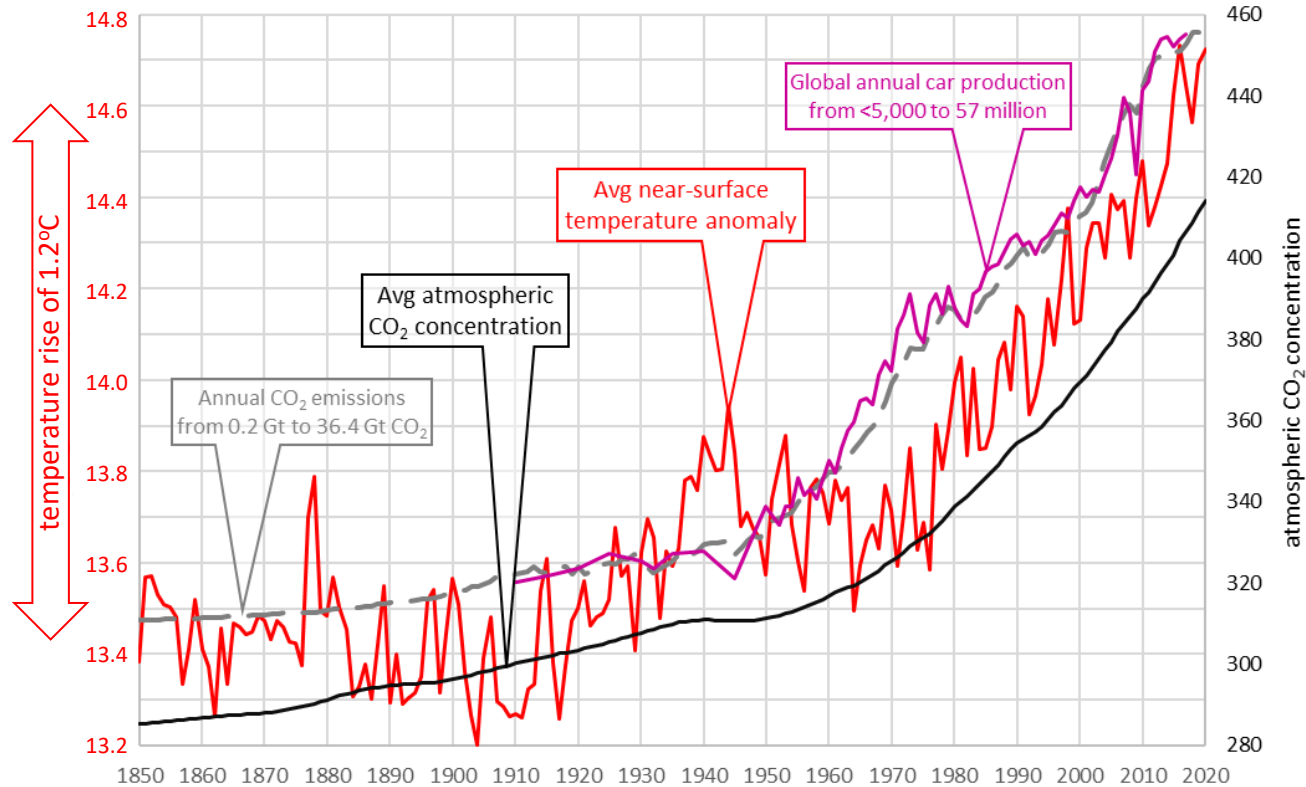


Greenhouse gases in atmosphere trap heat (Svante Arrhenius, 1896*)

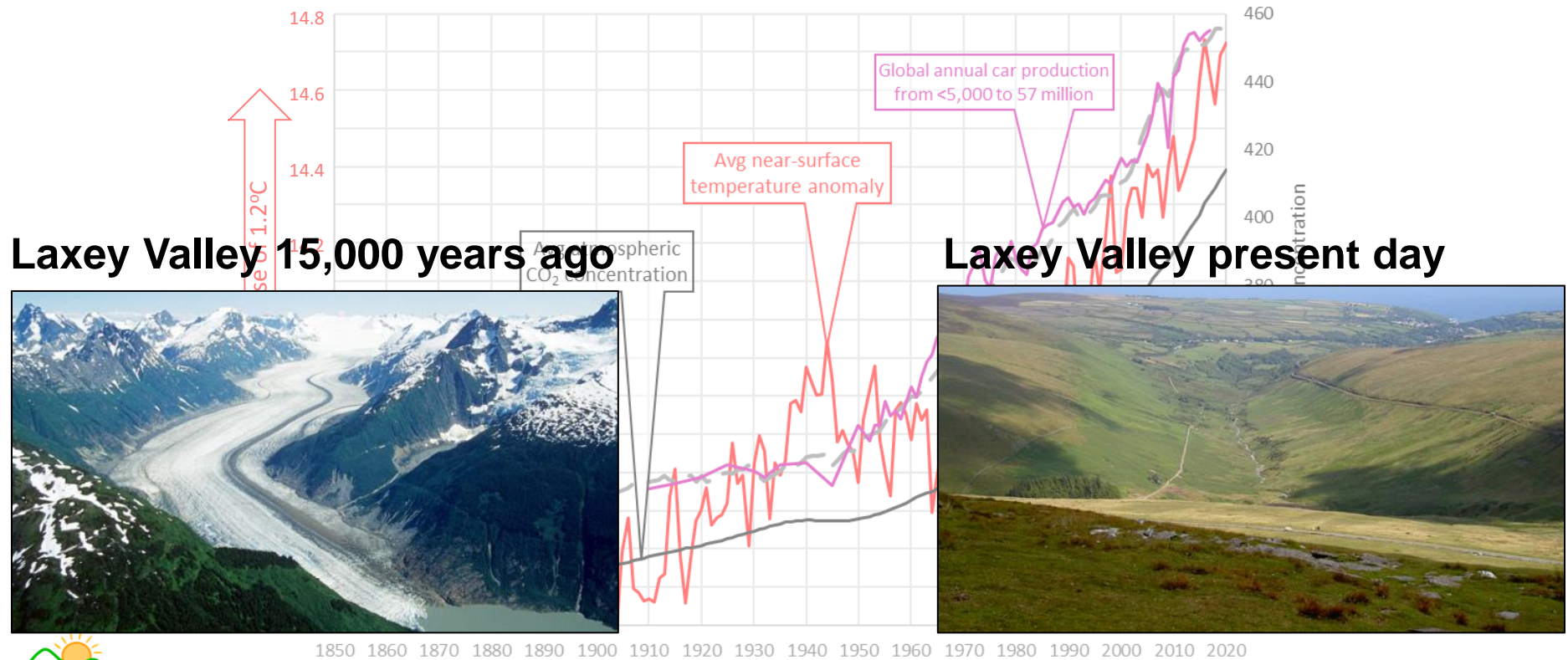


*www.energysustainabilitycentre.im/knowledge-hub

Current behaviour is unsustainable (< 10 years to reach 1.5°C*)



Current behaviour is unsustainable (< 10 years to reach 1.5°C*)



* >10 times faster rise than 12,000 years ago – end of last ice age

Quiz

Questions (1)

a) 1 litre of oil produces how much CO₂ when burnt?

0.1 kg

0.5 kg

1 kg

3 kg

b) 1 large tree produces how much CO₂ when burnt?

100 kg

200 kg

400 kg

2000 kg

c) 1 tonne of CO₂ has a volume equivalent to:

0.5 avg houses

1 avg house

2 avg houses

3 avg houses



Questions (1)

a) 1 litre of oil produces how much CO₂ when burnt?

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0.5 kg

1 kg

3 kg



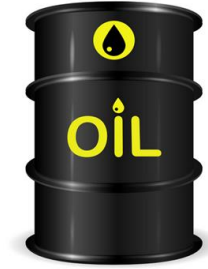
Net Zero Isle of Man – Preparing Businesses for a Low-Carbon Future

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Questions (1)

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1 barrel of oil = 159 litres = 430 kg CO₂



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**1 km² forest (250 acres) = 70,000 large trees ... sequester average 500 t CO₂/year
... seagrass about the same**

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c) **1 tonne of CO₂ has a volume equivalent to:**



3 avg houses

Questions (2)

a) An average Manx person is responsible for emission of how much CO₂ per year?

200 kg

400 kg

4 tonnes

16 tonnes

b) What percentage of these emissions are produced on-Island?

33%

50%

65%

90%

c) Meary Veg wood will absorb the emissions of how many people (once mature)?

25

100

1000

8,500

Questions (2)

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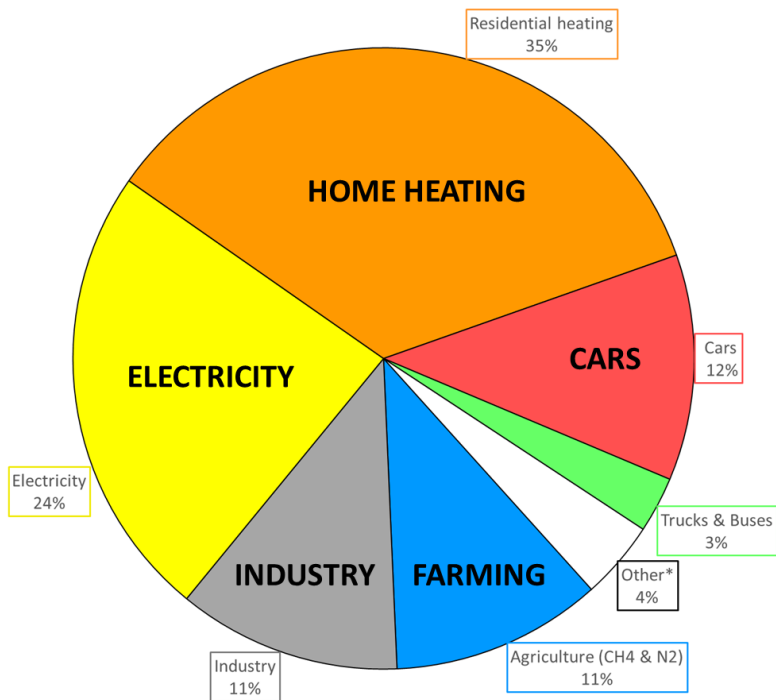
33%

50%

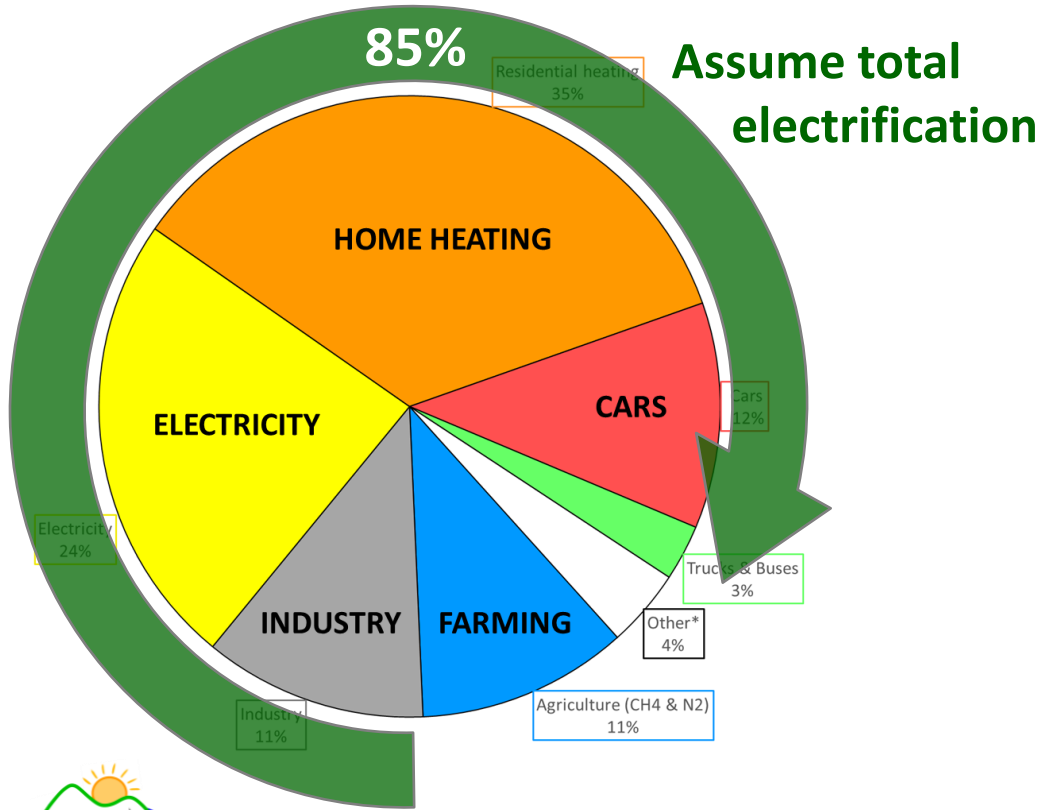
65%

90%

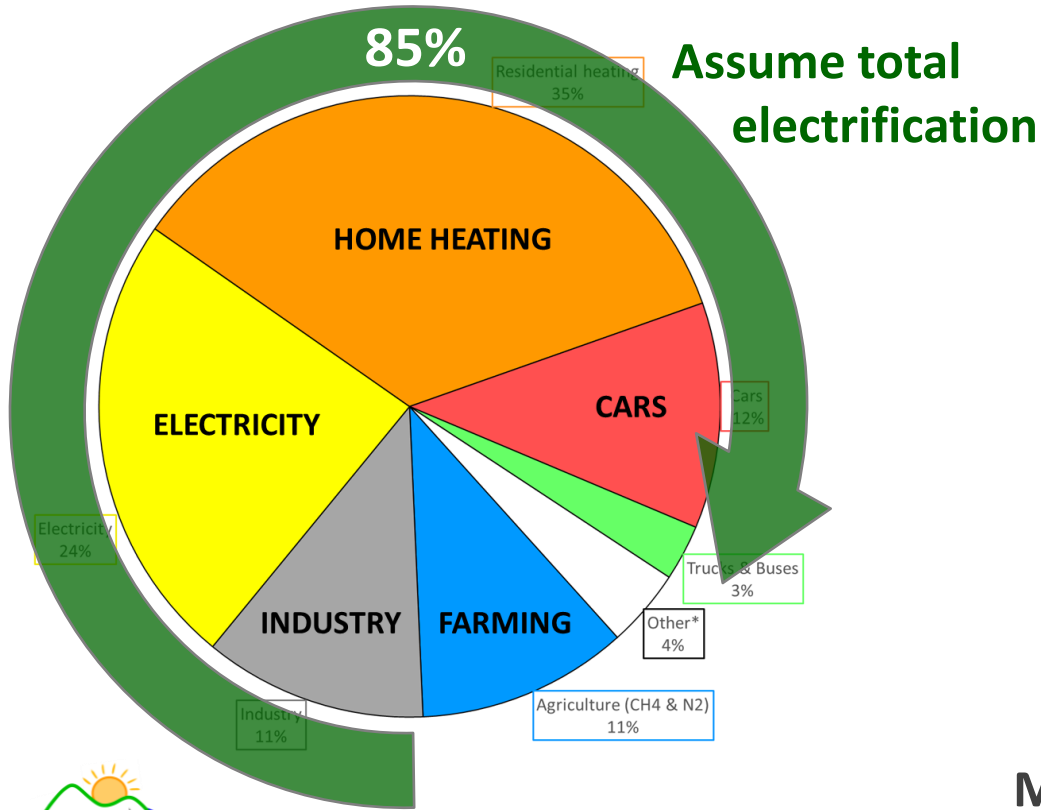
IoM direct emissions – c.10 tonnes CO₂e per capita in 2018



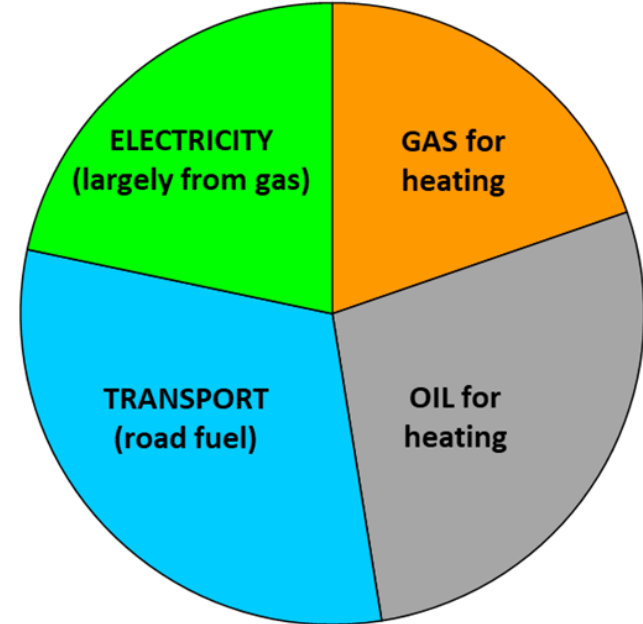
Can this all be provided from renewable sources?



Easier than most of the world...



Power consumption (c.1300 GWh/yr)



Manx energy resource $\approx 70,000$ GWh/yr

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1700 km² of maturing forest absorbs about the same as IoM annual emissions

Local initiatives



**Isle of Man
Government**

Reilrys Ellan Vannin



Our Big Picture

The strategy shaping our Island's Economy

Vision and Mission

Stakeholder input and feedback suggests an updated Vision and Mission for IOMG to adopt for the Economic Strategy.

Vision:

The Isle of sustainability, prosperity and wellbeing for all.

Mission:

A resilient economy of innovative, ambitious and sustainable enterprises, supporting robust growth in the economically active population and the facilities which make the Island a great place to live and work. The government is joined up and agile, responding quickly and positively to opportunities and ensuring the Island remains a place in which enterprises and people can thrive.

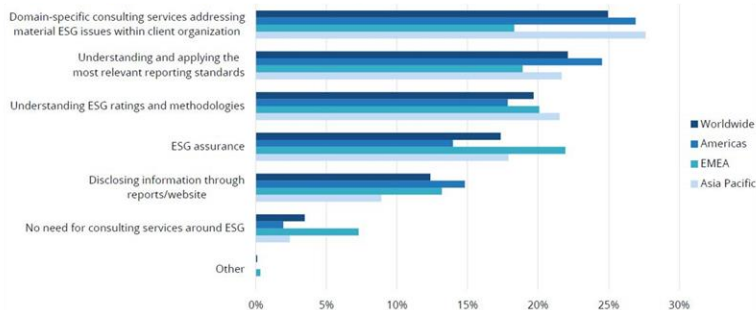
Key Themes for the Isle of Man Economy

Words beneath themes reflect stakeholder views. These are expanded upon on the following slides.



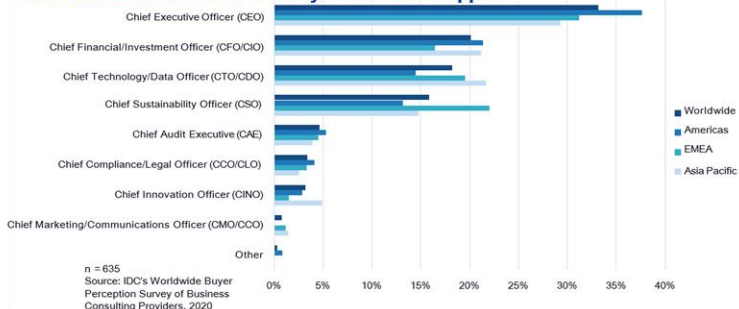
Where are the islands businesses?

97% of companies say they need help on ESG



SOURCE: IDC's Worldwide Buyer Perception Survey of Business Consulting Providers, 2020

CEOs and CFOs are now the buyers for ESG support



n = 635

Source: IDC's Worldwide Buyer Perception Survey of Business Consulting Providers, 2020

Has your business made a net zero greenhouse gas emissions commitment?

● No ● Yes: before 2030 ● Yes: before 2050

None (I am self-employed)



1-5 employees



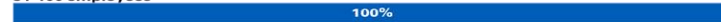
6-10 employees



11-50 employees



51-100 employees



101-250 employees



More than 250 employees



Do you have a defined ESG plan for your business?

● No: not started ● No: we are in the process of putting a plan together ● Yes

None (I am self-employed)



1-5 employees



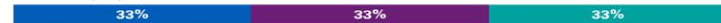
6-10 employees



11-50 employees



51-100 employees



101-250 employees



More than 250 employees



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KPMG: Our Impact Plan

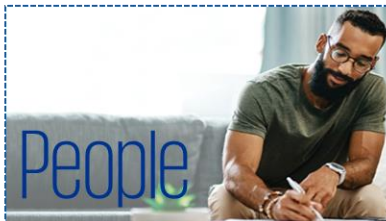
Delivering our Purpose: to inspire confidence and empower change



Reducing our impact on the environment to build a more sustainable and resilient future

Our commitments:

- Achieve net-zero carbon emissions by 2030
- Provide clear, comprehensive, high-quality information on the impacts of climate change
- Understand and improve our impact on nature and biodiversity



Creating a caring, inclusive and values-led culture for our people

Our commitments:

- Build an inclusive culture that values diversity
- Eliminate discrimination in respect of employment and occupation
- Empower women in the workplace, marketplace and community
- Protect the health of our people — both physically and mentally
- Develop a continuous learning culture
- Respect human rights



Driving purposeful business practices and good corporate citizenship

Our commitments:

- Act with clear purpose at all times
- Lead the profession in audit quality
- Drive a responsible tax practice
- Support education, lifelong learning and UNESCO's Global Education Coalition



Putting our Values at the heart of the way we do things

Our commitments:

- Act lawfully, ethically and in the public interest
- Work against corruption in all its forms, including extortion and bribery

Source: KPMG: Our Impact Plan, KPMG International, 2021. KPMG: Our Impact Plan represents the collective environmental, social and governance commitments of independent KPMG firms, affiliated with KPMG International Limited. The data represented in KPMG: Our Impact Plan is aggregated data from KPMG firms for the 12 months to 30 September 2020 unless stated otherwise. KPMG refers to the global organization or to one or more of the member firms of KPMG International Limited ("KPMG International"), each of which is a separate legal entity. KPMG International Limited is a private English company limited by guarantee and does not provide services to clients. For more detail about our structure please visit <https://home.kpmg/governance>. On this slide, where the term "KPMG," "firm," "we," "our," "us" or similar references are used without definition, they are meant to collectively refer to KPMG International Limited and the independent KPMG firms.

Zurich's commitment to carbon reduction

Mark Cady, Head of Operations

Jason Buckley, Facilities Manager



Zurich's climate commitment



	Investments	Products & Services	Operations
Today	No investment in companies with: <ul style="list-style-type: none"> - more than 30% revenue/electricity mix from thermal coal, oil shales and oil sands - USD 497mn divested under policy 2.9 million tons CO2e avoided per year through impact investing 	No GI underwriting of companies with: <ul style="list-style-type: none"> - more than 30% revenue/electricity mix from thermal coal, oil shales and oil sands - USD 33mn premiums not renewed under policy <p>Zurich will play a leading role in development of industry-wide standards on measurement of emissions from insurance</p>	Carbon neutral (since 2014) Ca. 1million tons CO2e saved since 2008 Expansion of emissions accounting with inclusion of value chain emissions
2025	25% cut in CO2e intensity in listed equities and corporate bonds 30% cut in CO2e intensity in real estate 5 million tons CO2e avoided per year Dialogue with companies producing 65% of emissions on setting climate targets		50% cut in gross emissions including: <ul style="list-style-type: none"> - 55% cut in direct and indirect emissions in own operations - 50% cut in indirect emissions in value chain
2029			70% cut in gross emissions including: <ul style="list-style-type: none"> - 80% cut in direct and indirect emissions in own operations - 65% cut in indirect emissions in value chain
2050	Net zero emissions		



Flight reduction

70% reduction to 2019
(291 tonnes)



Building initiatives

Recycling
Carbon planting
Commute to work (60%)



Renewable energy

Utility use reduction

Zurich Isle of Man's climate commitment

Before...



After



System Overview

589 PV modules

3 inverters

295 optimizers

Simulation Results

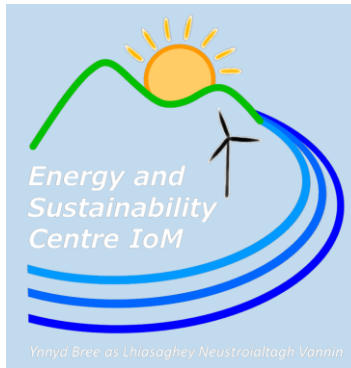
165.14 MWh annual energy production

64.73t CO2 emissions saved

2,973 equivalent trees planted

IoD Workshop 10 Nov 2021: Net Zero Isle of Man Preparing businesses for a low-carbon future

Swagelok®



- [illegible]

Shibaji Dasgupta, Country Head & Senior Manager

Quiz & discussions

Questions (3)

a) Emissions from electricity bought by your business are classified how?

Scope 1	Scope 2	Scope 3	Unattributed
---------	---------	---------	--------------

b) An average Manx household uses how much energy per year?

2000 kWh/yr	4000 kWh/yr	12,000 kWh/yr	36,000 kWh/yr
-------------	-------------	---------------	---------------

c) One 10 MW wind turbine produces enough for how many Manx households*?

100	400	1200	4800 households
-----	-----	------	-----------------

*All heat, electricity, travel (incl. on-Island transport) & work

Questions (3)

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Scope 1

Scope 2

Scope 3

Unattributed

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**Accounting for indirect emissions will become increasingly important:
ultimately, direct & indirect carbon footprint will have to reduce to net zero
meaning minimal emissions from energy & supply chain**

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Scope 2

Scope 3

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400

1200

*All heat, electricity, travel (incl. on-Island transport) & work



IoM territorial sea

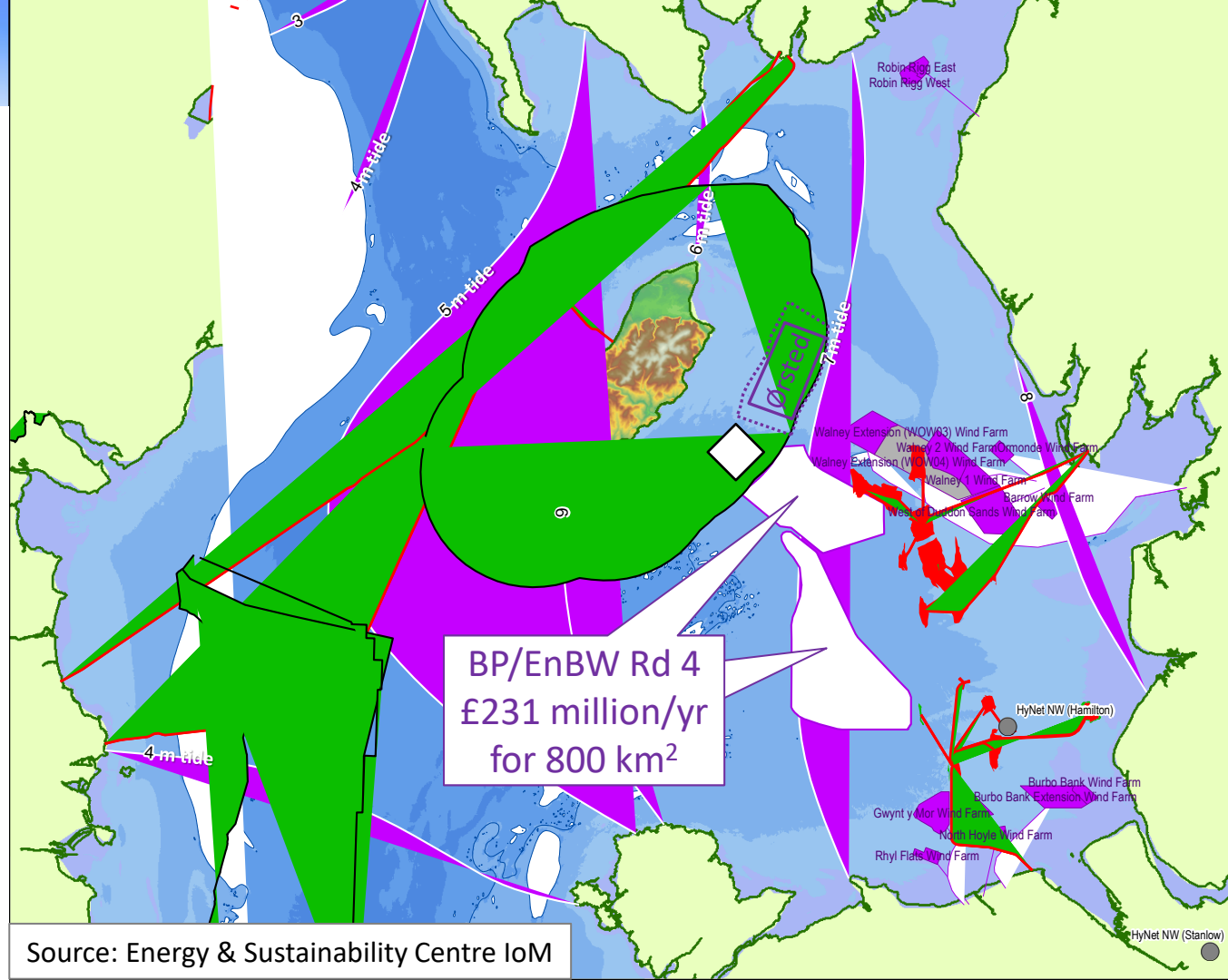
High value for wind

- mostly <50m depth
- reliable wind...
but sheltered
- ideal seabed for turbines

1.5% area (60 km²) would generate all IoM's power needs (c.1300 GWh/year)

Other renewable potential

- steep terrain
- strong tides
- reliable waves
- relatively sunny
- eco-productive



Source: Energy & Sustainability Centre IoM

Practical steps

Change is inevitable, how can companies be proactive while Govt develops strategy?

Greenhouse gas inventories

- A voluntary method **to account for company emissions** (part of ESG/CSR reporting)
- **Why?**
 - **Operational efficiencies** and opportunities for innovation
 - **Pre-empting legislation** for planning & strategies
 - **Funding & social licence to operate** investors & staff
 - **International regulations** e.g. FTSE by 2022, UK 2023
 - **Carbon pricing** taxes & emissions trading systems
currently £40-100/tonne CO₂ (McKinsey)
- Which emissions (GHG types; Scope 1, 2, 3) & **which standards** (GHG Protocol, ISO)?
Scope 1 – direct emissions; Scope 2 – from purchased energy; Scope 3 – indirect (suppliers & consumers)

Steps to lowering a company's greenhouse gas emissions

- 1) Set scope for emissions reductions - scale & timeframe
- 2) Quantify company emissions – a transparent baseline (+/- suppliers)
- 3) Review & rank abatement & mitigation options - “bang for buck”
- 4) Develop 3-5 year plan
- 5) Develop evergreen models for long-term reductions & identify game-changers
- 6) Monitor progress & report to stakeholders – std accounting + auditing will come
- 7) Discuss with upstream & downstream partners for Scope 3 reductions
- 8) Once emissions are as low as possible, consider legitimate* offsetting schemes



*Verified Carbon Standard & Gold Standard are often used but need reality checks

Emissions from fleet vehicles – e.g. delivery van

- A company has 10 small delivery vans & each covers an average 20,000 km/year
- Total annual CO₂ emissions are 60 tonnes (avg petrol consumption is 10 km/litre)
- The manufacture of 1 electric van produces 30 tonnes CO₂e (10 tonnes from making the lithium-ion battery)
- If a petrol-driven van is replaced with an electric van
 - It will take 7 years to reach CO₂e break-even if the electricity comes from CCGT
 - It will take 5 years to reach CO₂e break-even if the electricity is emissions-free
 - It will take 3 years to reach CO₂e break-even if green hydrogen is the fuel



Challenges in lowering a company's greenhouse gas emissions

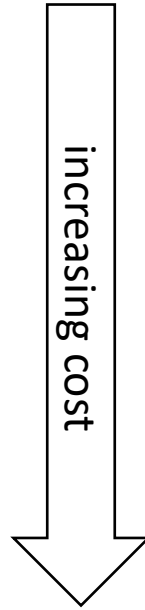
- Large ranges & wide choice of assumptions
- Difficulty in getting reliable emissions data, especially Scope 3
- Limited collaboration between companies & between governments
- Uncertainty in feasibility & costs of technologies like energy storage & H₂ fuels
- How to integrate emissions reporting & financial accounting with standardization
- Keeping data & models evergreen
- How to engage employees & wider society
- How to avoid the 'green-washing' tag
- How to make the transition equitable



14 years since first iPhone

Which low-carbon heating options are worth investing in now?

- 1) Electric boiler
- 2) Electric storage heaters
- 3) Biomass boiler
- 4) Immersion heater storage
- 5) Thermal solar panels
- 6) Photovoltaic solar panels
- 7) Battery storage
- 8) Improved insulation + heat exchange unit
- 9) Air-sourced heat pump
- 10) Ground-sourced heat pump



Ahead of strategy on renewable energy
e.g. cheap off-peak electricity via grid?



Business opportunities, skill sets & risks

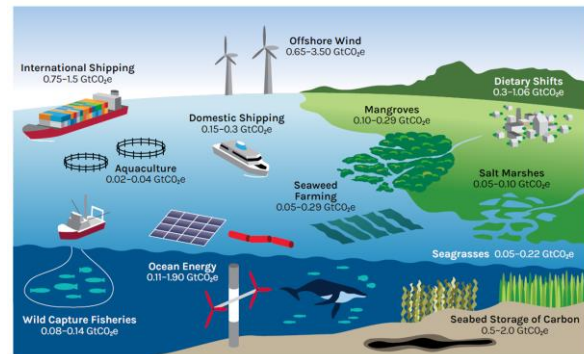
Potential new opportunities in decarbonizing the Isle of Man

- **Green financial management** + accreditation, trading of renewable power & tech
- **Energy efficiency** – insulation, conversion/installation of heating systems
- **Low-energy (passiv) buildings** – local stone & wood
- **Civil engineering** – renewable energy: incl. electricity transmission, hydro storage & fuel networks (electricity &/or hydrogen or derivatives)
- **E-Vehicles** (batteries or H₂ fuel cells) – conversions, E-bikes
E-racing green taxis, EV loan schemes



Potential new opportunities in decarbonizing the Isle of Man

- **Micro- & off-grid power** –
incl. community investment (e.g. Scottish islands)
- **Agriculture** – solar greenhouses, orchards, wood pulp
bio-sequestration (incl. rewilding, trees, peat, marine)
bio-fuels (incl. bio-digesters, seaweed & bracken)
- **Local packaging, eco-labelling & clothes repair**
- **Off-Island transport** – H₂-fueled ships, hybrid airships
- **Demonstration Island** – various hydro storage schemes
hydrogen society, **innovative policies & legislation**



Skill sets

- Develop expertise in auditing and monitoring energy use
- Adopt best practice energy accounting & reporting standards
- Educate & motivate employees in reducing environmental impact

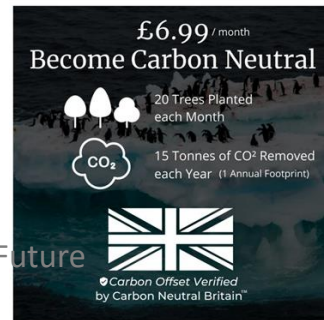
Skill sets & risks

- Develop expertise in auditing and monitoring energy use
- Adopt best practice energy accounting & reporting standards
- Educate & motivate employees in reducing environmental impact
- Strategy to achieve net zero emissions needs to be transparent & inclusive
- There is no single right answer – be collaborative, adaptable & open-minded
- Be suspicious of cheap & easy carbon offsetting schemes



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Final points & wrap-up

Final points

- Early adopters gain competitive advantages, demonstrate leadership & have impact
- Key point from CoP26 - finance industry has committed to invest in decarbonization
- Green funding is looking for viable low-carbon projects but uncertainty is inherent
- Potential cost of not embracing green transition is high

Final points

- Early adopters gain competitive advantages, demonstrate leadership & have impact
- Key point from CoP26 - finance industry has committed to invest in decarbonization
- Green funding is looking for viable low-carbon projects but uncertainty is inherent
- Potential cost of not embracing green transition is high
- IoM has all required resources to decarbonize, enabled through bespoke legislation
- Energy independence provides security of supply, predictable costs & income – industry will fund but generation, storage & transmission need to be integrated



Final points

- Early adopters gain competitive advantages, demonstrate leadership & have impact
- Key point from CoP26 - finance industry has committed to invest in decarbonization
- Green funding is looking for viable low-carbon projects but uncertainty is inherent
- Potential cost of not embracing green transition is high
- IoM has all required resources to decarbonize, enabled through bespoke legislation
- Energy independence provides security of supply, predictable costs & income – industry will fund but generation, storage & transmission need to be integrated
- ESC has several projects ready to go, incl. a Manx carbon sequestration scheme
- Energy & Sustainability Forum (ESF) – sharing information among local companies?



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Thank you

