

# ELK COAST INSTITUTE

FOR MINDFUL SUSTAINABLE INNOVATION

## Energy Equity Summit

### Framework Working Group

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## Introduction

For years, there has been increasing knowledge of climate change and its disastrous consequences, although climate change denialists have and continue to exist. The climate threat is, however, becoming more and more undeniable, and moreover it is beginning to have significant impacts — wildfires, floods, and hurricanes, to name just three. A dramatic decrease

in the usage of fossil fuels, as well as a transition to renewable energy sources, are essential, if we hope to reduce future destruction of the planet.

However, there is another side to the coin of energy consumption, namely the inequity of energy distribution. We define energy inequity, quite simply, as occurring when there is an unequal access to energy around the world. Currently, we live in a world in which energy inequity is a huge problem. Developing countries need *more* access to energy — and the current infrastructure makes fossil fuels the most accessible energy — in order to better their economies, improve the lives of their citizens, and continue developing.

Here, we are faced with two fundamentally important goals which seem as though they are at odds with each other. However, we propose a new framework which outlines a solution to both of these seemingly incompatible problems. This framework is based on a positive feedback loop, and centers around using the existence of climate change to fuel the solution for energy equity, and vice versa. In this framework, meeting the energy needs of humanity world-wide, and increasing both energetic self-sufficiency and economic growth, are the long-term goals. This positive feedback loop has already been proposed with a partial basis in carbon-capture technology by Graciela Chichilnisky and Peter Eisenberger (Chichilnisky and Eisenberger, 2009).

Through this framework, the climate crisis can be seen as an opportunity for growth — it is certainly a threat, but it is a threat which can help to coordinate, collaborate, and create a better and more equitable future. In fact, we argue that not only will this framework help bring about positive changes on both fronts, but it is also the *only* feasible framework to implement as we go forward in our fight against climate change.

## Discussion

### *Introduction*

As Einstein famously said, “One cannot solve a problem with the same thinking that created it.” We have long lived in a world in which inequity is rampant, and it is from this world that the climate crisis arose. The basis of our new framework is that we must give energy equity a top priority in our future planning, because increased energy equity is vital for reaching a global accord that will allow us to prevent further catastrophic impacts of climate change within the required timescale. Without adopting this framework, we risk increasing energy inequity, and causing larger-scale problems — perhaps even wars — as some countries transition to renewable energy and others are unable to.

### *Technology and Implementation*

As mentioned, the basis of this new equity-based framework is in both renewable energy sources, and in carbon capture technology. The purposes of carbon capture technology

are twofold. To begin with, we have reached levels of carbon dioxide in the atmosphere that necessitate its removal, rather than just a cessation of continued emissions, if we don't want our planet to continue warming. Therefore, one of the uses of carbon via carbon capture will be sequestering it, either in usable products such as building materials, or underground.

Additionally, we are developing the technologies to turn captured carbon into a usable energy source, specifically liquid fuel. Through the captured atmospheric carbon and hydrogen from water, hydrocarbons can be synthesized, a form of liquid fuel which is carbon neutral.

One of the driving forces of our ability to cleanly capture and convert carbon into a usable product is the accessibility of renewable energies such as solar, wind, and hydropower. Without the availability of this renewable energy, carbon capture and conversion would be necessarily done in a non-neutral way. The combination of renewable energy sources and carbon capture, sequestration, and conversion to fuels, therefore, can close the carbon cycle and provide an *opportunity* for human civilization to evolve from our current "industrial mining of the Earth's resources" to a more equitable, sustainable, inclusive, and prosperous Renewable Energy and Carbon Materials Economy (REME) (Eisenberger, Renewable Energy and Material Economy). A REME, based on renewable energy from sources such as solar and wind, and hydrocarbon fuel, will allow for an industrial version of photosynthesis, akin to the self-sustainability of organisms which conduct natural photosynthesis.

Transitioning to this new economy, and tackling both the problem of climate change and of energy inequity, involves visualizing the solution not as top-down, but as bottom-up. These new REME technologies are modular and scalable, enabling decentralized utilization that is essential to achieve equity. Specifically, these technologies must be *built where the people are*. Through carbon capture and hydrocarbon synthesis, we have the ability to provide clean, carbon-neutral energy that makes use of existing infrastructure.

To this point, we focus on the utility of the liquid fuel, which can be synthesized, as mentioned, using water and captured carbon. The ability to generate this carbon-neutral fuel will allow for those who do not have access to electric machinery, generally those in developing countries, to further their development. In more developed countries we have the ability to use renewable energy sources to fuel our electric vehicles and other technologies which rely on electricity. However, without large-scale changes to the current technology in developing countries (incurring exorbitant costs), there is no way for the electricity generated from renewable energy sources to be converted into the kind of energy that is needed for growth.

Through the scalability of clean and carbon-neutral energies, accessibility to energy creates a dramatically different architecture compared to the unrenovable fossil fuels which are currently being used. Unlike how oil must be extracted and distributed from few locations, new REME technologies can be implemented, on small and large scales, in many places simultaneously. Further, once the implementation of these new energy sources begins, it will

reduce the problem of energy equity, and self-perpetuate the creation and distribution of technologies, creating a clean, energetically equitable world.

## **Concluding Thoughts**

As these technologies become more readily distributable, this systemic solution, which works from the bottom-up, will begin to perpetuate itself. As countries are able to access and use clean energy, economic growth will occur, leading to more adoption and usage of carbon-neutral energy sources. In this way, as peoples' lives improve through these REME technologies, they are simultaneously contributing to the fight against climate change.

There's reason to be optimistic for the long term as we have the necessary knowledge and technology. In developed energy-rich countries, there are legacy systems that we may be able to adapt for the transition and build on for the long run. Market forces are a tailwind and provide patch-up solutions to ease the transition as we build new energy, food, and other infrastructure utilizing industrial and government-supported efforts. Furthermore, in the near future, we will have cheap and abundant renewable energy that is globally more equitably distributed than fossil fuel energy sources. Indeed, more renewable energy sources are located in the global South than in the global North. And as these REME technologies become cheaper to develop and distribute, people will respond positively to these opportunities and changes. Investors will respond to profit, while politicians and countries as a whole will be motivated by a "race to the top" as countries benefit from their more robust energy systems and REME.

Pursuing energy created by carbon capture, due to the fact that this will allow us to use existing infrastructure, will help address the challenges we face at the fast pace needed with much less disruption. A lower cost and, most importantly, a more equitable transition to a REME economy is viable in the foreseeable future. It is vital that as we make this transition to a clean world, nobody be left behind. Rather than maintaining the existing inequities of the world, we must maintain our view of solving the climate crisis as a simultaneous solution to energy equity. As technologies develop and become distributed, our global framing to these crises must remain bottom-up. We have more reason than ever to be hopeful, as there is a solution to climate change — and to the pervasive problem of energy inequity.