



April/May 2021

There have been several successes since last News in February/March 2021. A major Eureka project on Cyber Security has been approved and C4FF and MariFuture are expected to play in major role in this project. In addition, C4FF's new Erasmus+ has been approved with a high score. The assessment of the project was complimentary about the partners particularly C4FF. C4FF has an unrivalled track record of success with all its past and present funded projects, many awarded as 'Best in Europe' and all with high score for the proposals and/or for project delivery.

As reported in the previous news, due to Covid-19 there will be bi-monthly news until further notice. Any news up-dates will be implemented as and when necessary during April and May 2021.

The problems associated with Corona Virus continue to have an impact on C4FF work including its charitable networks and business units. Some of the EU and Eureka projects are progressing in general but some EU funded projects are being either re-scheduled or extended. This situation if continued may impact other projects and activities. We hope these surreal times will come to an end and that we can continue to work on all projects as planned soon. The manning for new projects has also been agreed.

Key Announcements

C4FF is in the process of continue its work on the successful SeaTALK and renew the accreditation of its e-course with IMarEST as an CPD. As reported in the last month News, C4FF's University Centre (Garden City) supported the development of two new courses in Technological Innovations and Research Methods. The courses were submitted to the Institution of Marine Engineering, Science and Technology (IMarEST). Both courses have now received recognition as IMarEST CPD courses. C4FF is also in the process of finalizing the development of an e-course in mentoring. With support from IMarEST the course is now being evaluated and is expected to be submitted as a recognized CPD course in the near future. In parallel, a course in improving mental health at sea and eradicating bullying is being developed with several partner organisations in the EU.





2021 Year of Seafarers Mental Health and Wellbeing

MariFuture continued with the publication of a Development Paper on efficient ship each month throughout 2010 in support of the 'Year of Efficient Ship' due to the importance of the subject in order to make our members and partners aware of the impact of toxic pollutants from shipping; and the means available to us to reduce the level and amounts of the emissions from ships to a minimum level. 2021 is the Year of Seafarers mental health wellbeing and Marifuture will publish a series of Development Paper, Articles and Paper in support of this initiative.

Funded Projects

PROMETHEUS - This proposal was accepted in mid- August 2019 and concerns the mental well-being of ship crew. The project was expected to start in October 2019. The first meeting of the partners was on the 18-19 November 2019 in Athens and was attended by Katie Parker (Research Officer) and Professor Ziarati. The partners have meet on regularly and next meeting is planned for 30th April 2021. Partners have also prepared the first Interim Report and this to gether will the all the necessary documents including the timesheets were sent to Polish NA. The feedback from the Polish NA has been positive.



Prometheas Project team from Poland, UK, Greece, Finland, Spain and Slovenia

C4FF reduced the first draft of the two proposed chapters of the Prometheas course and prepared a Learning and Assessment strategy for the Course. Several quizzes were prepared for the partners' considerations. The partners have agreed to work on the draft and produce the more content and quizzes.

Outcome of Prometheas Multiplier Event in Finland

As reported the two-day multiplier event run in Finland by Prometheas project partners was successful. C4FF and partners have had several meetings to discuss outcome of Multiplier event and review the plan for the implementation of the project. The E-course being developed by support by all partners led by C4FF is progressing well. Several workshops were arranged or participated by C4FF in support of Prometheas project. The following are summary of some:



The Institution of Mechanical Engineering (IMechE) Wellbeing Initiative workshop

The Institution of Mechanical Engineering wellbeing initiative workshop delivered by Dr Dougal Sutherland on 16th December 2020 describing a model for self care by focusing on Threat paused, Drive (helpful moves/actions) and Soothe (values, skills and strength that help). A short description of the model is presented below:

Running the COVID marathon overview

In this overview workshop we use the metaphor of running a marathon to acknowledge the demands of the pandemic on all of us and the wider implications that COVID-19 has on organisations and their people. We want to recognise the prolonged nature of this situation and introduce evidence-based skills to sustain ourselves over this time.

MODEL FOR BALANCING EMOTIONS

Research suggests people switch between three systems - threat, drive and soothe - to manage their emotions. All of these systems take place in the brain and are associated with different hormones and emotions.

The threat system serves to protect us from danger and is critical for survival. However, when operating from our threat system, our attention and focus can narrow and we can get stuck there.

The drive system is important for motivation and pursuing goals. Our soothe system helps us settle ourselves and feel calm, safe, and connected.

A key message is that we are at our best when these three systems are in **balance**.

How big is each circle for you at the moment?

Figure 1: Paul Gilbert, Compassion-focused therapy

SKILLS FOR MANAGING THREAT

Firstly, we can calm the threat system by deliberately taking a pause, doing a **body scan** or a **breathing exercise**.

Secondly, we want people to **notice** when their threat system is being activated before it starts to have a negative impact. We want to be able to **name** it - for example, naming the feeling of being overwhelmed, a thought of "not another thing!" or recognising that you're pacing around the room. Then, having clocked what we are experiencing, we want to be able to intentionally **navigate** towards making helpful moves.

SKILLS FOR MANAGING DRIVE

We want to be able to activate our drive system towards making helpful moves. Identifying our **values**, and playing to our **skills** and **strengths**, can help us to move towards useful behaviour. What behaviour would you engage in if you were living in line with your values?

SKILLS FOR MANAGING SOOTHE

We need to activate our soothe system to recover. **Self-care**, especially during times of uncertainty, is essential and should be made a priority. We want to be present, kind and gentle towards ourselves and others. We can use grounding skills such as **dropping anchor** to soothe in the moment.

Thanks for joining us. Want to know more or find out how we might be able to support you further?
Check out our website <https://umbrella.org.nz/> - ka kite ano.

IMechE Mental Health and Well-being

The Chair of C4FF is also the Chair of the IMechE for the Midlands Region and as a follow on from the above helped to arrange a workshop on Mental Health and Wellbeing on 5th January 2021. As well as the discussion on PROMETHEAS (not a spelling error of PROMETHEUS) project and its findings so far, a new concept was introduced by IMechE New Zealand on key drivers of stress



and how we manage it from a neurological point of view. The concept derives from the Model of Balancing Emotions developed by Paul Gilbert (2020) as per workshop on 16th December 2020. His research has found that people switch between three systems – Threat, Drive and Soothe. The concept proposes Skills for Managing Threat, Skills for Managing Drive and Skills for Managing Soothe. More on this at the next meeting of Prometheus Friday 20th February 2021.

Formation of Special Interest Group (SIG)

As reported in the previous News, C4FF have been involved in helping to set up a mental health group with LR, IMarEST, HSE, MCA, MaritimeUK, ISWAN and several others to find ways to share knowledge and experiences in mental health topic areas. The group is keen to organise workshops/conferences and seek support in setting up a formal SIG in this connection. The first workshop was organised by MaritimeUK on Mental Health on 2nd March 2021. C4FF attended this workshop and made contributions to it reporting on Prometheus findings so far.

Prior to the MaritimeUK C4FF together with IMarEST become involved in a discussion to set up first a UK Special Interest Group (SIG) to promote a series of action to help improve mental health and wellbeing at sea. The SIG was formed in February 2021 and since then had several meetings the last meeting took place on 13th April 2021. The discussions at these meetings have led IMarEST on behalf of SIG to organise a major conference titled: 1st Global Conference for Seafarers Mental Health and Wellbeing on 25-26 May 2021. The outcome of this conference is expected to lead to plan for future collaborations and preparation of several proposals.

GreenShip

This an Erasmus+ project started in October 2019 when the details were published in MariFuture. The kick-off meeting took place in Barcelona on 9-11 December 2019.



GreenShip Project Team from Spain, UK, Finland, Italy, Greece and Slovenia



News

The second partner meeting for Greenship was in the UK on the 27th and 28th February 2020. This second Greenship Partner Meeting combined a Multiplier Event with IMechE lectures and visit to the Battery production at Warwick Manufacturing Group and a keynote lecture by Professor Ziarati followed up by short presentation by the Partners and guest speakers at Warwick University. The lectures and battery production visit went well.



Figure 1 and 2 (above) is at Warwick University Lecture Theatre with Professor Ziarati and Captain Heikki.



Figure 3 and 4 is of the Lecture Theatre at Warwick University showing Professor German presenting



Figure 5 and 6 (above) is of the partner meetings based at C4FF, Berkeley House

The Satakunta University of Applied Sciences (SAMK) has organised an online event on Towards Zero Emissions on Thursday 29 October 2020 at 10.00–13.00. For more information click [here](#)

The GreenShip project is progressing as planned but the third partner meeting in Barcelona had to be cancelled due to the Corona Virus. A meeting was arranged on 25th June 2020 to report on the initial work carried out regarding IO 5 followed by IO 6. The postponed second Multiplier meeting which was planned for April 2020 delayed several times to see if a face-to-face event is feasible but due to continued Covid restriction eventually was decided to have it virtually in October 2020.

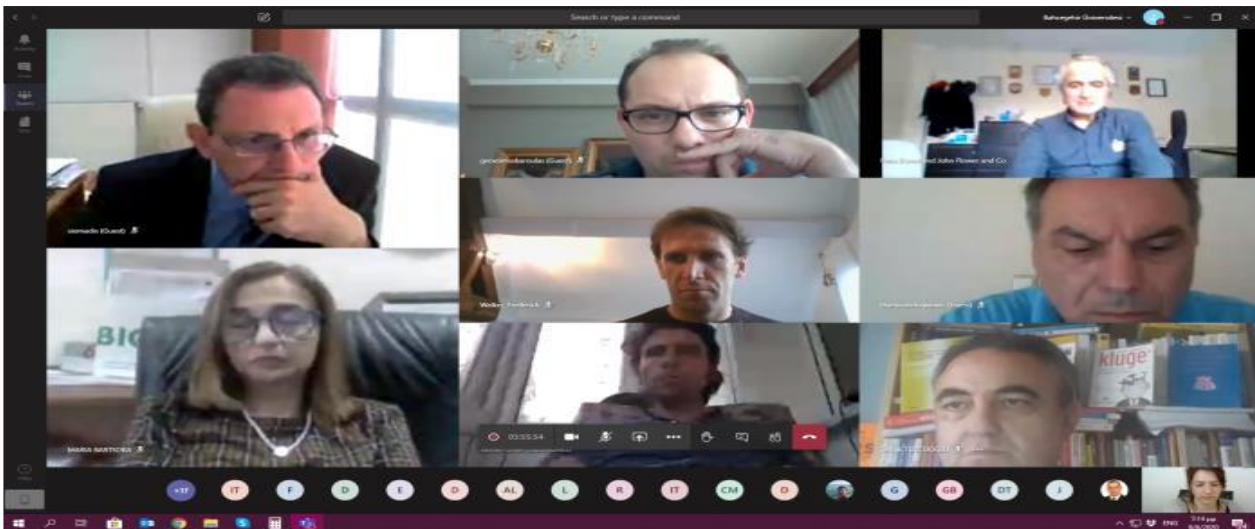
Since the Multiplier event in the UK partners have met on regular basis virtually and recently have been working to prepare the first interim report

Mentor Project

The #Mentor4WBL@EU Project was designed after the European Council prompted the EU Member States to increase "substantially the number of apprenticeships and traineeships to



ensure that they represent real opportunities for young people, in cooperation with social partners and where possible integrated into education programmes". In addition, according to the newly adopted "European Framework for Quality and Effective Apprenticeships" (October 2017), European Commission identifies 14 key criteria that Member States and stakeholders should use to develop quality and effective apprenticeships. Among the specific criteria, is made a concrete reference on the necessity to exist a specific procedure for teachers, trainers and in company mentors to "update their skills and competences in order to train apprentices according to the latest teaching and training methods and labour market needs". In-company WBL mentors are in the core of quality WBL. However, in most European countries, they lack standardized support and guidance which will set the expectations and boundaries clarifying and ensuring their successful contribution in the learning process. Based on the above and the identification of the WBL needs and gaps by NetWBL, there is a significant need for the development of standards and qualifications that would identify certain knowledge, skills and competences. They should also provide adequate assessment that will lead to valid certification and August 2019 marifuture.org News ensure quality in-company WBL mentorship in enterprises providing apprenticeships and internships. More information about the project will be available on the project website when it is published.



A snapshot of the virtual Mentor Multiplier Event organised by the Project Lead on 18th January 2021

Since the virtual multiplier event there have been several virtual partner meetings as well as several meetings with specific partners involved in IO 5. The IO 5 is now concluded and work on IO 6 is continuing.

There has been regular meeting of partners working on various IOs and as reported earlier the final conference and partner meeting took place online on 18th January 2021. The last few weeks the focus of the project has been on preparing an IPR and business model.

Mentor Project was concluded on 31st January 2021. The final conference of Mentor Project took place on 18th January 2021. The conference programme was as follows:



Mentor4WBL@EU

On-line Final Conference

Monday 18/02/2021, 16: 00 pm -18:00 pm (Central Europe Time)

16:00-16:15 Welcome Speech & Presentation of #Mentor4WBL@EU project by Mr Vassilis Siomadis, Project Manager

16:15-16:30 Presentation of the Course & Syllabus design for apprenticeship and internship in-company WBL mentors (IO1 & IO2) by Ms Jennie Kallergi, DIEK AIGALEO

16:30-16:40 Presentation of Certification scheme for workplace mentors (IO3) by Mr Didier Blanc, EFCoCert

16:40 – 16:50 Presentation of the Assessment Development for apprenticeship and internship in-company WBL mentors (IO4) by Professor Reza Ziarati, C4FF

16:50 – 17:00 Presentation of the E-Course Development for apprenticeship and internship in-company WBL mentors (IO5) by Professor Yaman Omer ERZURUMLU, BAHCESEHIR UNIVERSITY

17:00-17:15 Presentation of the IT competence certification platform and the results of the pilot test phase (IO6 & IO7) by Ms Florence Le Lann, Viasyst

17:15-17:30 Presentation of the Exploitation Report by Ms Maria Bartsoka, Head of Unit, IVET Directorate, OAED

17:30-17:50 Q&A

17:50-18:00 Conclusions & Closure

Moderator: Vassilis Siomadis

Official Language of the Event: English



The Partners also had a meeting to prepare for the Conference and also a meeting after to discuss post-funding issues.

As a result of the final conference partners helped in finalising the final report and submitted it the Greek NA on 13th April 2021. Once the final assessment is carried out C4FF intends to



promote the e-course in Mentorship throughout its network in the UK and later through MariFuture.

PoliUniBus

The project is progressing well. Online meetings were held on Thursday, 15th April 2021 and to discuss project progress. Dr Lakhvir Singh from C4FF updated the partners on transfer of Project Management from UoL to C4FF. C4FF team is in touch with the UoL. UoL has no objection in principle for C4FF to manage the project although a modus operandi has to be agreed and the UKNA blessing is sought.

Partners discuss the progress of the Intellectual Outputs (IOs). A progress update on IO1 was provided by Professor Tauno; Progress update on IO2 was provided by Bahar Bahramian; Progress update on IO3 was provided by Professor Reza and Lakhvir; Progress update on IO4 was provided by Andre and U.Porto team.

Dr Lakhvir then presented PoliUniBus portal demo to all the partners. The new project website is also live now and can be accessed at: <https://www.poliunibus.org/>



The Project Team from UK, two organisations from Finland, Turkey and Portugal

DayTiME Project

The DayTiME project is progress well. Dr Lakhvir from C4FF supported the partner workshop on DayTiME Standardisation. During last semester, C4FF team worked on DayTiME Standardisation activities i.e., reviewing existing standards in Digital Twin and predictive maintenance domain. C4FF team participated in number of online discussions during virtual meetings with partners as well as several internal meetings. C4FF played an active role in project dissemination through MariFuture platform by publishing monthly generic project progress reports.

For more information visit project website at: <http://daytimeproject.com/>

OPTIMUM

The project is progressing well and nearly at its final stages. The partners continued having weekly progress meeting. OPTIMUM - International Workshop was also organised. C4FF continue its support to the project.



The project aims to support innovative concepts for engineering, commissioning, control and supervision of smart manufacturing and material handling. It will be in line with European, National and international initiatives towards digital manufacturing, closely related to on-going activities in working groups around the German initiative Industry 4.0. Taking the results from ongoing architectural, component and ontology discussions, OPTIMUM's major goals are: improvement of the aspects of distributed control, adaptation of (I)IoT technologies to real industrial needs, enhancement of control and applications by context and location awareness as well as application design and common-model based 3D engineering and supervision.

For more information visit project website at: <https://www.optimum-itea3.eu/>

New Papers for major International conferences

A new paper is being prepared one for GreenShip project for presentation at net IAMU in October 2021.

The Prometheas partners are planning to prepare a paper for presentation at Nav conference in Poland.

C4FF is also preparing a STEM activity (New Fan Boat) for introduction in Primary Schools and an assignment based on GreenShip IO 5 finding for secondary 14+ pupils. The new assignment uses the RZ Multiple-choice confidence testing technique which relates to the confidence assessment which removes the guessing dilemma in answering these types of questions in tests and examinations. The technique has played a major role in re-introduction of multiple-choice questions in e-learning applications.



**School pupils 14 years old and over
Climate Action Competition**

CW-AQPC, C4FF and Inspire Group Joint Climate Change Competition

We have a challenge for you!

A simple assignment after which your students answer quizzes. Then submit their answers to Professor Reza Ziarati at reza.ziarati@c4ff.co.uk. Areas covered are:

ir Emission Overview

- Climate System and Global Warming
- Greenhouse Gas (GHG) emissions and Climate change
- Main GHG Emissions The main GHGs heat-trapping gases
- Climate Change Impacts on Oceans



- Combating Air Pollution: The Role of International Bodies
- Growth of Concern on Air Pollution
- Historical Developments
- The United Nations Environment Programme (UNEP)
- Intergovernmental Panel on Climate Change (IPCC)
- The United Nations Framework Convention on Climate Change (UNFCCC)
- The Kyoto Protocol

The winning school will get £250, and a Certificate along with the winning students getting £100 each together with a Certificate. The students plus their teachers (2 max) will be invited to our Annual Dinner event as our guests.

Our aim is for Schools to encourage both girls and boys to take part and hence can submit two entries one each from a female and a male student.

The winners will be announced at our Air Quality group conference in September/October 2021

To join the competition along with information on prizes please contact me reza.ziarati@c4ff.co.uk.

I look forward to hearing from you,

Prof Reza Ziarati

Cyber Security

New projects are being developed and a meeting with leading IT specialists have been arranged at C4FF. A major Cyber Security group has been formed from C4FF, BAU UK, Gloucestershire University, Coventry University, Birmingham City University; the latter two are two of the 13 cyber security centres in the UK.

Latest Events

Air quality group meetings are taking place every month. The last meeting took place

Air Quality latest Joint Proposed Project with Coventry University

1. Investigation into the Global State of Air Quality Monitoring and Measurement, Informing the Centre for Factories of the Future for the Design and Manufacture of a Mobile Air Quality Monitoring Unit. It would be good to form a new team to continue with this project. Samuel and his team did an excellent job last year. His participation in the Blue Sky Seminar was also commendable. We would like to nominate him for a C4FF prize to be presented at the next Midland Engineering Dinner event. Participants of the IMechE Design prize would all receive a complimentary dinner ticket, paid for by C4FF) to the next Midland Engineering Dinner as was the case last year.



2. Investigation into the Low-Cost Air Quality Monitoring and Measurement Systems, Informing the Centre for Factories of the Future of Their Accuracy and Precision in Comparison with the Standard Systems Used by the UK Government.

There are two other projects:

3. The project is expected to tackle the climate change actions at the core. Cleaner air necessitates the use of ever increasing greener energy for all key related sectors and industries such energy transformation, transport, agriculture and food as well as manufacturing and built environment (Ziarati, 2010b)^[1]. Education also plays a major part and hence involving local universities and schools in an important consideration in this proposal.

The project primarily concerns the measuring and monitoring pollutants indoors such as offices, schools and at homes as well as in inside the cars, trucks and buses but the intention is also to use dual air quality sensors for measuring pollutant levels in several pilot outdoor sites such as outside schools with a view to measure and monitor the air quality and find ways to mitigate the adverse impact of poor air quality on our health, both inside and outside. Through stem activities the project will be promoted at primary and secondary schools through the existing networks (www.inspire-group.org).

The sensors that will be used will be as accurate and precise as DEFRA ones but a lot cheaper. These sensors are developed by a group of highly competent organisations and individuals and tested in cities such as Oxford. One would be installed next to a DEFRA air quality monitoring station in Coventry for comparison and calibration purposes and two or more in indoor pilot sites. In parallel a set of sensors developed as part of an STEM activity by 16+ students will be installed alongside the more accurate sensor and DEFRA's for comparison purposes and for providing an R&D support to the STEM project for its further development.

While measurements are taking place, the system installed will be configured to a cloud environment and using Artificial Intelligence (AI) and by applying predictive techniques, trends and patterns will be studied. C4FF has established that there is correlation among several key pollutants. The proposed system will be able to capture any data available to populate the air quality grid over a city or an area and predict pollution levels indoor and outdoor and provide feedback on actions that could reduce the level of one or more pollutants.

4. Design and Development of Novel Twin Wind Turbines

The Dual rotor wind turbine will have two rotors, one at the front and one at the rear of the wind turbine. It is expected to offer a higher efficiency and therefore a way forward in renewable energy transformation. In a recent C4FF study states that dual rotor wind turbines are superior to single rotor wind turbines and these scientific researchers prove that dual rotor wind turbines can generate 50% more energy (in kWh) in a year. The difference is a remarkable. Since dual rotor wind turbines are fairly new subject there are not any commercial dual rotor wind turbine in the market. The subject is still at the academic level. Bringing the subject of dual rotor wind turbines from academic level to

^[1] http://www.marifuture.org/Publications/Articles/RZ_Air_Quality_2020_Article.pdf



industry level is a challenge and it promises a great deal to offer. This project proposes design of a dual rotor wind turbine, made and tested at Coventry University with C4FF support. In the literature there are several different dual rotor wind turbine configurations. In this project we propose to design and make a mobile 30 kW counter rotating wind turbine. The application for such a device is substantial and can be installed to provide electricity in rural areas worldwide.

Coventry University Students Project

Three groups of students have been working on the twin blades wind turbine initiated by C4FF. Professor Reza, C4FF Chair supervised the industrial advisor on this project. Two wind turbine engineers from Siemens attended a workshop with students and engaged with the project. Members of Air Quality group with experience in climate actions projects attended another workshop with the students. The final meetings took place on 1st April 2021. The students groups are now expected to work on their final report. Siemens engineers also provided written answers to several questions raised by the students.

New Projects

Several new project proposals were prepared and submitted on time. Due to confidentiality of these projects no mention of some of these will be made until C4FF is informed of the results. Two of the proposals are EU related and several countries have agreed to participate in these projects. It is important to note that UK can still participate in EU funded projects until the end of the year.

C4FF with support from Surrey University, Bytronics and Coventry University is preparing an R&D project proposal for the Government's consideration.

Coventry University students-CWAQPC-C4FF Air Quality Project

The project concerns an investigation into Global state of air quality monitoring and measurement informing the design and manufacture of an Air Quality Measurement Station. There are two groups of students. C4FF and CW-AQPC are seen as the clients. The project is student project and is expected to come up with a specification for design of the measuring station. Both groups recently made a presentation to their academic Supervisor, Professor Paul green and Professor Ziarati. So far both groups have made a good progress.

The UK Government's Response to C4FF Concerns regarding EUREKA and EU Funded Education and Research Programmes

A letter has been sent to the Prime Minister in response to the letter to C4FF by Mr James Duddridge, MP, Parliamentary Undersecretary of State, BIES, asking him to review the two recently awarded EUREKA projects and help C4FF to receive the grants expected. In previous letter to Professor Ziarati, the Minister had assured that Government will be supporting EUREKA approved projects and more funds are being allocated to this novel programme. In an earlier letter he reassured Professor Reza Ziarati that the UK will continue to participate in EU annual budgets including 2020. This means that the Government will continue to make contributions and get receipts from EU budget programmes under the normal rules. All EU projects and programmes, including Erasmus+, will be financed as foreseen under the current Multiannual



Financial Framework (2014-2020). This provides certainty to all beneficiaries of EU programmes, including UK beneficiaries. They will continue to benefit from EU programmes until their closure. C4FF is waiting to hear from Downing Street.

The Government's Response to C4FF on Matters Raised by the Centre about Pollution

In response to C4FF's efforts in helping to improve air quality, the Department for Environment Food and Rural Affairs, Secretary of State, Rt. Hon. George Eustice replied to Professor Ziarati with assurances that the Government is committed to tackling air pollution UK wide and huge progress has already been made in reducing emissions. Air quality has improved significantly; however, it remains one of the most persistent public health challenges of our time. Our understanding of the range and scale of health effects associated with air pollution is constantly improving and Defra continues to have extensive discussions with the Department of Health and Social Care and the research community on the relationship between air quality and health.

Government Recent Efforts – Climate Assembly UK: the Path to Net Zero

In a letter to Professor Ziarati, the Prime Minister, with regards to the advisory and academic panels working towards zero emissions, states that it is testament to your hard work that so many talented individuals and organisations from across the UK are involved.

As the UK's first citizens' assembly on climate change prepares to meet for the first time at the end of January, the two panels of stakeholders and researchers helping to ensure the balance and accuracy of the assembly have been announced.

Dr Martin Ziarati