In search for truth and solutions – Part 1 People and Climate

23.12.2025

Who are people and why do people do what they do? We are shaped by our culture, evolution, interactions, environment and natural laws. We have remained fairly the same at least for thousands of years. Our environment is changing, partly unintentionally and with that we accumulate loss of nature and maybe bit of ourselves. Climate change and unsustainable technology development and resource use is somewhat driving us away from nature. Is it possible to turn the tide so to speak and connect us back? Humans' basic driving factors for motivation are needs for safety, food, health, water, to be near other living organisms, reproduction, play and curiosity and altruism. Developed emotional states and anatomy helps us achieving those motivated goals. We are separate from other beings especially in our capacity to understand morality and do selfless acts. Many similarities exist naturally for many species, but we often have more capacity to understand ourselves and the surrounding world. We have the intuition to see and reach others but we also need reason to make good long-term decisions. Biology creates restrictions on what we can achieve. However, it is argued that genes do not determine organisms fate which is where some creativity can take place. Similarly value-based decisions can make even more boundaries. Many times we have the power and will to choose how we act and what kind of approaches we support. Like simply, how we like to conserve and preserve other living things, environment or ways to act. Predictability is important in bringing out cohesion between and inside groups. History points out we can do acts that seem extremely virtuous or even the opposite. These can be for our group of humans', environments' or just future's sake. We tend to see threats too often than not and not attending these experiences can also be harmful. Many things that we do are to be more free or free to choose. This can of course mean something different for some but more or less it is the same for everyone. How can more freedom then be achieved? Technology gives our species the edge on overcoming previously thought impossible. Improved information, energy, transportation and processing

technologies give us access to currents of information in an unforeseen pace. Overwhelming competition for attention and influence have arisen. However, from a technical point also possibilities to maintain security in production are shown. Efficient resource use and securing renewability gives space for living without noticeable disturbance to nature or environments. Large scale innovations change societies' behavior, rules and even laws. However, constant occurrences of small incremental innovations still can benefit different communities in not as visible ways. Contradicting in modern information technology is when making technology more available and adding restrictions, it is something that creates more safety and freedom to choose and leaves more things to explore. In climate-sustainable food chain we explore ways to utilize calibrated measurement, calculation and information technology methods to maintain a seclude designed and programmed software especially for target groups use. We specify the biological and chemical processes like nitrification and metabolism that impact the greenhouse gas emission amounts. We also keep in mind not to single mindedly "attack" the issue but also taking into account that same factors need to be considered in other issues that need to be solved. Like making sure crop fields return enough yield to harvest and controlling pests. Co-operation already happens in trustworthy areas of technology, research methods and production communities. We reach to connect with that trustworthy co-operation to provide or offer a solution to easily and reliably calculate, how different Finnish food products produce climate change impacts. We can commit to reducing our impacts and showing visibly and verifiably to each food chain actor how they themselves can make impacts. For example, sometimes we have to tolerate some solutions in food supply where technology and method improvement is slow or not expected to be fully carbon neutral at any point. In meat production, progress happens due to different social pressures. In this project we must be supporting alternative food production which can fulfill same needs without compromising climate change or other environmental impacts like acidification of lakes and oceans. However, cutting out peoples' lively hoods and traditional habits is not something taken lightly and there must be possibilities to turn to for everyone. Resources in our project do not reach directly to how people can earn their lively hoods, but we can make impacts to it by showing what is objectively closer to the truth. How carbon and nitrogen moves, reacts and transforms from one form to another and impacts the environment. For example, certain microbe processes like denitrification and mineralization in the soil do occur, but different small variables determine the actual outcome like the soil type. We utilize some estimate values in our calculations but next step Is using more adaptive models on how emissions occur when certain parameters change. This way more truthful and actual emissions and its variability can be seen and carbon neutrality then could be achieved by optimization and simultaneously some resources and efforts could be put elsewhere maybe more useful. Climate-sustainable food chain project is co-funded by the European Union and the region council of Southern Ostrobothnia. **Eetu Hannelin**
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