

Climate Opportunity Ideas Factory

Marine Environment: Ocean and Sea

18 February 2021

Chair

James Oliver

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Edinburgh Science

Edinburgh Science Foundation is an educational charity, founded in 1989, which operates Edinburgh Science's Learning and Festival programmes. We are best known for organising Edinburgh's annual Science Festival – the world's first public celebration of science and technology and still one of Europe's largest – our science education outreach programmes, Generation Science and Careers Hive and our community engagement work.

Our mission is to inspire, encourage and challenge people of all ages and backgrounds to explore and understand the world around them. As leaders in our field of Science Communication, we work year-round to create and deliver dynamic hands-on workshops and exhibitions and inspirational shows, discussions, debates and performances that continually push the boundaries of public engagement with science. Communication and engagement is at the core of all our work and we strive to ensure that this is embedded in all aspects of our organisation.

Edinburgh Science also operates a large-scale international programme of work under our Worldwide arm. It regularly presents events overseas and has been the Major Programming Partner of the annual Abu Dhabi Science Festival since 2011, helping to curate, produce and deliver the event. For international partners, the team at Edinburgh Science provide engaging content, curatorial advice on programming and business planning support, along with expert staff and training for local science communicators.

Our UK and international projects reach a combined audience of over half a million people each year.

The Climate Opportunity Ideas Factory

Edinburgh Science coordinates and runs the Climate Opportunity Ideas Factory - a series of round table meetings for senior Scottish leaders to discuss ideas for action that will enable Scottish enterprises to respond to the climate emergency. The first meeting was in April 2019 when Edinburgh Science Festival awarded the Edinburgh Medal to Christiana Figueres, the Costa Rican Diplomat who was instrumental in bringing about the Paris Climate Agreement. We organised a round table meeting on that day, with leaders of business, public sector, third sector and higher education present. We were challenged by Christiana to collaborate, to act, to not wait for anyone to give us permission, and to use the Climate Opportunity that presented itself for positive change.

Christiana was coming back to Edinburgh in two months and asked to meet again for an update on what this group had decided to do. Two months later, Baillie Gifford hosted a larger group of senior leaders who presented a number of ideas for discussion in this forum, with Christina Figueres and Roseanna Cunningham, Cabinet Secretary for Environment, Climate Change and Land Reform. Many of the ideas have been picked up by attending businesses and organisations to make an impact, and the attendees have told us that this group is of immense value to them, due to the diverse invite list and the facilitated discussions.

The Climate Opportunity Ideas Factory now meets regularly. The purpose of the meetings is to generate new ideas that are then acted upon by those present to achieve steps towards reduced carbon emissions and greater environmental sustainability.

Edinburgh Science is in an exceptional position to bring together cross-sectoral leaders from diverse groups to gather views to identify new ways to work collaboratively to unlock ideas and create opportunities. The Climate Opportunity Ideas Factory has already provided a unique safe space for collaboration, resulting in major ideas for example; a national carbon reserve for offsetting which we know excited many organisations. With connections across industries and many sectors, and no agenda other than to share the science and to see a solution to the climate emergency, Edinburgh Science strongly believes that the time is right to harness the collective power of organisations and minds in Scotland to put Scotland at the forefront of this Climate Opportunity.

Through the Climate Opportunity Ideas Factory we are encouraging, supporting and facilitating these leaders as they address the challenges and opportunities that the climate revolution will bring. The Climate Opportunity Ideas Factory will continue meet regularly and we are excited to work towards bringing innovative ideas into reality as we approach COP26 Glasgow in November 2021.

We would like to thank the many organisations involved in supporting this exciting and unique project, particularly our 2020 Programme Supporters and Founder Members.

Programme Supporters



Founding Members



Sectoral Sub-Group for the Marine Environment

During the most recent Climate Opportunity Ideas Factory roundtable meeting on 5 November 2020, the need for sector specific focus groups was raised with the following industries/topics suggested:

- *Agriculture, Land Use Change and Forestry*
- *Aviation and Shipping*
- *Construction and the Built Environment*
- *Finance*
- *Greenhouse Gas Removal*
- *Heat Decarbonisation*
- *Local Transport and Tourism*
- *Manufacturing*
- *Marine Environment*
- *Power and Hydrogen*
- *Resources and Circular Economy*

Marine Environment: Ocean and Sea

James Oliver, Group Marketing Director of Hampden Holdings chaired the meeting with the aim to present three aspirational and deliverable programmes that will make a genuine contribution to Scotland and the UK and beyond for COP26. Focussing specifically on how to invest and accelerate new ways to improve food production, job provision and scale in marine industries and coastal communities.

Agenda

1. *Welcome from Edinburgh Science: Dr Simon Gage OBE. 5 min*
2. *Welcome and Introductions: James Oliver, Hampden Group, Chair. 10 min*
3. *Purpose of meeting: James Oliver, Hampden Group, Chair. 10 min*
 - We see this meeting as having two main aims:*
 - *To identify list of key topics or themes that are likely to be the basis of the tangible initiative[s].*
 - *To agree a process and timetable for achieving overall purpose*
4. *Process outlined: James Oliver, Hampden Group, Chair. 5 min*
 - *What, when, how and who.*
5. *Introduction of themes: James Oliver, Hampden Group, Chair. 45 min*
 - *Highlight potential themes to focus on, existing initiatives and opportunities with contributors:*
 - *Dougie Allan, Founder and President of the Great British Prawn Company [not present]*
 - *A passionate advocate for sustainable circular food production, Dougie has developed a system that could be rolled out globally to enable farmed organic crustacean on land.*
 - *Hanli Prinsloo, Founder and Executive Director of I Am Water*
 - *South African free diver, speaker, writer and ocean conservationist. Voted one of the most influential women of the century through achievements as a leading ocean advocate and teacher to thousands of kids via her foundation. Hanli is also the holder of multiple free diving records and is sponsored by fashion brands*

through to international banks. Her influence on the 'Blue Planet' series helped bring about the focus on the ocean plastics catastrophe.

- Gordon Jeffrey, Founder and CEO of Aqualife, a world leading fish robotics, track and trace company. (not present)
 - Gordon comes from Skye where he started as a sheep farmer who had a vision of what was coming down the road. His motto is 'don't doubt the vision, doubt the fears' which he uses in every aspect of his drive to ensure that our seafood has the chance to be the very best the world.
- 6. Ideas discussion: James Oliver, Hampden Group, Chair. 30 min
 - Discussion of ideas and ways to collaborate
- 7. Next steps/AOB: James Oliver, Hampden Group, Chair. 5 min
- 8. Thanks: Hannah Schlesinger, Edinburgh Science. 5 min

Participant List

Name	Position	Organisation
Chloe Darling-Stewart	Client Service Manager	Baillie Gifford
Campbell Gerrard	Senior Planning and Policy Manager	Crown Estates Scotland
Simon Gage	Director and CEO	Edinburgh Science
Jessica Monsen	Development Officer	Edinburgh Science
Hannah Schlesinger	Director of Development and External Relations	Edinburgh Science
James Oliver	Group Marketing Director	Hampden Holdings Ltd.
Zoe Laird	Head of Communities Infrastructure	Highlands and Islands Enterprise
Hanli Prinsloo-Marshall	Founder	I Am Water Foundation and Ocean Guardian
Jamie Ormiston	Beaches and Parks Officer	Keep Scotland Beautiful
Clive Mitchell	Outcome Manager – People and Nature	NatureScot
Melissa Moore	Senior Policy Advisor	Oceana
Mike Wedderspoon	Marketing Consultant	Scottish National Investment Bank
Matthew Nesbitt	Director	St Abbs Marine Station
Jane Dennyson	Founder	Thrive

Meeting Summary

Setting the scene:

- Meeting participant introductions
- Poem by Amanda Gordon for World Oceans Day
 - www.facebook.com/watch/?v=292359761903067
- What are we trying to achieve today and in subsequent COIF meetings?
 - We have to jump in, talk about ideas and take action now
 - COP26 at this stage may not happen or might be online only, may become too political or a bit boring
 - We will provisionally coalesce around a few concepts or ideas that we can expand, promote and/or finance to showcase at COP26 and beyond.
- Parameters for developing ideas

- Ideas don't need to be brand new but should be exciting
- Have potential to benefit livelihoods and job creation
- Scalable – very important
- Neutrality

Potential list of themes and associated ideas:

Theme: Land and Sea	Theme: Science	Theme: Scale and Jobs
<ul style="list-style-type: none"> • Education • On shore food • Agricultural enjoyment • Traceability • Logistics and distribution • Other? 	<ul style="list-style-type: none"> • Carbon offsetting • Research institutes • Business models • Auditing and accreditation • Other? 	<ul style="list-style-type: none"> • Value per job • Investment per job • Replacement or new? • Cooperatives or societal companies • Other?
<i>Example Idea / Existing Initiative:</i>	<i>Example Idea / Existing Initiative:</i>	<i>Example Idea / Existing Initiative:</i>
<p>Dougie Allan, ex soldier, founder and president of the Great British Prawn Company based in Cornwall. Has created an interesting concept that integrates land and sea on his farm using fresh water from the hills to produce fresh water prawns.</p> <ul style="list-style-type: none"> • Sustainable circular food production. • Traceability of sea produced food a long way off land produced products and this helps to address that gap. • Idea could be rolled out globally to enable farming of crustacean on land. 	<p>Gordon Jeffrey, originally a sheep farmer from Skye, and now founder and CEO of Aqualife, a world leading fish robotics, track and trace company.</p> <ul style="list-style-type: none"> • Robot capable of identifying and inoculating farmed fish. • Could provide a much higher standard of managing fish farms. 	<p>Concept of creating three vast inshore organic 'Ocean Keeper' sea farms [researched over last 3 years].</p> <ul style="list-style-type: none"> • 40km² minimum • 1000 jobs created at each site
<i>Feedback from participants:</i>		
<ul style="list-style-type: none"> - Scottish Rural Parliament were mentioned as a key contributor in future meetings to discuss what is best for rural communities. - How do we propagate some of these ideas? How do we develop ideas like the prawn farming? - How can we roll out support for innovation? - The Blue economy has been ignored: shellfish are exported, processed and then imported. - Insurance companies are interested in coastal projects as they want a reduction in flooding. - Decarbonisation of shipping is important to discuss. - There is also a lot going on in the development of green hydrogen. - Can we use islands to showcase Scotland's innovation at COP26? - Local change must come from local developments. 		
<i>Next Steps...</i>		
<ul style="list-style-type: none"> • Assess possible amplification • Seek funding • Consider scale [4.5k inshore fishermen in Scotland – an important livelihood for coastal communities] 		

Presentation from Hanli Prinsloo, Founder and Executive Director of I Am Water

- Hanli's profile: South African free diver, speaker, writer and ocean conservationist. Voted one of the most influential women of the century through achievements as a leading ocean advocate and teacher to thousands of kids via her foundation. Hanli is also the holder of multiple free diving records and is sponsored by fashion brands through to international banks. Her influence on the 'Blue Planet' series helped bring about the focus on the ocean plastics catastrophe.
- Conservation can be seen as an elitist way of thinking [i.e. easy for those not living in poor coastal communities trying to make a living from the land and sea]. How can we expect others to be responsible in looking after these habitats?
- Data, facts and statistics do not necessarily change behaviour (at least not without good public engagement). E.g. what relevance do government level events such as COP26 really have for regular people living in coastal communities?
- Human disconnect is affecting the degradation of our oceans. How can we change people's behaviour?
- Hanli runs projects working with communities that will be first to be impacted by climate change – communities that often have no voice in these matters.
 - 70% of unemployment in these communities is within the 17-35 age bracket
 - Works with schools - 80 kids per 2-day 'ocean guardian' workshop - to teach them how to swim and learn about the ocean habitat in their part of the world.
 - Employs community leaders as workshop coaches to work with the schools.
 - Impact of workshops is that they help solve related problems like unemployment and food security.
- Good to combine philanthropy and blue economy
- Good to have holistic conversations [like this COIF meeting] that consider the bigger picture and connect people across different industries and disciplines
- Ocean education is lacking from school curriculums. It links with biology and geography but not covered in detail. Coastal community schools would benefit from more education in this area from an early age. We do see this but not at a national or global level.

Group Discussion Notes:

- Examples of Existing Research and Initiatives
 - Seaweed
 - Kelp harvesting project on Barra using old fishing equipment and sell it locally: www.hie.co.uk/media/7639/swmid-seaweed-farm-wildplusseaweedplusharvestingplusasplusplusdiversificationplusopportunityplusforplusfishermen-a3302938.pdf
 - We are still at foothills of industry and we would like a better understanding of market for seaweed – such a nascent industry with great potential in Scotland
 - Kelp sequesters carbon, and absorbs a lot of wave energy slowing coastal erosion
 - From a commercial point of view can be used in agriculture, food and drink, cosmetics, etc.
 - Financing
 - [Chip Cunliffe](#) did some work for AXA specifically about financing and insuring assets in the sea and helped to develop methodology in mangroves in Mexico and Vietnam. Axa article: <https://axaxl.com/fast-fast-forward/articles/axas-ocean-risk-initiative>
 - As well as carbon capture and wave deterrent (in storm surges), mangroves and potentially reed beds have become an insurable entity.
 - Great example of nature-based solutions. If these are insurable then this becomes even more exciting. Insurance firms obviously recognise cost of impact of climate change on coastal environments.

- Banks interested in nature-based solutions on river flood plains to protect housing – so this is very interesting applied to the ocean too
- What other assets are insurable – uses of offshore oil and gas infrastructure for reef creation, transmission networks and hubs?
- Connecting communities with local environments
 - Visit Scotland 2021 is Year of Coasts and Waters and a lot of work is around reconnecting people with ocean habitats.
 - Charities do incredible work and there are some great education projects out there although some funding is lacking. Potential for these projects to do a lot more with more investment.
 - Carbon literacy training: <https://carbonliteracy.com/scotland/> - talk of taking this further perhaps to teachers and curriculum for excellence.
 - 2-minute beach cleans
 - 2-minute litter pick promoted on social media
 - Coach to 10k app to include litter pick
 - Keep Scotland beautiful litter hubs linked to campaign projects e.g. river plastic “upstream battle” <https://www.keepsotlandbeautiful.org/upstream-battle/>
 - Marine conservation society beach clean
 - 100s of organisations doing this - all charities / communities / volunteers - power of community (groups) get a great deal of work done! E.g. East Haven Together in Angus <https://www.easthavenangus.com/> is a great group that achieves a lot of work
 - Ambitions plus catalyst for change equals success
 - St Abbs Marine Station trying to deliver a citizen science app - direct local engagement gathered in one place. This is scalable local to global.
- Decarbonisation of shipping
 - Project already underway looking at feasibility of hydrogen fuel for Scottish Island ferries: www.woodplc.com/news/2019/study-into-hydrogen-powered-ferries-fuels-green-transport-ambitions
 - Green hydrogen developed using coastal resources
 - Emission and fuel consumption and vessel manufacture emissions all count
 - Rules in harbours (see Europe) taxing on high emitting vessels to help incentivise greener sea travel
 - If we're looking at fisheries and agriculture, fisheries fall between the cracks in carbon emissions
 - Need blue economy awareness and education
 - Interesting to look at shipping through lens of the global Covid-19 pandemic (e.g. people quarantined on ships). What are economic / trade repercussions of container ships not reaching dock?
 - The International Maritime Organisation is slow to act. Follow www.cleanshipping.org for information on campaigns for greenhouse gas emission reduction in shipping
- Floating reed beds
 - Extract pollution from the air
 - Tested in Moray at small scale but can be rolled out in cities at large scale
- Restoration of extinct oyster beds
 - Dornoch Firth project funded by Glenmorangie (good PR for the company plus the oysters help to clean the water eventually used in whisky production): <https://www.bbc.co.uk/news/uk-scotland-45829130>
 - 40 hectare site
 - Great example of data lead science, attracting business investment with significant local impact
 - HIE trying to provide data and science to support Scottish blue economy but need further support from Government and business.

- Green Initiatives on Scottish Islands
 - Bio-renewables and off-grid energy systems (Eigg); conserving habitats (Arran)
 - Green hydrogen development and longterm decarbonisation of energy systems
 - Very small populations so doesn't bring money in
 - Are islands a useful way of showcasing what Scotland could do on bigger scale?

- Climate change and government policy
 - Blue economy largely ignored by policy makers
 - Not many interesting concepts in policy change or climate committee deliberation
 - Sea emissions not included in UK targets and therefore not a main concern at the moment
 - Marine Scotland are undertaking blue carbon surveys and we expect more dialogue on this in the summer
 - Different coastlines dealt with in different ways country to country. It's easy to look at own coastal waters but what about the commons? Unregulated areas of ruthless fishing grounds. Important to flag this politically.
 - Green finance group looking at how private sector can be encouraged to invest in nature
 - Biodiversity covered in treasury department report (Clive to share) about recalibrating systems to be better informed on nature.
 - Trying to provide data and science to support Scottish blue economy but we need further support from government and
 - Dark Matter Labs were commissioned by the Scottish Government to develop ideas for SNIB on the development of new lead markets in natural assets: <https://darkmatterlabs.org/Urban-Nature-based-Solutions-in-Scotland-at-Scale-Toward-a-regenerativ>
 - DEFRA groups keen to push ocean climate agenda (salt marshes, etc) - look at linking in with this.
 - NatureScot already looking at salt marshes, oyster beds restoration and carbon storage
 - In all cases – the big question is how to manage this?
 - NGOs are advocating for 30x30 - that's 30% of seas and ocean in Marine Protected Areas by 2030, including areas beyond national jurisdiction (ABNJ). Mainly this is advocated through Convention on Biodiversity at the moment
 - On Blue Economy, the earlier you test sustainability and impacts the better - not all blue economy proposals are sustainable sadly. Proposals will need Environmental Impact Assessments and Habitats Regulations Assessments to determine their impact on marine habitats and species at some point

- What would a net zero marine food look like?
 - Need for innovation
 - How do we ensure the food system is considered in our net zero economy
 - Look at marine systems
 - Low vs high trophic levels
 - Sustainable diets – tie into lower trophic levels
 - What we buy and why we buy it and why we eat it
 - Much need for trace-ability

Summary of Ideas Discussion

- Themes to potentially take forward:
 - EDUCATION & BEHAVIOUR CHANGE

- *Data and research alone may not change human behaviour BUT innovation lead by data/research and supported by funders DOES change behaviour and in turn can affect positive change. Therefore data and science is important, and independent and philanthropic sharing of this data with the public is vital*
- *St Abbs Marine Station Model of local initiatives, citizen science, crowd source info gathering (monitoring sea life and sea levels)*
- *Some things will not have monetary reward so we have to back just because and long term it will have benefits*
- *Clearly there is an option for Scotland/UK to position marine/sea/costal education as part of a great curricular investment*
- *Hanli to provide insights on her App?*
- *Look at how social science from Matt [St Abbs Marine Station] can integrate with Jamie and Campbell on beach clear-up programmes?*
- *How to ensure needs of coastal communities listened to?*
- *Education and training of community leaders, teachers, etc.*
- *SEAWEED*
 - *SAMS are running a programme however is there more where we [Scotland] could become a leader*
 - *Ask AXA for information on Mangrove restoration and insurable assets*
 - *Find out the value of carbon in non-harvested kelp – NatureScot?*
- *BOYCOTTING*
 - *Should Scotland take a stand against non-green/blue industries?*
 - *Reduce investment and government support of oil and gas?*
 - *Encourage corporations to take ESG responsibilities seriously – or think about more collaboratively?*
- *GREEN / BLUE INVESTMENT TEAM*
 - *Very big investments need to happen*
 - *Clive mentioned one but the main bank, private bank and fund-manager are not involved – a policy document to allow great financial support?*
 - *Investment in insurable assets*
 - *Focus on local blue economy business development*
 - *Green (and blue) tourism?*
- *SCIENCE PRIZES*
 - *From a collaboration of funders and agencies*

Appendix

Appendix 1 – Meeting Powerpoint Presentation Slides