SOCIO-ECONOMIC RISKS ASSOCIATED WITH DIGITALIZATION PROCESS IN THE FIELD OF ECOLOGY AND ENVIRONMENT PROTECTION

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Abstract. The paper examines the contradictions in the current environmental agenda, arguing that climate narrative (later IPCC summary) overlooks important factors – natural variability of temperature. Other factors are solar activity, potential deliberate weather modification and dissenting scientific findings – leading all to flawed policies. The analysis highlights that rapid digitalization (AI monitoring, CBDC) combined with carbon accounting and renewables dependence could create socio-economic vulnerabilities: ecosystem distruption, foreign resource capture, exposure to weather-modification threats and a de facto absorbtion into a social-credit system that risks totalitarian control. The paper overall points that environment protection field has sufficient overlooked natural and technological variables in policy-making, that it can misdirect mitigation/adaptation and worsen geopolitical and domestic risks. Therefore, entire approach toward environment protection and data security can be revised with more realism, under lenses of security.

Keywords: solar activity, weather modification technologies, climate policies, digitalization, CBDC, national security.

JEL Classification: Q56 Environment and Development • Environment and Trade • Sustainability • Environmental Accounts and Accounting • Environmental Equity • Population Growth

INTRODUCTION

Environmental protection is gaining more attention from regulatory national and international actors, as the public is rising its awareness both on the impact ecology plays in the life of a human being, as the impact of environment on the wellbeing of the society as a whole. This attention is aggregating into a series of policy recommendations across sectors on the premise to help improve environmental condition. The logic for the act of formulating an intervention proposal presumes a prior analysis of data about the state of environment, and on the basis of acquired data, to generate directives of strategic movement for the system improvement. Particularly for ecology field, this would translate into analyzing data about previous condition of environment (eg.: *temperature variations in the last centuries*) and, with selected variables and premises, to formulate prognosis (eg.: *how temperature will fluctuate, what crop yield is expected*) and conditioning (eg.: *positive or negative interpretations*) that would tailor future measures adopted by the government (eg.: *loosen entrepreneurial and production activities or impose sanctions and carbon tax*).

The problem appears when the technicality of such complex approach is stumbled upon the probability that the scientific base and strategic premises of this instrument is flawed from the beginning. For example, IF:

A. Premise 1 „*accelerate warming*" is contrasted with probability of a different reality 1 „*not accelerate warming / probability of upcoming colling*";

B. Premise 2 „*warming is bad*" is contrasted with a different understanding upon physical causality in environmental processes „*warming in not bad for the environment, a potential cooling is worse in its impact over socio-economic processes*";

C. Premise 3 „*climate change is caused by human activity*" is contrasted with real science censored or unincluded in policy development process „*climate change is caused mainly by natural factors*";

D. Premise 4 „*carbon tax will reduce global temperature*" is contrasted with simple logical comparison exercises between existing research „*solar activity / irradiance affects global temperature*"; or with further combinations of:

E. Premise 5 „*carbon is bad*" with „*net-zero policies*" vs. „*carbon is necessary*" with carbon generators production for food production and green stimulation and „*track purchase behavior and reduce consumption to reduce carbon*" vs. „*no need to reduce carbon for environment protection*".

F. Premise 6 „*energy policy promotes renewables that are highly dependent on weather oscillations*" is also contrasted with logic and existing practices „*big global players are developing weather modification technologies*" etc.

THEN, we might formulate the hypothesis that: „ *socio-economic risks resulted from digitalization process associated with environment protection efforts promoted ideologically by international actors and implemented practically by national ones, will damage both (a) national security and (b) individual sovereignty and (c) will surpass declared benefits in the long term*".

MAIN CONTENT

The contradiction between official declarations and observed reality trigger more questions upon the efficiency and appropriateness of actions recommended for environment protection. At the Conference of Parties COP29 on 12.11.2024, the UN Secretary General, Antonio Guterres, states that we are in „*the hottest day on record, the hottest months on record, this is almost certain to be the hottest year on record*", however in the same week, various media outlets published that in South Africa it snowed for the first time in 85 years (11.11.2024). These contrasts between official statements and official reality check, create an inevitable impulse to research deeper the potential errors in the environmental agenda.

The environmental agenda includes several measures for decarbonization, promotion of renewable energy and a clear visible yet instrumental trend to digitalize everything, from monitoring (AI, satellite data) to ESG criteria for crediting from banks. Nevertheless, a serious incompleteness represents the absence of important variables in environmental agenda, precisely: solar activity, deliberate weather modification activities that are or can be carried out by interested actors, as well as existing real science statements that contradict the statements, which stand at the base of current environmental policies.

1. Materials and Methods

The research materials are research papers from various disciplines (from legal analysis to findings from astrophysics), journalistic articles from international classical media outlets starting with the premise that such materials influence public awareness and perception of the subject at hand, press publications from international institutions and other official reports.

Main research method is qualitative method based on document and policy analysis to examine legislation development, government strategies, international directives. It was also used an interdisciplinary approach with comparison between statements and observations on similar set of

concepts in order to identify the errors in the general narrative and sketch a risk assessment framework for further research.

2. Contradictions of IPCC

Intergovernmental Panel on Climate Change (IPCC) is the main scientific body affiliated to international organizations, that create science and policy briefs, that are imposed on institutional decision bodies. It doesn't conduct its own experiments or collect raw data. Instead, it brings together and evaluates thousands of studies produced by scientists around the world. From this research, it produces large assessment reports that summarize what is known about climate change, its causes, possible future developments, and ways societies can respond. It acts like a „translator" between climate science and policymakers, as it was established by the United Nations through the World Meteorological Organization and the UN Environment Programme, and it is widely considered the most authoritative global source on climate change assessments. Even Republic of Moldova has recogized and included IPCC as its standard in national legislation (*Law on climate actions* no.74/2024, *Regulation on the monitoring, reporting and verification of greenhouse gas emissions from stationary installations and aviation activities* no.575/2024; *Regulation of the establishment and operation of the National System for Monitoring and Reporting of Greenhouse Gas Emissions and other information relevant to climate change* no.1277/2018 (through modifications from Regulaiton no.31/2024); *Regulation on the energy governance mechanism and climate action* no.10/2024 etc).

However, IPCC contradicts itself in a serious manner – the nuances are sufficient to destroy the premise of environmental agenda. In the first report (1990) IPCC explained that the temperature has known natural variations with warming and cooling and again warming trends in the last milenium, but in its third report (2001), IPCC has leveled the whole natural variations across the centuries at lower levels and leaved depicted on the graph only the warming from the last 2 centuries, which is a a colossal mistake and a gross methodological manipulation.

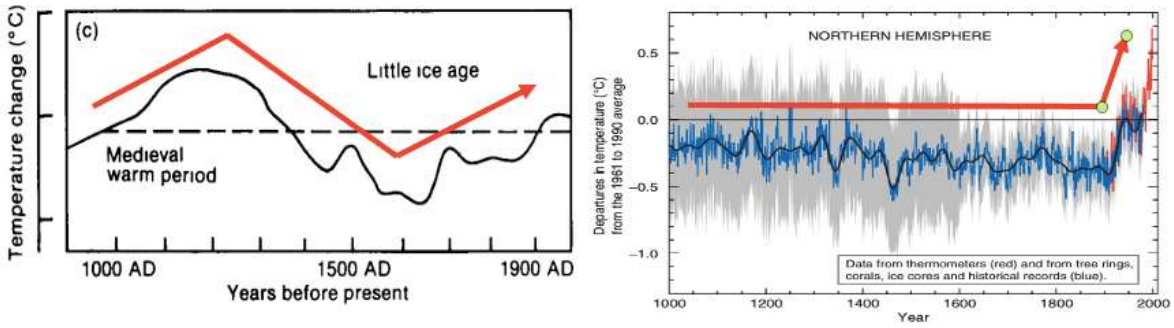


Figure 1 and Figure 2. Variation of the Earth's temperature for the last 1000 years
Source: *IPCC Report (Figure 1: Report from 1990; Figure 2: Report from 2001)*

Researchers and practitioners challenge the validity, construction and scientific handling of „the Hockey Stick" graph, arguing that it is methodologically flawed and politically protected, as it prominence reflects failures in scientific practice rather than robust consensus. Also, not less important is the statement that algorithms can produce hockey-stick shapes even from random data, downplaying any variabilities at prior order of data set, which, if proven true, must be immediately revoked. The issue resides in the impossibility to verify the algorithm due to high complexity of matter at hand, modelling program and possession aspects.

It is also a paradox that in the scientific and policy community co-exist officially 2 realities: (a) recognizing the existence of Medieval Warmth Period and a Little Ice Age (clearly not caused by industrial CO_2 emissions), and (b) not recognizing any variability in temperature changes in the past

10 centuries when formulating policy recommendations for economic reconfiguration of production sector and climate adaptation. Therefore, if another side of research is not reflected in policy discussions (the potential cooling), then what would the system encounter when preparing for a warming instead?

3. Contradictions between predicted and later observed temperature

The public debate is exacerbated by the findings of John Christy, Roy Spencer and others, who separately from each other, have argued that the computer-generated climate models show a prediction of warming faster than real-world measurements, especially in the troposphere, where temperature are shown to rise significantly lower than the model-predicted rise. From over 35 examined models, was identified a statistically significant average difference from observed records and an overpredicted warming. Their basic claim is not that the warming is absent, but that the rate and pattern of warming in the computer simulations are too strong compared with satellite and radiosonde observations. For researchers from real science, this overprediction is large enough to raise questions about how accurately the models represent atmospheric feedback; as for social scientists this is a confusion that signals the wrongness of proposed economic modifications in the system.

4. Solar activity

Solar activity implies variance of solar irradiance that Earth is receiving and directly affects the climate dynamics. A solar cycle is established have 11 years, recording a peak in solar flares (understood through sunspots) and a minimum. In the same time, apart from decadal cycle, the sun has a bicentennial variation as well: Grand Solar Minimum (GSM) is a prolonged period lasting decades to centuries when the Sun's magnetic activity, sunspots and overall solar output remains unusually low compared with normal solar cycles. This suggests that the Sun might have longer rhythms. There are various papers that confirm the coincidence between solar activity and Medieval Warmth Period and Little Ice Age (Steinhilber F., Beer J., 2011). Yet more controversial is the link between Grand Solar Minimum and seismologic events as well as with increasing incidences of volcanic eruptions (Tavares M., Azevedo A., 2011). Currently we are in the 25th solar cycle, and some research state that in the future 26th cycle more volcanic eruptions are anticipated (Vasilieva I., Zharkova V., 2022). On the impact of modern Grand Solar Minimum on terrestrial environment, it was assumed that we might expect a reduction of terrestrial temperature until 2053, with negative impact over vegetation growth, agriculture, food production and heat sector (Zharkova *et al.*, 2025). Notewothy to say that not only various research from real science confirm the approach of a new Grand Solar Minimum (Mörner N.A., 2015; Miyahara *et al.*, 2021; Arsenovic *et al.*, 2018), but also the ***Vatican Observatory*** official website has a publication for New Dual Dynamo Solar Model that predicts a „Maudern Minimum" for cycle 26 with reference to Bob Trembley's lecture about the Sun. The presented graph depicts an upcoming reductio of solar irradiation with soft decrese by 2060, and severe decrese with a full GSM by the year 2150. Although this prognosis differs in timeframe with what Zharkova proposed, nevertheless – *both admit the potentiality of a temperature reduction (global cooling) due to natural causes, as opposed with ideologicaly promoted narrative of global warming due to human activity.*

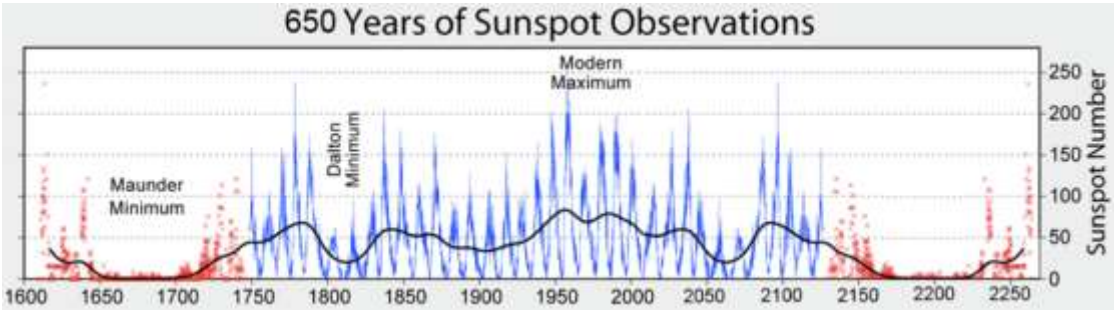


Figure 3. A 650 years of sunspot graph proposed as a new dual dynamo solar model
Source: *Vatican Observatory* https://www.vaticanobservatory.org/sacred-space-astronomy/new-dual-dynamo-solar-model-predicts-maunder-minimum-for-cycle-26/

When NASA headquarters consultant and White House national space policy advisor John L. Casy, have discovered solar cycles and the probability of encountering a future relative cooing instead of warming, he has advised Washington to revise its strategy in environmental domain, however instead of revising economic recommendations for developing states, USA officials have agreed to simply replace „*global warming*" in „*climate change*" and continue pushing the same „adaptation proposals" internationally.

5. Weather Modification Technologies

Whether Modification Technologies are of several categories – induce precipitations (*cloud seeding*), large-scale manipulations (*geoengineering*), modifications of the weather on local or regional scales (*other weather modification technologies*).

Although Nikola Tesla registered its earthquake machine in 1894 (patent no.US511916A), currently are a few hundred of patents registered and with open access visibility, on weather modification category (starting from *method of producing fall precipitation* in 1891 until *systems for artificially forming clouds, relocating formed clouds and methods of using same* registered in 2023). The patent for *Weather Control Method/Process* was registered several times in the past 70 years and is already expired.

Across the continents we even have developed legislation that regulates manipulation of weather processes: Romanian Law on active interventions in the atmosphere no.173/2008, Canadian Weather Modification Information Act from 1985, USA National Weather Modification Policy Act from 1976 and even since 1967 there is a law in Australia that regulates „rain-making control" being still an act in force.

Project Cirrus (1947) and Project Stormfurry (1962-1983) were two governmental projects coordinated with defense sector, to learn hurricane control and modification, admitting officially the state attempts to manipulate large weather processed by artificial cloud seeding. More than this, during Vietnam War, USA used climate weapons to weaken the opponents through „Popeye Operation" (among others), the purpose of which was to increase rainfall in carefully selected areas to prevent Vietnamese military supply from reaching their destination. When it got publicly known that USA used climate weapons, instead of pledge to not repeat such activity, they managed to gather everyone at UN and sign the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD), which entered into force in 1978 and clearly recognized the existence and by this, offered the definition for „*environmental modification techniques*". Thus, it is naive to assume that from 1978 until today, no international organism has improved and developed such capabilities.

More than this, in 2021, China has created an official institution dedicated exclusively to Weather Modification Technologies under state Meteorological Administrate – China MA Weather Modification Center (WMC). With this, China has declared though a State Council note that it will develop worldwide advanced operational services by 2035 in terms of weather manipulation. Also, it is China who currently runs the biggest official weather manipulation project - „Sky River Project" is an initiative to move water vapors from Yangtze to Yellow River (almost 5 billion cubic meters of water) as the targeted area up north hold over 60% of the country's agriculture production.

In the same time, United Arab Emirates (UAE) also strives to publicly become a world leader in rain control, as it created the UAE Rain Enhancement Program under National Center of Meteorology and with the blessing of His Highness. The cynical part from this subject is that, local research of the environment and biodiversity if often used to study the area of the place against which weather weapon is being created for. Be it crop improvement or weather control; humanity has always looked upon methods to influence natural processes.

6. Digitalization process

On the official page of an UN body (United Nations Framework Convention on Climate Change UNFCCC) is being presented the prototype of the world's first credit card with a carbon footprint, stating that the card „*not only helps users track and measure CO_2 emissions associated with their purchases but also puts a limit to the climate impact of their spending*", which translated into conventional language – the banking card will get blocked once the costumer consumes more CO_2 that what is being programmed as allowed for him/her to consume. This is feasible from technical part if the (a) product is being calculates in terms of carbon, and (b) the financial system becomes digital. Both such conditions are already crafted as massive international policies.

(a) The EU is transitioning toward mandatory carbon footprint labeling, targeting specific sectors by 2027. Such instrument is named product environmental footprint (PEF) or climate label for products, where for a product is being indicated the carbon emitted during producing process and its supposed carbon rating. For example, a piece of meat would be the lowest at score at the purchase with the card.

(b) The European Central Bank (ECB) is actively preparing for a digital euro (Central Bank Digital Currency CBDC), aiming for a possible issuance around 2029, if EU legislation is adopted by 2026. It is needed to bring clarity that, cryptocurrency based on blockchain means a Decentralization of the system, while CBDC is a complete Centralization.

Overall, a fully digitalized financial system with digital money in the form of CBDC cumulated with a personal carbon footprint calculator – gets the creation of a new Social Credit System, which can be translated only as totalitarianism (this one being based not on political motives, but on limiting consumption rights and dismembering the middle class).

Recently, Republic of Moldova is advancing in the process of requiring more monitoring on environment data – annual reports on soil quality and land use from owners, upgrading state water cadastre, and a cartography of all natural resources in the country financed by Soros Foundation. The stipulated the creation of National Integrated Air Quality Monitoring and Management System (SNMGICA), National Air Pollutant Emissions Inventory System (SNIEPA), Automated information system „National Pollutant Release and Transfer Register" etc. We can assume that this infrastructure is being prepared to accommodate the entry in EU Emission Trade System (ETS). UNECE is assuming that Moldova will join EU ETS by 2030, thus - will double its electricity prices, and will triple its gas prices, among other increases.

7. Results and Discussion

The ridicule is emphasized when we return to the reality check of how much of the atmosphere is carbon and what portion of that humans are responsible for. Total carbon in the air is 0,04% and around 3% of it is emitted by humans (the rest are emissions resulted from natural drivers). Thus, from 0,0012% each country has its share, the biggest being the one of China – 33%, far more than entire Africa – 4% Moldova has recognized through National Contribution Reports at UN, that its national share from global emissions is less than 0,03%. That means that Moldova emits only 0,03% out of 0,0012%. For comparison, the share of Denmark is 0,08% and it means that Denmark with all its industry, cars and people's activity – account no more than 0,00000096%. Nevertheless, Denmark was the first country to impose carbon tax on agriculture, with cattle farmers set to be charged almost 100 Euro a year for the greenhouse gas emissions from each of their cows. The impact over the economy in general and agricultural sector in particular – is expected to be very negative. Now, returning to global tendencies for developing countries, such small real impact over carbon percentage is being „counterbalanced" with the proposal from International Monetary Fund to increase carbon tax to 1000% (from $3 to $75 per ton of carbon by 2030), and in the context when 99% of the business in Europe is composed of Small Medium Enterprises – the combination is catastrophic.

The closer we get to Grand Solar Minimum, the more cataclysmic events will follow (such as earthquakes, volcanos, floods etc.), this will attract more attention to environmental policies and allow a new bloom of environmental propaganda. Due to informational pollution, low education of that public (on the topic), high censorship from international institutions and time pressure upon decision bodies – more aggressive measure will be pushed to introduce and increase the carbon tax (even if other science voices advocate for the idea that carbon is beneficial for plant life).

On another hand, with EU targeting to have almost 45% share of renewables in the energy generating sector, it is difficult to explain the logic of upcoming phenomenon. If the energy system is expanding its renewables program, meanwhile solar irradiance is reducing due to a new grand solar minimum, then the energy system collapses or it is purchased by foreign or bigger entities. If foreign entities are developing weather modification capabilities, then the energy power is being easily targeted and effected while a state digitalized its financial and management system. If the industry sector is increasing its reliance on renewables, then a state's production and infrastructure is taken over, or strategically decreased. If low harvest is being encountered due to lower solar irradiance, a carbon footprint calculator would implode the economy, and one way or another – a CBDC with carbon limit will destroy the middle class.

The effects and benefits of geoengineering will be further disproportionately distributed among the strongest state and non-state actors; thus, a new frontier of climate geopolitics is appearing.

CONCLUSIONS

Analyzing various components from environmental domain, we find that socio-economic risks associated with digitalization process in ecology, contrary to declared objectives, are much higher than hypothesized. We observe the following general risks:

1. Ecosystem disruption – government must prepare a natural set of genetic species for protected area management programs, and invest in greenhouses to sustain agriculture sector when weather oscillations will get extreme in short periods of time.
2. Foreign takeover of best national resources is facilitating upon a detailed screening of best natural actives available in the country, and a normative requirement for constant reporting and monitoring offers interested parties access to such information.

3. Increase national vulnerability in front of climate weapons and weather modification technologies – a country that is implementing measures that make the system dependent on digital processes, and centralize digital infrastructure to be further dependent on renewables, and renewables dependent on weather variability, while other states or private entities develop climate weapons – is a deliberate exposure of one owns vulnerability.

4. Facilitate adoption of totalitarianism: prepare the infrastructure for a new Social Credit System under ecology mask and with neoliberal agenda.

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