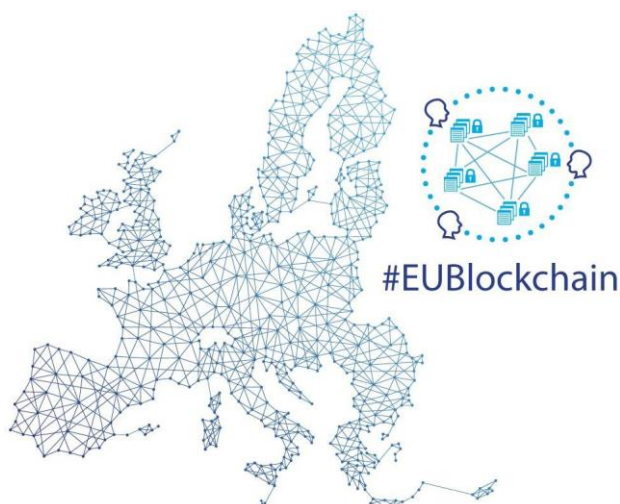# EU BLOCKCHAIN OBSERVATORY & FORUM

Blockchain for Social Impact (in partnership with INATBA) –
Online Workshop, 16 December 2021

#EUBlockchain

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WELCOME

Christian Hauschildt, Managing Director at White Research, welcomed everyone to the workshop organised by the EU Blockchain Observatory and Forum. In his opening remarks, Mr Hauschildt stressed the need for people to understand that blockchain is not only connected to bitcoin and cryptocurrencies but it could also have a social impact. He later introduced the organizers of the workshop, as well as all the moderators, panellists and contributors. Finally, he gave the floor to the keynote speaker of the workshop, Marianna de La Roche from the IOTA foundation and co-chair of the Social Impact Working Group (SIWG) INATBA.

Marianna de La Roche started her presentation by highlighting that through Distributed Ledger Technologies (DLTs) we can address multiple issues, such as climate change, poverty, inequality, food waste and other areas. Ms De La Roche provided information on what INATBA is and has been working on, including a report that presents the challenges that blockchain projects are facing when addressing the United Nations Sustainable Development Goals (UN SDGs). The report was published in September 2021 and includes 69 blockchain projects. A number of projects originate from regions such as Northern Europe and the United States. The projects focus more on Western Europe, East Africa and South America. All SDGs are being addressed through the projects but he majority of them are focusing on the Climate Action Goal, with others also addressing the Industry, Innovation and Infrastructure Goal, Sustainable Cities and Communities Goal, Decent Work and Economic Growth Goal and Responsible Consumption and Production Goal. The report drew out three main needs: the standardization of the social impact's measurement in the wider blockchain space, the difficulty to access funds and the interoperability between the DLT protocols. Ms De La Roche mentioned that there was an additional point raised by some projects, namely the need for educating technical and non-technical people about the potential of DLTs and Blockchain. The report concludes that there is the need to measure the social impact of Blockchain and DLTs. Last, Ms De La Roche referred to a specific project that IOTA is working on; DIG_IT. The project is funded by the EU and it aims at "greening" the mining industry.

PANEL 1

The first panel was moderated by Åsa Dahlborn from the IOTA Foundation and INATBA SIWG, who introduced herself and then made her opening remarks for the first panel, followed by a short introduction to the panelists.

Panellists:

- Tom Bauman - ClimateCHECK/DigitalMRV
- Joerg Walden – iPoint
- Ismael Arribas – KUNFUD
- Wambui Wanjiku - IOTA Foundation

Presentation 1 - Carbon Accounting Challenges and Solutions, Digitizing Measurement, Reporting and Verification of Climate and Sustainability Activities for Trust, Utility and Efficiency, by Tom Baumann, co-founder and CEO of ClimateCHECK

Tom Bauman, co-founder and CEO of ClimateCHECK presented the work that has been carried out in carbon accounting as well as providing information on challenges and solutions, unfolding a variety of developments in digitizing measurement, reporting and verification (MRV) of climate and sustainability activities for trust, efficiency and utility. Following the Paris agreement and its goal to decrease the average global temperature and limit global warming to 1.5 Celsius degrees, the "carbon budget", Mr Bauman mentioned that there are only 8 years left for the budget to be used; a fact that is considered an extreme goal in such a short time. He also addressed the percentage of errors when implementing carbon accounting concerning the macro and micro level. He later presented all the challenges that are to be tackled at this stage; the first being the lack of MRV professionals and the time needed to create and train professionals for these activities. The need for more professionals derives from the goals of the Paris Agreement.

The second challenge is the so-called "Greenwashing" data and metrics; bad data equals bad results. Mr Bauman mentioned that the data issue is being tackled, especially through IoT sensors, but the standards are creating a bigger problem. Using good data and bad standards is currently the main problem. The presentation also focused on the "Greenwishing" phenomenon; countries making promises to adapt to the Paris Agreements goals but being unable to fulfil those expectations. Mr Bauman also summarized the challenges that need to be tackled, mentioning again the lack of expertise of MRV professionals, the errors that occur during the collection and interpretation of data, the lack of credible standardization but also the decreased credibility on finances and policies. He concluded that the goal of not surpassing the carbon budget that was set, seems impossible.

Following the presentation of challenges, the carbon footprint of digital was introduced. Mr Bauman mentioned that there are solutions that are being deployed to tackle this issue as well. He proceeded with analysing the meaning of Digital MRV. IoT sensors, DLTs, remote sensing, Digital Twins, AI, Smart Contracts are all part of the Digital MRV and all are nested within a systemic set of MRV solutions; how MRV reporting and accounting fit into registries and carbon markets and how the MRV standards themselves become digitized for implementation in Digital MRV solutions and then at a larger level how do digital solutions in terms of governance, social and system level change, shape the context for the MRV solutions.

The digital transformation of audit capabilities was also covered in this presentation. Mr Bauman referred to huge companies investing billions of dollars internally in digitizing and modernising audit capabilities, thus investing at a financial and auditing level but there is also an urgent need to invest in non-financial level (e.g. climate). He later on presented a wide base of digital solutions being used in carbon accounting (e.g. 5G networks, calculators, DLTs, remote sensing, mobile sensors, etc). Next, Mr Bauman presented what MRV is and what scope of activities can be digitized and which technologies are involved. Before his closing remarks, Mr Bauman presented an overview of a project that they have been working with IOTA on Digital MRV. He also presented an overview of the Chile Pilot Project, including a multitude of stakeholders. As a conclusion, Mr Bauman mentioned that digital solutions are being used in smart cities to help reduce carbon impact, but they can also be used to improve the carbon accounting to monetize carbon benefits and move to a de-carbonised economy. Last, he mentioned that there is rapid progress in technology innovation, but there is still a lot to be done in order to reach the maximum use of this innovation on Digital MRV.

Ms Åsa Dahlborn, thanked Mr Bauman for his presentation and useful insights and gave the floor to the second panelist, Mr Joerg Walden from iPoint Systems.

Presentation 2 - Creating Positive Impact in Supply Chains with the help of Blockchain Technology, by Joerg Walden, iPoint Systems

Mr Walden, from iPoint Systems, introduced himself and thanked the previous panelist for his presentation. Mr Walden started his presentation by mentioning that each crisis is an opportunity and that we are now facing a challenging COVID and climate crisis which can become a great opportunity. His thoughts evolved around the perspective that this is the last generation being able to tackle these challenges by building responsibility for climate, data and an ecosystem into the supply chain. What iPoint is working on derives from the product side. How all impacts in terms of sustainability are pushing organizations and companies to start thinking about the ways that they are producing materials and products, to reach sustainability in the production process. Mr Walden mentioned that matrixes and measuring systems are quite confusing and that the only way to change the world in the future is to start at the product level. This leads to the realization that innovation through digitalization must come faster. He explained that there is a need to rethink how products are produced and how this production can become more sustainable. Then, Mr Walden addressed the issue of carbon footprint and at which phase it is actually created as well as the impact of the supply chain, which is massive. A material flow was presented to visualize the information process, beginning from the small percentage of data shared during the phase of turning raw materials into actual products, then transferring them into the supply chain, manufacturing phase, use/reuse process and finally the recovery process. There is a significant loss of data during this flow. Mr Walden highlighted that we need to rethink the actions that concern the end of the first life cycle of materials and that there are a lot of opportunities if we start thinking about how to produce our products differently. He then explained, through and example, the carbon footprint challenge. Specifically, he used the example of the energy that is being used during the production phase of a car and the lack of data sharing, standards and trust during this phase. He highlighted the difficulty in tackling data sharing due to lack of trust between manufacturers on the quantity of data sharing, what is being considered as intellectual property or not. He stressed the need to build a secure and trustworthy way of sharing information, so as to tackle the lack of data. Mr Walden also presented how blockchain can improve the data sharing process, by automating processes. Blockchain will enhance visibility and trust, everyone will be aware of the origin of the product, what has been used and what the footprint of a product is. He pointed out that the better the automation process is, the faster we can make innovation happen. An additional challenge that needs to be tackled is data exchange and interoperability between business partners. There is a need to build better frameworks and methodology. Furthermore, Mr Walden also provided information on how blockchain can tackle conflict minerals. He highlighted that through the SustainBlock project that they are working on, blockchain can help keep track of information and what is smelted. In his concluding remarks, Mr Walden mentioned that – especially after the COVID pandemic – everyone accepts digitalization and there is a trust in data and that this is an opportunity to further create change and digitalization.

Ms Åsa Dahlborn, thanked Mr Walden for his presentation gave the floor to the third panelist, Mr Ismael Arribas from KUNFUD.

Presentation 3 - Global Sustainable Market Mechanisms – Digital Single Market for Climate Adaptation, by Ismael Arribas, KUNFUD – Blue Future Organization: protection of the oceans

Mr Arribas started his presentation by explaining what the Blue Future Organization is working on and continued with the core of his presentation, the global sustainable market mechanisms. The Blue Future Organization consists of seven digital blue hubs, acting as a Decentralized Autonomous Community (DAC), a multi-stakeholder platform that address sustainable practices in seaweed and the transition from "farm to fork" revolving to "farm to finance". A Community which is oriented towards the EU Green

deal and focuses on three UN SGDs, namely goals No 14 – Life below water, 16 – Peace, justice and strong institutions and 17 – Partnership for the goals. Blockchain is an inspiration for goal No 17. Mr Arribas presented some facts on the Blue Economy for the year 2019, during which 99% of the US Marine Biomass was imported and 98% of the algae was harvested, which leads to lack of certification for many practices in different circumstances.

According to a recent study that was carried by the Allied Market Research, the global aquaculture market will reach $242 billion. Following this observation, the panellist explained the essence of the blue circular economy, also trying to match different parameters such as biotrade and biocommerce, compensation, coastal competences. He mentioned that blockchain is an excellent way to increase trust in data sharing, especially focusing on blue bonds. Additionally, Mr Arribas presented numerous honours that were awarded to the Organization, including by the OECD Blockchain Policy Forum. He showed a video concerning a project that they have been working on, whichhad a great networking impact for their organization and refers to the Blue Future 0_2 boat; the first carbon compensation workshop, based on algae farming. It produces blue carbon credits and embraces tech for climate. The BFO is pursuing the Blockchain Interoperability Maturity Model, introduced in 2021 by Cohen, and Eric E., the Sustainable Development Model on how to build the blue economy. Finally, Mr Arribas thanked everyone for their participation.

The moderator, Ms Åsa Dahlborn, thanked Mr Arribas for his presentation and video and gave the floor to the fourth panelist, Ms Wambui Wanjiku from the IOTA Foundation.

Presentation 4 - The Trade, Logistics, Information and Pipeline (TLIP) Project, by Wambui Wanjiku, IOTA Foundation

Ms Wanjiku started her presentation by sharing information about the TLIP Project; a concerted action between the IOTA foundation and Trademark East Africa, an NGO based in East Africa, focusing on reducing barriers around trade. The project was established around ways to simplify and digitize trade. Ms Wanjiku presented how trade is currently evolving, by engaging many different stakeholders, requiring significant documentation exchange and explained that those processes create an increased lack of trust concerning data sharing. To resolve this issue, the project envisions the supply chain as one organization, where everyone involved can have access to any documentation released or shared. The TLIP project understands DLT as the layer between the authorities and other parties (producers, consignors, etc) so as to ensure that all relevant documentation is shared in real time and that its trust is guaranteed. The solution provided by the project is considered to be timesaving, it makes the truth visible due to the fact that all documents are collected from the source and are shared at the initial stage of the transaction, the information is collectively owned, accommodates current infrastructure, customs systems will not be changed, but complemented and finally fosters adoption by all. The project generates three benefits. It provides more complete information, thus making risk assessment easier, it counters illicit trade, fraud and forgery by introducing a robust audit trail for documents and it facilitates trade by enabling sharing of documentation. It gradually leads to the creation of more jobs due to the increased imports and exports at any country. Ms Wanjiku mentioned that this is an open solution and can be implemented in any country wishing to join.

Panel 1 Q&A

The moderator of the panel, Ms Åsa Dahlborn, opened the Q&A and invited the audience to ask questions.

Question 1

The Q&A started with a question by the moderator about the challenges and barriers to the use of Blockchain in the areas that were covered by the presentations, highlighting the standardization process and the lack of trust in data sharing.

The first one to address the question was Mr Bauman, who stressed that there is an ongoing lack of climate standards, but steps are being taken to coordinate and harmonize them. He also stated that user friendly standards and environmental integrity will be applied eventually and stressed the need for a restructuring of the standards already present.

Mr Walden then expressed agreement with Mr Bauman regarding the lack of standards and went on to outline the issues surrounding product chain footprint reporting. He explained that the metrics have to do with company-related advantages and disadvantages and finding a common approach on interoperability is difficult. He also said firms might not be willing to take part in data exchanges.

Mr Arribas then spoke about how even though efforts are being made, there is a need for increased coordination and communication between the currently initiatives and hubs. He then suggested that there is a need for a harmonisation of regulations, as the lack of harmonisation is the biggest barrier to the aforementioned coordination.

Question 2

Ms Dahlborn then asked how the speakers view the relation between the public and private spheres regarding Blockchain technology.

Mr Bauman responded to the question by citing the example of his organisation and how during COP they partnered with Gold Standard a foundation in Switzerland, and stressed the importance of Public-Private collaboration, while also stating that there is no one-size-fits-all approach, to accelerate the deployment of resources (standards, frameworks, data). He then said that the challenge was to effectively communicate the vision and to attract sufficient interest to be able to find solutions fast in order for those solutions to be time-relevant to the needs of the markets and stakeholders.

The question was then picked up by Mr Walden who while nodding in agreement with Mr Bauman agreed by saying that there are many initiatives being started by the private sector, that are transparent and competitive. He elaborated by saying that businesses, IT, and government initiatives create channels that facilitate this. He also differentiated the European approach from the US approach to initiative development, by stating that the European approach involves funding and assistance to boost growth of the community, unlike that of the US.

Mr Arribas then expressed agreement with Mr Walden and said that DG GROW is doing great work in the European area with regards to anti-rival policies and posed the question of how this technology can be kept as anti-rival.

Ms Dahlborn also asked Ms Wanjiku to weigh in, which she did by agreeing with Mr Walden that the main issues the technology is faced with is communication to stakeholders about their utility and the need to build capacity and inspire adoption of such technologies. She stressed that there is a need for more trainings and communication efforts about the subject.

Question 3

Ms Dahlborn, after expressing agreement with Ms Wanjiku, proceeded to ask whether the speakers have any suggestions for solutions to the highlighted challenges.

Taking up the question Mr Arribas deemphasized regulatory barriers and emphasized the need for autonomous reporting parameters, few of which currently exist. The role of the ISO 26000 family with regards to standards and the importance and role of the markets in carbon compensation were also mentioned. Lastly it was suggested that regulatory risks could be addressed by making government reporting timelier.

Mr Bauman then tackled the question by saying that, as far as sustainability is concerned, the importance of transformational change cannot be overstated. He proposed that change could be created at an individual level, both through life changes and through peoples' interactions socially and with the government. He also discussed the issue of what norms and rules that exist, that due to the need for fast change automation is the only way. He then said that the aforementioned transformational change is as important as digital and financial change.

Panel 2

Following Ms Dahlborn's conclusion of panel one, Christian Hauschildt from White Research, representing the EU Blockchain Observatory and Forum, introduced panel two. He introduced the following panellists, and then passed the floor to the moderator, Bara Greplova,Director at Future Energy Foundation, Co-chair INATBA's Climate Action Working Group

Panellists:
- Cathy Mulligan - ERA BIG Chair holder and Professor at Instituto Superior Técnico, University of Lisbon
- Álex Casas - Head of Blockchain Climatetrade/Climatecoin
- Karl Schultz – INATBA Resilience and Adaptation Group/Adaptation Ledger

Presentation 1 - DCentral – Decentralization for Sustainability and Social Good, by Cathy Mulligan, ERA BIG Chair holder and Professor at Instituto Superior Técnico, University of Lisbon

Dr Cathy Mulligan started the presentations of panel two on the DCentral centre she is leading at the Instituto Superior Técnico at the University of Lisbon. The lab is an initiative of the BIG ERA Chair hosted by the institute, which will be looking at decentralisation for sustainability and social good over the next five years. As this project is at its beginning, Dr Mulligan covered the primary aims of the project and what research they plan to do. DCentral specifically focuses on decentralisation rather than blockchain to incorporate the associated technologies that are also important to understand in this context. It will work towards developing depth of research in decentralisation and its role in several interdisciplinary areas, including distributed systems, cybersecurity, environmental engineering, HCI/design, digital economics and telecommunications.

The project covers a range of initial questions. The first being around how decentralised technologies can both help and hinder sustainability, depending on how these systems are built. The goal of this project is to create an exact framework that will help determine whether an application will have net positive or net negative effect. The second question is around governance mechanisms. Some decentralised technologies, such as DAO's, are not as democratic over time as they first seemed. It

then becomes important to understand how to build effective and appropriate governance systems that maintain focus on social good over time. The third overarching question focuses on more socio-economic areas and implications of this technology. Lastly, the project will push the boundaries of existing research on new technology paradigms. Some specific projects being conducted through this ERA include projects on the environmental impacts of cryptocurrencies, the creation of independent economies using blockchain, and how water management infrastructure funding can be rolled out using blockchain. There is a project on culture heritage, which is seeing how decentralised technologies can be used to protect and record the cultural heritage sites that exist next to seas and oceans. Lastly, there is a project on food supply chains, which are inherently brittle, and how they can be made more resilient. Dr Mulligan finished her presentation encouraging anyone interested in these projects to reach out through the DCentral website at http://dcentral-lab.org/.

Ms Bara Greplova took the floor and thanked Dr Mulligan for sharing insight on such important projects. There are not many projects out there combining cultural heritage and blockchain. Ms Greplova then introduced Mr Álex Casas from Climatetrade.

Presentation 2 - Environmental Offsetting: Blockchain for environmental Offsetting, the Climatetrade Marketplace, by Álex Casas, Head of Blockchain Climatetrade/ Climatecoin

Mr Casas began his presentation by introducing Climatetrade, which was initially created as Climatecoin in 2018 and was the first project to tokenise carbon credits. However, at the time, the market was not ready to create tokenised carbon credits. So the company pivoted to create Climatetrade, which is a marketplace that brings transparency and accountability to sale of carbon credits in the marketplace. Mr Casas described additional operations under the umbrella of Climatetrade that allow for companies to introduce a carbon offsetting process in their point of sale that allows customers to directly offset carbon in their purchase. Climatetrade is expanding their client base around the world and has so far offset 1.5 million tons of carbon. The company uses protocols in line with their sustainable ethos, including using the Algorand network, which is one of the greenest blockchains that exists. Mr Casas brought up the lack of transparency in carbon markets, such as how much money was sent to the developer or how much was kept by the broker, and the significant friction this caused in transactions. He then gave a demonstration of how the Climatetrade website is used to address this lack of transparency. Any user can look up a project hosted on the website and find information about the project, the SDG's it works towards, and their linked Algorand account that hosts their CO_2 tokens. Users can then purchase carbon tons directly from projects and see through Algorand the exact breakdown of how the money from the purchase was split between the developer and the broker, and what retirement account the carbon token goes into.

Ms Greplova thanked Mr Casas for demonstrating the work that his company is doing and then introduced the final presentation from Mr Karl Schultz.

Presentation 3 - Adaptation, Blockchain and Social Good, by Karl Schultz, INATBA Resilience and Adaptation Group/Adaptation Ledger

Mr Schultz began his presentation by introducing his topic on the need for adaptation to climate change and how blockchain can be used to reach that aim. Climate change, which is often thought of a solely an environmental issue, is also a social issue. The challenges that increase wildfires, floods, and other environmental catastrophes require society to rethink what is valued and what people are willing to change. Mr Schultz distinguishes between climate change mitigation and adaptation, of which there is less awareness. While mitigation is focused on reducing the compounds in the atmosphere, adaptation

about adapting human systems and restoring natural systems. Adaptation addresses social, economic, environmental and governance structures. It needs to be applied everywhere—to health systems, infrastructure, agriculture, supply chains, and everything else. The main types of adaption include ecosystem-based options, infrastructure based options and socio-political options. Investing in climate resilient structures and early adaptation will limit the grave environmental impacts of climate change.

There are several challenges that adaptation approaches face. The first challenge mentioned by Mr Schultz is the need for greater investment and the creation of better investment opportunities. Second, the standards and best practices for adaptation have yet to be created. This is necessary to have an appropriate understanding of the potential impact of adaptation interventions to ensure there are no secondary negative effects. Third, there is a lack of integration and general policy incoherence. If one does not consider all the tools at their disposal, including distributed ledger technologies, satellite imagery, big data, IoT, and others, then there is significant lost potential. While these challenges are critical, there are also new opportunities. Mr Schultz highlighted that at this years' COP in Glasgow, there was a considerable increase in adaptation initiatives, which shows that it is rising on the global agenda. Climate change requires transformational change and integration across governmental, environmental, and digital innovation systems.

The Adaptation Ledger Ecosystem is a high-level concept on how this integration could exist. It brings together digital technology, governance, and expertise with various solutions at a high-level as well as a specific project level. The aim of this integration is to enable rapid transformational change and system-level adaptation. It can overcome the challenges of the current systems in place that are immature, poorly connected and slow-moving to reduce costs, improve data and environmental integrity, increase transparency, and increase assess to finance. In addition to the Adaptation Ledger Ecosystem, which is a more general application, the Adapt IT™ suite of adaptation tools is a customisable foundation for application developers. Mr. Schultz provided an example of the Adapt IT™ is use, the Well Adapted Coffee Supply (WACS) application. WACS provides DLT-enabled, robust, verifiable information on provenance of coffee supply to reduce climate vulnerability of entire coffee supply chain. It allows producers to access finance to support adaption efforts and a platform to report adaptation actions, buyers to have better data for improve sourcing, financiers to have better risk profile information, and consumers to have the information necessary to target support for vulnerable farmers.

Ms Greplova thanked Mr Schultz for his highlighting the need for transformational change and interoperability between sectors. With that, she opened the floor for the second panel Q&A.

Panel 2 Q&A

The Q&A for the second panel was opened by Ms Bara Greplova.

Question 1

Ms Greplove began the session by asking about the debate of Blockchain vs Sustainability. She started the conversation by specifically asking Dr Cathy Mulligan about the environmental impact of Cryptocurrencies.

Dr Cathy Mulligan responded by saying that there are many discussions around the issue of sustainability of Cryptocurrencies. First, she mentioned that it is important to understand that the issue is not one of just energy consumption and CO_2 output, but also one of biodiversity loss. She mentioned however that the biggest problem is churn, the replacement of components and increase in needs (under PoW). She then mentioned that there are blockchains put forward that are less bad environmentally speaking and that a balance needs to be found, as that is where there is room for positive impact and where it becomes a negative impacts can currently be found.

Mr Casas then spoke about how the emissions associated with cryptocurrencies not being a cryptocurrency issue but rather a human issue as it is people that consume energy for data mining. He also mentioned that there are many other negative effects that need to be assessed, that compose the huge carbon footprint of the technology.

Following Mr Casas' comments, Mr Schultz said that there are many "goods and bads" in every action and that one needs to avoid carbon-intensive solutions when dealing with vulnerable communities for the purposes of mitigation and adaptation.

Question 2

Ms Greplova then posed the question of whether we are doing enough to innovate and be fast enough to protect the climate?

Mr Casas responds that the pace of innovation is not bad. He mentioned innovations such as layer blockchain which is helping solve the issues of transparency and accountability. He then said that acceleration of innovation will happen when the incentives surrounding climate change, change, and that a change in behaviour is key.

Mr Schultz added that he did not believe that the pace of progress was fast enough, to which Ms Greplova asked him what can be done, and he responded by highlighting the importance of mitigation. He then explained how he first focused on mitigation in 1994, but that since mitigation was not fast enough, he instead started focusing on adaptation. The field of adaptation has not seen much progress in 12 years however, because it encompasses every system. A better understanding of how the blockchain community can gain information from scientists on what is the impact and what technologies can reduce these vulnerabilities is needed. He then said that there is a need to identify that information and of ensuring sufficient trust and aligned incentives. Something which would require policy decisions on what the metrics are, what the appropriate tools that governments can market are.

Ms Greplova then asked Mr Schultz a follow-up question about the roadblocks. He replied that adaptation strategies are harder to understand than mitigation strategies. The metrics of adaptation are harder to envision. He also mentions that there is a lack of funding for adaptation and a lack of articulation of project opportunities.

Dr Mulligan agreed with the previous statements and further stressed that progress is too slow and that the transformation of research to results is happening very slowly. She also stressed that there is a need for additional interoperability.

Question 3

Ms Greplova then brought up the Covid-19 pandemic and asked whether behaviour had changed since the pandemic?

Dr Mulligan commented that people have become much more critical of greenwashing.

Mr Schmidt added that the pandemic is nothing compared to climate change and that in the past few years, people are seeing wildfires and record heat, death and destruction and people now are seeing climate change as a fundamental issue.

Mr Casas then weighed in by saying that progress can never be fast enough with what is at stake. He however also said that blockchain, has not reached a critical mass yet, but is nevertheless growing very fast.

Question 4

As a final question, Ms Greplova asked the panellists about on who they believe the solution depends on; governments or on individuals?

Mr Schultz replied first by saying that a solution will depend on everyone. He then explained that the solutions and understanding of how transformational changes can be achieved are key. He then said that individuals are not the only part of the solution, but people need to start somewhere. He continued by saying that fundamentally, these things do come down to politics and public sentiment but that it is a bottom-up dynamic. He concluded by commenting on the ability of politicians to create incentives that then lead to the private sector providing solutions.

After these concluding remarks, Mr Casas spoke, beginning by saying that the market created our current problems so the market should fix them. He explained that the economy is the driving force of the world, for better or worse. He then touched upon the IPCC's recommendation that we stop or at least slow down economic growth to demonstrate that we are living in an unprecedented time and wondered about how even though the world is not infinite, economic growth is thought as being such.

Dr Mulligan took over after that point and exclaimed that since 1980's we are not living in a democracy anymore, and that we are living in a corporate-run world with 180 companies owning the economy. Conventional thinking entails conceptualizing economics with a neoclassical lens, a lens created by the Chicago School of Economics, but that that does not mean that we cannot create a new system. She then called on everyone, individuals, and governments to change the economy.

Appendix

- Presentations from the workshop can be found here:
  https://www.eublockchainforum.eu/events/blockchain-social-impact

- Videos from this and all other workshops can be found on the EU Blockchain Observatory and Forum website under the section Reports

Official Agenda

| Time	Topic	Speaker
14.30	**Welcome**	**Christian Hauschildt, EU Blockchain Observatory and Forum, White Research**
14.40	**Keynote:** Blockchain for Social Impact	**Mariana de la Roche -IOTA Foundation / Co-chair SIWG INATBA**
14.50	Panel 1 DMRV: Climate monitoring iPoint Systems: Supply Chain Blue Future Organization: protection of the oceans TLIP: Trade Logistics Information Pipeline	**Moderator: Åsa Dahlborn -IOTA Foundation / SIWG INATBA** **Tom Bauman** - ClimateCHECK/DigitalMRV **Joerg Walden** – iPoint **Ismael Arribas** – KUNFUD **Wambui Wanjiku** - IOTA Foundation
15.30	**Q&A for Panel 1**	**Moderator: Åsa Dahlborn -IOTA Foundation / SIWG INATBA** **Panel members** from Panel 1
15.50	**Introduction to Panel 2**	**Christian Hauschildt, EU Blockchain Observatory and Forum, White Research**
15.55	**Panel 2** DCentral: Research for sustainability and social good Environmental Offsetting: Blockchain for Environmental Offsetting HGF: Climate adaptation	**Moderator: Bara Greplova - Co-chair INATBA's Climate Action Working Group** **Cathy Mulligan** - ERA BIG Chair holder and Professor at Instituto Superior Técnico, University of Lisbon **Álex Casas** - Head of Blockchain Climatetrade/Climatecoin **Karl Schultz** – INATBA Resilience and Adaptation Group/Adaptation Ledger
16.35	**Q&A for Panel 2**	**Moderator: Bara Greplova - Co-chair INATBA's Climate Action Working Group** **Panel members** from Panel 2
16.55	**Closing**	**Christian Hauschildt, EU Blockchain Observatory and Forum, White Research**

Speakers Biographies

Mariana de la Roche (https://www.linkedin.com/in/mariana-de-la-roche-410ba3130/) is the Lead Project Manager at the IOTA Foundation and the Co-Chair of the Social Impact Group at INATBA both of which are key players in the DLT sphere. She has an academic background in International Law and is currently pursuing further education in Digitisation and Big Data. Over her time as part of IOTA and INATBA she has engaged with a series of subjects surrounding Blockchain and its practical implementation. She has also authored reports on Blockchain's utility in the areas in which she specialises such as the report on "Blockchain for Social Impact" published by INATBA.

Åsa Dahlborn (https://www.linkedin.com/in/%C3%A5sa-dahlborn-4151a399/) works as Project Administrator at the IOTA Foundation and is an active member of INABTA's Social Impact Working Group (SIWG). She graduated from Bard College Berlin in 2020 with a bachelor's degree in Economics and Politics. She had gained experience in Content Analysis as a Researcher at Freie Universität Berlin before joining INATBA. She is also one of the co-authors of the report "Blockchain for Social Impact", a report showcasing DLT projects' potential to tackle social issues, published by INATBA earlier this year. Her focus of interest lies in exploring how DLT can be used to promote sustainability, equality and economic empowerment.
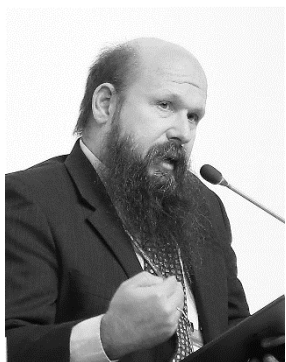
Tom Baumann (https://www.linkedin.com/in/tombaumann/) Tom is a globally recognized authority in the digital and sustainability space and was recognized in 2019 as a Top 100 Fintech for SDG Influencer. Tom Baumann is CEO of ClimateCHECK, a company specialized in innovative standards and assurance for climate and cleantech. Tom is a serial entrepreneur involved in the launch of 7 start-ups since 2007 including: the GHG Management Institute as the global society of GHG MRV professionals, Collaborase and ScribeHub, the Climate Chain Coalition as an open global multi-stakeholder network of more than 270 organizations in 50 countries, DigitalMRV ,and also Xpansiv as the digital platform and global marketplace for ESG-inclusive commodities. Tom was founding co-chair of INATBA's Climate Action Working Group as well for the Hyperledger SIG for Climate Action & Accounting. He has a degree in environmental economics and completed graduate studies in climate change economics.

Jeorg Walden (https://www.linkedin.com/in/joerg-walden/) is a serial entrepreneur driven by the vision of securing a sustainable world for future generations using today's digital technologies and create solutions for better transparency and enable the path to the circular economy. He has worked in different roles in the IT-technology industry and has many years of experience in leadership, executive management and software development.

As the Chief Executive Officer and Founder of iPoint-systems, a leading provider of software and consulting for sustainable products, value chains, and brands he is responsible for the business, innovation and product strategy. Since its founding in 2001 as a small automotive-focused company, iPoint has transformed into a multinational, globally operating market leader with a clientele of tens of thousands of companies from various industry sectors.

Ismael Arribas (https://www.linkedin.com/in/ismael-arribas-9433324/) is a global entrepreneur specializing in Blockchain Modelling, wealth management, and Good Governance. He holds a degree in International Law and Legal Studies from Universidad de Valladolid and has an extensive record of engagement with Blockchain initiatives and projects. He is an Accredited Expert at the CEN and CENELEC Focus Group on Blockchain and Distributed Ledger Technologies and the ITU Focus Group on Application of Distributed Ledger. He is also President of the Spanish Chapter of the Government Blockchain Association, an organisation interested in the ways in which Blockchain can affect government agencies, departments and other public organizations. He also has experience with the potential uses of DLT and Blockchain as part of the UNE and through his role as CEO of Kunfud, a compliance company specializing in Blockchain. In 2021, he also became a member of the panel of the EU Blockchain Observatory and Forum.

Wambui Wanjiku (https://www.linkedin.com/in/wambui-wanjiku-b20465187/) is the Project Coordinator of the TLIP Project and is based in Nairobi, Kenya and a member of the IOTA Foundation. She has an academic background in Business Information Technology and Information Technology Management, and has over ten years of project management experience, managing key projects in international development organizations, the private sector and technology start-ups in East Africa. Her professional record features roles such as Regional Coordinator for East Africa at the IOTA Foundation another key DLT initiative. Passionate about gender inclusion in technology, she also mentors young girls to develop an interest in STEM-related careers.

Bara Greplova (https://www.linkedin.com/in/baragreplova/) has a background in energy and is a strong advocate for innovative technical solutions deployed in locations and communities that do not always benefit from the latest innovation, with particular focus on solutions to ending energy poverty. She is the current Board Member of INATBA and a Co-chair of the Climate Action Working Group, in addition to also being the Director of the Future Energy Foundation, and Enterprise Working Group Member at Blockchain Ireland. She also is engaged with several projects concerned with environmental issues and environmental sustainability.

Dr Cathy Mulligan (https://www.linkedin.com/in/cathymulligan/) is an interdisciplinary researcher at the boundary of digital technologies and economics who places sustainable development at the centre of her research practice. She is highly accredited in scientific fields such as Information Technology, Sustainable Development, and Communications from renowned institutions such as the University of Cambridge and has been involved in academia ever since. She has been researching in the cryptocurrency space since 2009 and she has co-founded the Imperial College Centre for Cryptocurrency Research and Engineering. Additionally, she was a member of the Management Board of the EU Blockchain Observatory and Forum up until 2019. She has also collaborated with multiple international organisations on the subjects she specializes in – including the UN, WEF, OECD and a series of governments.
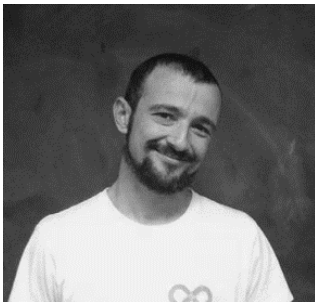
Álex Casas (https://www.linkedin.com/in/alexblockchain/) is a social entrepreneur passionate about blockchain's potential to build a fairer and more sustainable world. He has an academic background in International Business Administration but has had a deep fascination with Blockchain technologies which is evident from his professional record. He is the current Head of Blockchain at ClimateTrade, an organisation in the Carbon Offsetting business. He is also the founder of the Leon Blockchain Hub, the Ecosystem Lead at Aeternity a Blockchain focused on Smart Contracts and has worked as an Independent Evaluator for DLT Calls in addition to other projects such as RSK and DAppNode.

Karl Schultz (https://www.linkedin.com/in/karlhschultz/) is an adaptation and climate expert and advocate. He is the creator of the Climate Vulnerability Reduction Credit (VRCTM) a mechanism for evaluating and sustainably funding climate change adaptation. He is also the co-author of the Adaptation Metrics Mapping Evaluation Framework. In addition, he is a co-founder and principal of Adaptation Ledger Ltd., a company that works to integrate adaptation standards, metrics and next-generation digital technology for climate adaptation. He also has an extensive record in the field of sustainability and adaptation, featuring organisations such as the Peace Corps and the United States Environmental Protection Agency.