

UNESCO

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Why the ocean is our best option

Innovation has allowed the world to witness unprecedented development and progress in recent times. We benefit from this progress by adapting it to serve the whole of humanity. A highly abundant material we don't usually consider when thinking about innovation is saltwater. 96.5% of our planet's water is saline, consisting of a homogenous mixture comprehending sodium chloride and dihydrogen monoxide. I believe utilizing more of it enables us to minimize the effect of climatic fluctuations and attempt to hinder the effects of global warming. Since 30% of greenhouse gas emissions originate from means of transportation, why not replace petroleum with salt water?

I believe that the concept of redox flow batteries could be a sustainable solution: batteries that are not lithium-based but instead based on a saline solution known as the electrolyte. Being a devotee of sportscars, I was intrigued by its efficiency and durability; to cover over 1000 km on a single tank, on just 48 volts, is fascinating! As the bi-ionic fluid is driven through a membrane, the charged electrons interrelate generating an electric phenomenon. The liquid vaporizes, casting off water dust, spawning no greenhouse gases. By implementing such technology into only on-road transport, you are eliminating over 22% of world emissions. By reducing world emissions, you reduce the rate of increasing acidity in oceans; you are saving an entire ecosystem.

Adjusting thermohaline circulation could be revolutionary. Investing in research in this particular area could help combat global warming. The project proposal of heat pipes and

pumps: an example of thermodynamic geoengineering. By harnessing the state change of water, and further exploiting its latent heat rather than solely relying on traditional convection and conduction, the electricity you are generating could be over 100% efficient. How that works? Simple. It can defy the laws of thermodynamics. Such a simple process: cooling down ocean surface water. Astounded by its potential in mitigating global warming, I engaged in Atmospheric and Ocean Circulation course on MIT OpenCourseWare. Enrolling onto more courses and delving into more information, allowed me to finally conclude (using scientific models) that if OTEC were to be implemented, long-term warming will be exacerbated. In spite of what preceded, models also show that it might be beneficial if executed on a small scale to help ease hypoxic waters via aeration.

It's not the species richness that's important; it's the abundance as well.

Yes, hydroelectric energy is clean and generates a good amount of electricity but we, as human beings, are selfish. When building those dams are thinking about all those populations you are separating, displacing and endangering. Look at us overfishing. Look at us still relying on petroleum for transport. Reality is that we have a solution, we just choose to not accept it because we are scared. We are used to using diesel cars that actually, we don't want a change. Over using nitrogenous fertilizers will soon affect us. From algal bloom to hypoxia, eutrophication is also a problem. Not all algae are harmless, some like black and red species produce toxins that could significantly affect the nervous system. We have organic fertilisers and biological pest control. Ban artificial ones, save marine life.

What most of us realized is that yes, diesel cars are cheaper, yes, carbon sequestration is expensive but life; that is priceless. In damaging the environment, we are also damaging ourselves. We need to act on this immediately. We need to exploit the oceans. OTEC does have the potential to make a difference I believe more research should be done in that field.

I am planning to take this proposal further by studying chemical engineering to change the World. Implementing this technology in the Middle East, a peninsula, would make our energy cleaner and contribute to less emissions worldwide.