

Facing the change mirror, hold by ActNow climate activists

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20 August 2020

Abstract

Climate Change is evolving into irreversible Climate Collapse. Growing societal awareness crystallizes in 'Act-Now' activism, requesting drastic and urgent changes to stop GHG emissions. Change is the subject of Sustainability Transition Research, with modeling, transition and practice-based studies. Time-sequential decision-making on specific actions reacting on events and results of previous actions is a practical approach. The actions address inertias that impede change wanted by Act-Now activists. The dual techno-economic and socio-political-institutional actions are specified as addressing Inertias in Ideas, Interests, Institutions, Infrastructures, and energy-technology transformations. Building on the research of transition scholars and other sciences, exemplary immediate actions are proposed to crush specific Inertias. The analysis uses a few figures to summarize and imprint findings and proposals.

Workable propositions to dissolve Inertias will support Act-Now. Also Inertias in academic paradigms and procedures need consideration.

Keywords

Act-Now activism

Inertia-Reversal diptych

Reclaiming Sustainable Development for Our Common Future

Thermal power generation is fading and phasing out

Ostrom remedy for UNFCCC functioning

1. Introduction

Climate change evolved fast from a future eventuality (Manne and Richels, 1991; Ulph and Ulph, 1997) to a present frequency of natural disasters (IPCC, 2018; WEF, 2019). The reaction speed of world's political leadership was fast on paper (UN, 1992), however slow when actions are considered. Scientists announce irreversible collapse of climate stability, and calls for 'urgent and drastic' reduction of global greenhouse gas emissions (Stern, 2006) multiply. However, political programs seem insufficient to halt global emissions growth, and activists (Youth4Climate, Extinction Rebellion, Hambach Forest Occupiers, etc.) press for 'Act-Now'. They hold a mirror for all of us: are YOU quitting 'Business-as-Usual' immediately and change profoundly? Humans (academics included) are fond of vanity mirrors; yet, the exigent demands of change mirrors ask reflection about one's own visions and activities (also the academic ones).

The word 'change' is ubiquitous in Sustainability Transition Research (STR) publications, and a challenge for the STRN community when evaluating and reconsidering the own methods, models, research frames and practices (Köhler et al., 2019). Hof et al. (2020) discuss bridging modeling, transition and practice-based studies. The top-down to bottom-up structure of the three bridged study islands parallels the multi-level climate policy-making world: from top (UNFCCC, COPs, IPCC), over national states (wrestling between Business-as-Usual and change), to bottom (vibrant cities in transition). Like in the actual world, the top is approached with reverence and caution, and critical analysis of the UNFCCC and COPs performance seems not leading to effective change.

Citizens as societal actors, artists, teachers, politicians, business staff, and others spend an increasing share of their time and activities on absorbing, managing and triggering changes. Modern times are characterized by strong dynamics, whose unpredictability is a main aspect of 'complexity' (Homer-Dixon, 1991). Around the 1970s, increasing awareness of uncertainties and of irrevocable / irreversible

consequences of human actions stimulated the search for better decision methods. Advanced decision-making under uncertainty, with flexible time-sequential modeling of events and decisions, may substitute for rigid long-range scenario planning (Arrow and Fisher, 1974; SRI, 1977; Dixit and Pindyck, 1994). Although time-sequential logic best represents the actual dynamics observed in living societies, applying the method is challenging. Still, policy studies are generally based on rolling out scenarios for the long term, mostly extrapolating the past (what includes obedience to vested ideas, interests, institutes, etc.) Activists are confronted with the urgency of disruptive changes in the right directions and are investigating 'How change happens' (Green, 2016). For addressing Act-Now challenges, flexible, dynamic approaches are proposed (Green, 2016: 20-22, ch.12, 235-255). This contribution joins practice-based studies by applying the diptych 'inertias-reversals' on factors supporting and driving societal functioning, such as Ideas, Interests, Institutions, Infrastructures, and Indispensable energy-technology transformations. Disruptive thinking and drastic action entails: reconsider ideas, resist aberrant interests, reform institutions, restructure infrastructures, and fully revolve energy-technology sources and applications. Pointed reversals break specific inertias, and now seem the necessary approach for avoiding climate change turning in irreversible climate collapse.

Figure 1: Climate and energy policy scene: Actors driven by and driving Ideas, Interests, Institutions, Infrastructures, based on Indispensable energy-technology transformations

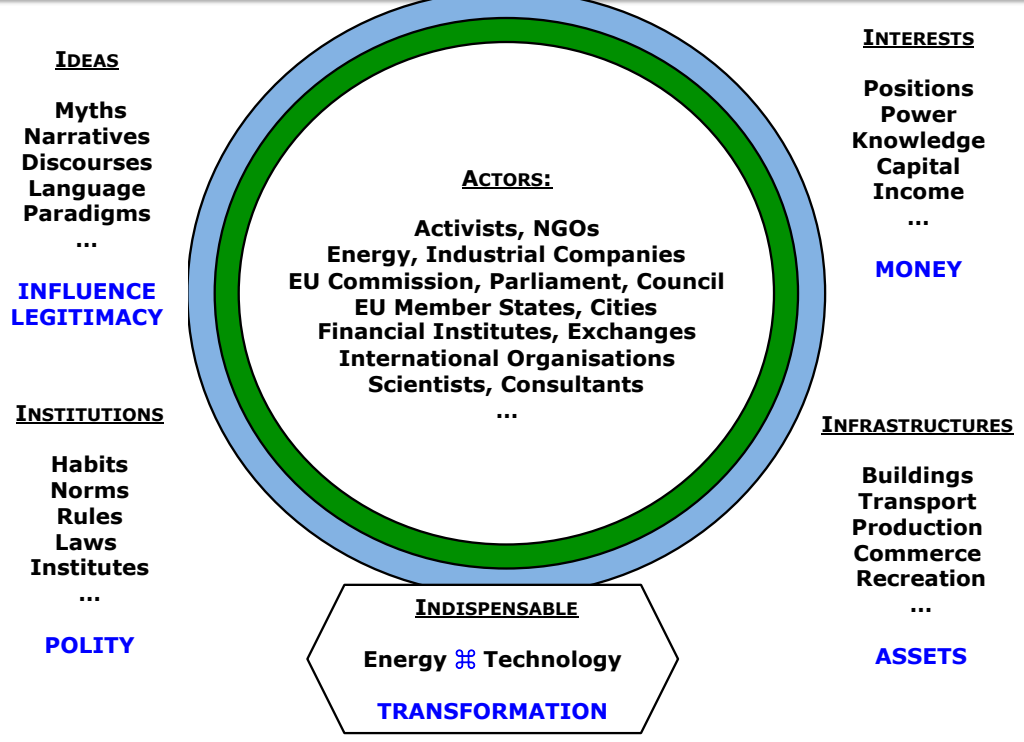


Figure 1 shows six clusters. In the center of a green Earth encircled by a blue Atmosphere live diverse ranges of societal actors, individual and organized. Their activities are driven or upheld by many forces, summarized in five interacting clusters. In pursuing their goals, actors manage and endure Ideas, Interests, Institutions, Infrastructures and Indispensable energy-technology transformations for escaping climate collapse (Carlson and Fri, 2013; Verbong and Loorbach, 2012). Civilization and energy interact continuously; a scholar neglecting one panel truncates the understanding of the other (Smil, 2017). The overview covers

the techno-economic and socio-political-institutional 'dual challenge' of sustainability transitions (Kemp and Van Lente, 2011).

Ideas (myths, narratives, discourses, language, paradigms, ...) influence the minds of people and purport legitimacy to the actions and positions of societal actors. Discursive power is highly influential (Fuchs, 2007; Lamb et al., 2020). Biased language imprints faulty beliefs in the minds of people; for example 'cheap oil', reduction of Sustainable Development to a 3P bottom line, GHG emissions reduction by 'renewable energy, nuclear power, Carbon Capture & Storage'. A first change is substitution of appropriate language for flawed or imprecise expressions. For example, focus on the substance of sustainable development by imprinting the central role of Politics driving People, Prosperity and Planet's priorities (figure 2). Reinstating sustainable development as the valid future paradigm of societal functioning means reclaiming its original content (WCED, 1987; Meadowcroft 2012; Stirling, 2014). The neoliberal paradigm has been instrumental in pushing the polity and the public interest to roles subservient to markets and in setting up artificial carbon markets. Persuasion, bribing, coercion, and elimination are gradual phases in controlling societal discourses (Verbruggen, 2014).

Interests (positions, power, knowledge, capital, income, ...) are quantified and monetized in money stocks and flows, when applying the economic lens. Carbon pricing and trading are evidently focused on money. Societal actors are pursuing their interests. Actors like climate activists may prefer non-monetary interests above money, but this is not the case for most actors listed in figure 1. Section 5 documents energy corporations' influence on the EU's state aid guidelines in 2014, gaining priority for large-scale renewable power deployment and allowing nuclear power subsidies in the UK, all limiting the action space of community and household renewable power. Pluralizing incumbencies (Turnheim and Sovacool, 2020) is a peculiar affair. Political economy is like studying icebergs: many pieces of the puzzle are obscured, hidden or unknown, in particular lobbying and influencing.

Infrastructures (buildings, transport, production, commerce, recreation, ...) are visible artifacts. They materialize how societies thrive and function. Drastic and urgent change conflicts with lock-in and inertia inherent to large and long-living infrastructures. Infrastructural reversal toward renewable electricity is a techno-economic tipping, ending the steam power generation era, because of its dependency on heavy source and sink flabs (section 6; fig.3). Dealing with climate change means reducing the GHG emissions of the energy systems to zero, urgently because broken ecosystems mean irreversible loss. Energy and technology transformations are indispensable. They are the substrate of human civilization, and precursors of societal transformations (Smil, 2017). Substituting renewable currents for fossil-nuclear steam flows in power generation annuls CO₂ emissions. In the 1990s, to develop wind turbine and PV technology, Danish and German politicians created a clever subsidy system, against fierce opposition by vested corporations and neoclassical economists (adhering IAMs). Technological progress sliced the construction expenses of wind and PV, now below the expenses of steam power. This economic-financial reversal is a significant game changer.

Institutions (habits, norms, rules, laws, institutes, ...) structure the polity of society (Vatn, 2005). *"From the perspective of 'now', institutions appear to be permanent and unchanging; in fact, they often depend on that appearance for their credibility. But 'now' is merely a moment on the continuum of history"* (Green, 2016: 75). A political scientist would specify many institutions and

institutes making modern societies, such as governmental, legal, administrative, communicative, social, economic, scientific, and more.

Salient institutional inertia is observed in global climate policy. UNFCCC is intended to govern the ultimate global commons climate, but ignores social science on commons and managerial practices. Section 7 summarizes a global climate policy regime respecting Ostrom's recommendations and using KPIs for coordinating the climate endeavors of the Parties. Revamping the UNFCCC role in board control of the polycentric, multi-level global climate policies of the Parties requests active politics in the public interest. The properties of the profound changes are discussed.

2. Methods and author's position

This contribution targets a broad scope and is rooted in multidisciplinary research activities and experiences. Temporally, it learns from the 1970s penultimate warning, which created awareness, however smoldered by bursting energy corporations investing in fossil and nuclear supply overcapacity. Over the last years, the ultimate warnings have become factual evidence, urging mankind to act now for saving its own future. Societally, cases from the four clusters of supporting-driving forces: ideas, interests, institutions, and infrastructures, are briefly discussed. Scientifically, 45 years experience and study in the immense fields of energy and environmental technology, economics, and policy, creates particular insight and knowledge. The particularity of one's life path molds frames and lenses, delivering specific analysis, conclusions and propositions. Having lively experienced the structural, hidden and discursive powers of giant energy companies, offers views on incumbency according to the caveat of Turnheim and Sovacool (2020: 183), placing pluralizing in brackets. By joining the depth and detail of many case studies by various scientists in comprehensive frames, kaleidoscopic and robust policy insight may result.

Morally, intellectual and financial independency is critical for an academic when engaging in non-neutral positions (Stirling, 2014). My work and propositions are trimmed by adherence to Our Common Future Sustainable Development (WCED, 1987), entailing sympathy and support for 'Act-Now' claimed by climate activists. Humankind must revert its attitude towards nature: from instrumental explorative to respectful partnership accepting limits (Daly, 1980; Meadowcroft, 2012). In the 1980s, neoliberal interests supported by neoclassical economics, nipped promising resilience reversals in the bud (section 3). The main concern is: will mankind now create and follow the indispensable reversal paths?

3. From the penultimate warning of the 1970/80s till today's ultimate warning

In the period 1965-75 emerged broad societal awareness about growing inequality in global development (UNCTAD, 1974), uncontrolled population growth (Ehrlich, 1968), depletion of resources, and environmental pollution (Meadows et al., 1972). Crude oil prices increased in 1973 to U.S. \$12/barrel and in 1979 beyond \$35/barrel, triggering worldwide fears about resource depletion (Dasgupta and Heal, 1979), outweighing attention for pollution and obliteration of life support systems, like climate change. In the 1970s the world community glossed over the penultimate warning of mankind destroying its own habitat, revealing strong inertias in redirecting societal processes.

Using less energy, more efficiently, dissolved most of the 1970s energy turmoil. Beginning 1980s CO₂ emissions declined (www.GlobalCarbonBudget.org). The moderation was aborted by excess new-built fossil and nuclear supply capacities. Some scientists (Freeman et al., 1974; Lovins, 1976) proposed transitions to efficiency and renewable energy, but received little political, societal, media, scientific support, rather criticism and opposition. The mid 1980s dominant neoliberal paradigm sanctioned unlimited wealth accumulation with more fossil fuels burned and billion tons of CO₂ emitted. De-regulation, privatization, and

globalization overshadowed the UN's initiatives on environment and development. At the Rio Summit (1992), world political leaders agreed on Sustainable Development as future paradigm, however watered down for obtaining unanimity (Norman and McDonald, 2004). They adopted the UNFCCC for preventing dangerous climate change, exposed in IPCC's first assessment report (1990). Lessons from that period are: Financial interests override societal benevolent propositions; Unanimous agreement by world's heads of state is no guarantee for effective, timely action; Scientific arguments do not convince constituencies and politicians to change plans and activities. This experience is sobering given the importance of early action.

After decades of scientific calls, the ultimate warnings about life support systems collapsing, in particular climate change (IPCC, 2018), became factual apparent in the second decade of the 21st century. Responses are mostly incremental in preserving vested institutions and interests; installment of SD as guiding societal paradigm remains bypassed.

Societies run on infrastructures, institutions, interests, and ideas composing narratives (figure 1). Performance and interaction of the four clusters of supporting-driving factors affect the state and dynamics of society's fabric. Inertia is rooted in the clusters, and benign for stability and security as perceived by citizens, however inertia obstructs societal dynamics and impedes urgent and drastic changes. Yet, occurring global social and economic changes never were deeper and faster than during last three decades (UNDP, 2019). The frenzy changes strengthened accumulation of concentrated wealth, power and privilege. Associated social and environmental worries were underestimated, obviously climate change hitting the poorest first and hardest. Business-as-usual with incremental adjustments do not address ongoing overshooting of the Earth's carrying capacity (Rockström et al., 2009; Kalfagianni et al, 2019). Act-Now means reversals scoping the human universe, affecting customary activities of most peoples. Exponentially accelerating the pace of well-directed reversal starters, such as wind and solar power, are readily the best response to urgency. Linkages among and across inertias and disruptive reversals in ideas, interests, infrastructures, and institutions, are obvious, however not worked out in this contribution.

4. Ideas and narratives

Ideas provide thoughts or suggestions as to possible courses of action, some inhibiting change, others elucidating future paths. Language communicates ideas to others. Narratives or discourses represent particular situations or processes in such a way as to reflect or conform to an overarching set of aims or values. Lending the words of artists (Vandenkeybus, 2019): *"Life is living with narratives. Without narratives humans would not exist: neither as individual, nor as society. Narratives provide cohesion and purpose. By linking the past to the future, they direct the present. (...) In the confusion of societal reversal, narratives of conflict and doom prevail. A new future is but sensible when the old ideas crumble."* Following examples of typical flawed language endorsing incumbent visions, are opposed by alternative formulations:

- *'When mitigating carbon dioxide emissions, the present generations bring offers for the well-being of future generations'* (Aldy and Stavins, 2007; Hahn and Ulph, 2012) glosses over the appropriation of privileges and rights (Bromley, 1986) on the atmosphere and on the climate by a minority, affluent part of human beings living now in the fossil fuel era.
Opposite formulation: *"Carbon dioxide emitting is gaseous littering of the atmosphere"* reorders legal positions. Littering is illegal, and is generally the rule in civilized societies that litterers have the duty to stop littering immediately, and to clean the mess they made by their littering activities.

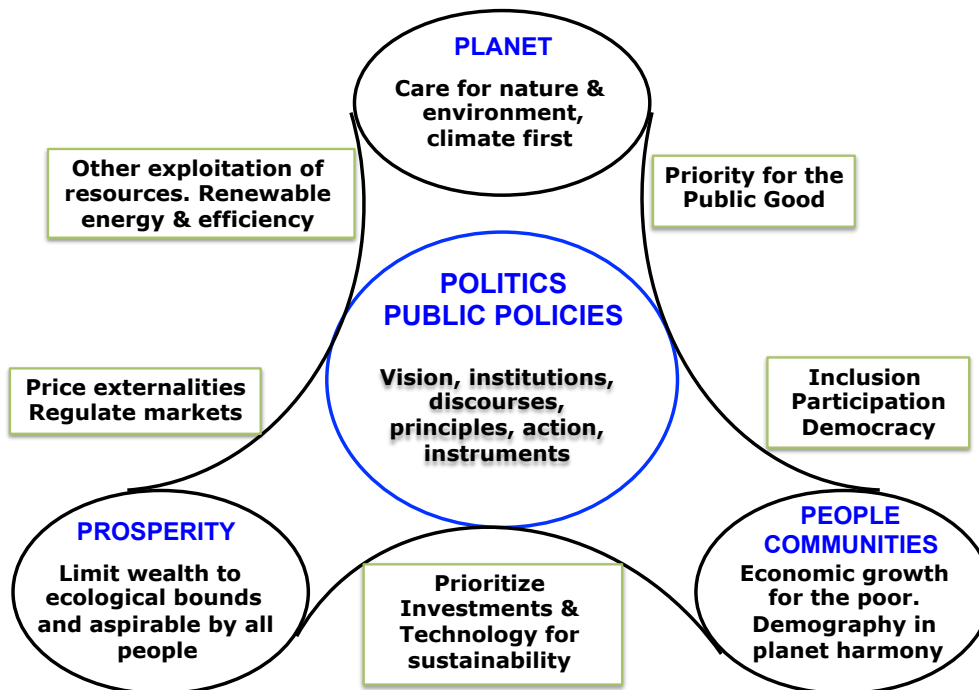
- *'Fossil fuels are cheap; eliminating their use is very costly'. As historically saved solar energy, extraction of fossil fuels is free. Major economic costs are damages to nature and environment, human health, risks of climate change. Also the extraction, processing and use expenses are significant (section 6).*

Opposite formulation: 'Fossil fuels are low-priced. External costs and risks are little or not incorporated in the price. Contrarily, fossil fuels are subsidized (Coady et al., 2019). The full economic costs of using fossil fuels are incredibly high when the damage to essential life-support systems are counted'.

- *' Sustainable development (SD) allows economic growth. Companies comply with SD when respecting the 3P (Profit, Planet, People) bottom line. Society complies with SD when pursuing the SD Goals.'* This mix of neoliberal and SD agendas safeguards vested interests, while legitimizing their operations, an example of "highly instrumental manipulation" (Stirling 2014: 89).

Opposite formulation: 'Our Common Future is a radical change program (Meadowcroft et al., 2012), crafted on four core dimensions (Fig.2): People, Planet, Prosperity, and Politics energizing the other dimensions.' "In essence, SD is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations" (WCED, 1987: 46).

Figure 2: Sustainable development holds 4 main dimensions. Politics stays central, moulding vision, institutions, discourses; guarding principles; spurring action



Neoliberal growth proponents do not conceive effective societal reversals; they hide behind sustainability façades. Otherwise, radical activists expecting the overnight invention and agreement upon a new, more radical societal paradigm than Our Common Future (OCF) Sustainable Development is a naïf hope, moreover a waste of time. Suffices restitution of the original OCF SD paradigm by reclaiming the narrative from the tangle of present media, consultancy

companies, corporation advertisers, thought leaders (Giridharadas, 2018), and more.

5. Interests

Interests are ubiquitous, ranging from the individual to the state level, to international organizations and to gigantic corporations influencing civil society's course. The business world is diverse: some companies have high interest in full and fast transformations, some can afford deep and early transform, others face considerable technological and financial challenges by deep de-carbonization of the economy. Energy corporations are diverse, with electricity companies moving to 100% renewable power systems, and fossil-nuclear fuel cycle companies facing significant decline when fuel applications dwindle. Realigning interests for the climate case is not helped by a one-fits-all approach.

EU's main electricity companies' inertia was incomprehensibly strong, in building coal-fired power plants until 2018 (after 2008, the Netherlands have built three large coal power plants, although "*Researchers and policymakers have taken up this general idea (of transition management) from around 2000, when a national program started in the Netherlands to influence developments in the energy domain toward a sustainable energy supply*" (Verbong and Loorbach, 2012: 14)). Around 2012, awareness about decentralized wind and PV power possibly crowding out steam power triggered EU's electricity oligopolies to shape new business models, with centralized renewable electricity first. While this reversal brings relief, it also entails drawbacks. Giant corporations prioritize centralized Giga-Watt wind parks and Mega-Watt solar fields, above community-based wind and PV roofs for living, working, and service buildings. Deliberately, EU's energy corporations slowed down the energy sector transformation pace in Europe by influencing EU's state aid guidelines and the German renewable energy law (Verbruggen et al., 2015), prolonging life of obsolete fossil-nuclear systems, now also financially outcompeted by wind and PV (IRENA, 2020). The most perverse effect of the power play by giant energy companies is nipping the development of distributed options that are urgently needed by the peoples of the global community.

Interests operate through influencing (Meckling, 2011) via persuasion, bribing, coercion, and also elimination when the first three ways failed in acquiescing a singular actor or group of opponents (Verbruggen, 2014). Climate activists can learn from energy corporations' strategic advocacy, but not foster the illusion they ever could revert the above influencing cascade for changing corporations' behavior. Persuading energy corporations is unlikely, because they have access to rich data, latest know-how and bunches of scientists to support their worldviews. Bribing wealthy corporations needs fortunes, lacked by activists. Coercing energy corporations requires considerable and lasting power, where activists' allied power is but sufficient for a sudden sting. Elimination of dangerous corporations by brutal force is neither evident, nor attractive due to the collateral damage. However, their activities, products and services may degrade to little or no relevant for society, as is expected to happen for fossil and nuclear fuel cycle corporations. Their Benefit/Cost ratio is decreasing, because the costs of climate change and of nuclear risks are growing and becoming more visible, and decrease of the expenses for obtaining electricity from wind currents and from light waves is not exhausted.

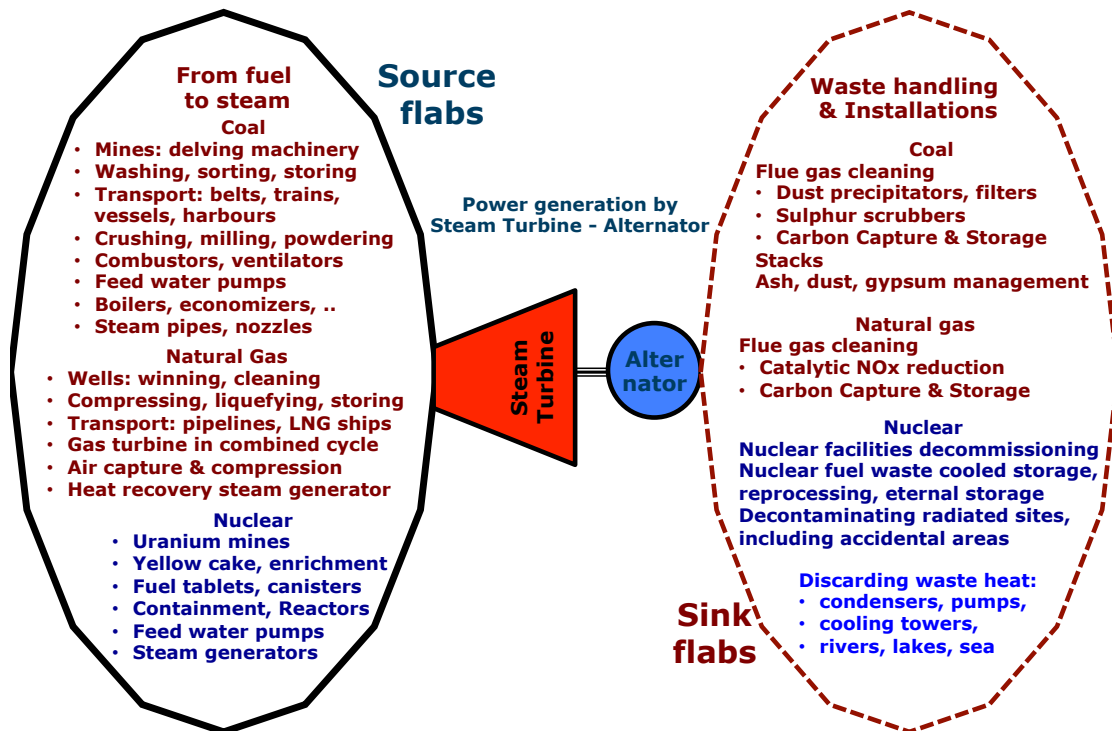
6. Infrastructures

Most infrastructures built for longtime service are poorly adaptable to the exigencies of low-carbon societies. Since the 18th century, industrializing societies have expanded infrastructures in energy, manufacturing, transport, buildings, ... with fossil fuels as main energy source, putting the energy sector "*at the heart of the climate change challenge*" (IEA, 2019). The focus here is on electricity

generation, given the crucial role of electric power in the coming zero carbon energy supplies.

De-carbonization is linked to electrification of activities and is conditional on sourcing electricity from renewable energy currents (light, wind, water). Around the turn of the century, mainly Danish and German politicians, for example Herman Scheer (1993) stimulated the development and deployment of wind and solar (photovoltaic) electricity with cleverly designed financial incentives (Haas et al., 2004). Mainstream economists (Frondel et al., 2010) criticized the German approach, and climate policy scholars seem unaware of its significant impact. Around 2008, wind and PV compete with steam power generation; since 2018, wind and PV undercut any other power generation technology in generation expenses (IRENA, 2020).

Figure 3: Steam electricity generation needs many costly and polluting flab activities to source steam and to sink waste and waste heat (non-exhaustive enumeration)



Energy systems reversal irrevocably has started and will revolutionize societies in a similar way as the steam era did during industrialization. Not only fossil fuel based electricity is driven out; all steam cycle electricity will dwindle because of its cumbersome and costly flabs for sourcing steam and for sinking the residues, also spoiling scarce water resources and causing significant environmental damages. Fig. 3 marks the incredible weights linked to thermal power generation. In a steam power plant, pressurized steam currents deliver the energy for spinning an axis driving an alternator (generator of electric current). To obtain massive steam currents, wide-ranging infrastructures are requested. Very differently, wind and PV harvest wind currents and light waves, both without any source or sink flabs. The pace of substituting renewable for steam-sourced power is now the most decisive factor of de-carbonization success.

'Integrating renewable power in the established electric systems' is language commonly used. However, this reflects and extends the controlling position of (fuel driven) power plants on command and as such delays the 100% renewable electricity future. Energy corporations now fully invest in large-scale wind and

solar projects. On the one hand, this turn is welcomed and may be seen as an example of pluralizing incumbents (Turnheim and Sovacool, 2020). On the other hand, it endangers the future of community and household owned installations when public regulation (EU, 2018) is not properly enforced (Burke and Stephens, 2018). Affordable and performing small-scale renewable power generation is less vital for wealthy countries with dense power grids than it is for developing countries now causing the growth in carbon dioxide emissions. For saving the global commons, priority for decentralized renewable power is a must.

7. Institutions

For sustainable development several institutional gaps (WCED, 1987: 9-11, ch.12) need remedying by politics. The UNFCCC and COPs deliver slow progress on global de-carbonization, and alternative approaches are worth consideration. The present UNFCCC dependence on unremitting goodwill of the Parties is perilous for governing commons, being the main warning in 'Tragedy of the Commons' (Hardin, 1968). While meteorological science (IPCC, WG1 reports) is highly valued in the climate policy debate, applicable social sciences seem rather ignored for conceiving institutions instrumental in safeguarding the global commons climate. After COP3 (Kyoto 1997) various policy regimes were discussed offering elements for building new institutions (Aldy and Stavins, 2007; Keohane and Victor, 2011). Ostrom (1990) designed a triptych for stable self-government: (1) Create a new set of rules; (2) Credible commitments by Parties, based on reciprocity, trust and fairness; (3) Mutual monitoring of/by Parties, and she added: "*without monitoring, there can be no credible commitment; without commitment, there is no reason to propose new rules*".

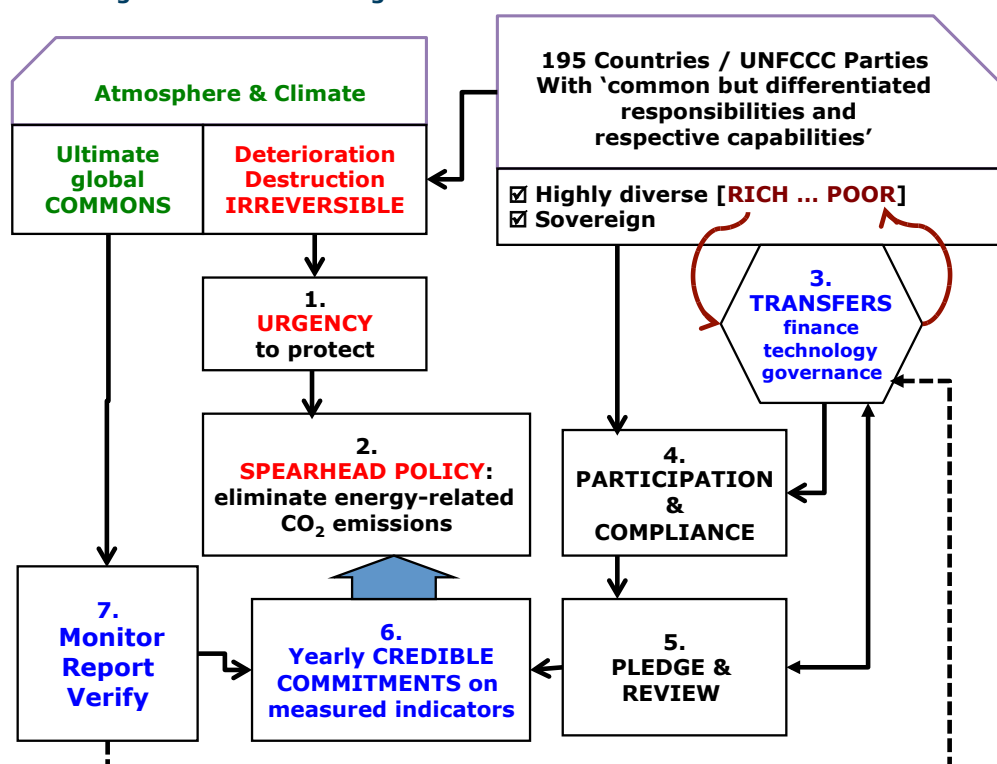
Literature investigating climate regimes and policy options, as well as practice and experience in managing transnational multi-level businesses deliver arguments to invigorate the UNFCCC for a top-board role in the multi-level, nested polycentric (Ostrom, 2010) climate policy structures. Top boards do not meddle in detail activities and reports, but handle key performance indicators KPIs (PWC, 2007) for monitoring the performance and results achieved in wide-ranging organizations. The factors of an Ostrom triptych are outlined in fig.4 for managing the Parties' volatile goodwill in reducing energy-related CO₂ emissions. Next, the main properties of the proposed approach are highlighted.

The top left of fig.4 mentions commons and irreversibility as material challenges. Monitor-Report-Verify [box 7] meets Ostrom-factor (3). Urgency [box 1] is due for avoiding the abyss of irreversible collapse of the climate and other major life-supporting systems. Urgency is pursued by spearhead policy focused on the elimination of energy-related CO₂ emissions [box 2].

The top right of fig.4 reminds that UNFCCC Parties are diverse, sovereign partners. Transferring finance, technology, and governance assets is an essential component of every global agreement [box 3], because of disparate wealth conditions and historical responsibilities. Sovereign Parties decide on participation and compliance [box 4], stimulated by proper rules about transfers. Although heavily criticized by economists (Gollier and Tirole, 2015) 'Pledge & Review' [box 5] is the only workable mechanism among sovereign Parties as bridge between compliance and credible commitments (Barrett, 2012), and interacting with transfers. Credible commitments (Ostrom-factor 2) are yearly KPI values on lowering the Parties carbon emissions per inhabitant (C_{pp}), feeding the spearhead policy [box 2]. C_{pp} is mostly decomposed in three intensity KPIs: affluence; energy intensity; energy's carbon intensity (IPCC, 2014: ch.5). Yearly statistics on the KPIs for most countries in the world are processed by organizations such as IMF, UNDP, and IEA, alleviating UNFCCC's monitoring tasks. The yearly transfers are best made conditional on GDP/person of donor and recipient countries, and on the achievements of yearly pledged commitments

(Verbruggen, 2009). The new set of rules (Ostrom-factor 1) is the assembly of boxes 1 to 5.

Figure 4: UNFCCC Self-government of the Global Climate Commons



Advantageous attributes of the above approach are several. First, UNFCCC assumes a proper role and leaves the detail plans and activities under full responsibility of the sovereign Parties; no new institutions are needed at the top level. Second, the framework for coordinating the CO₂ mitigation efforts of the Parties is transparent, lean and integrates Ostrom's triptych for self-government. Third, the regime can start with the countries willing to coordinate their efforts and aggregate their results in global ends; non-participating Parties can opt-in at every moment. Fourth, the regime's starting level is coordination of self-selected ambition levels, evolving to common resolve to progress in de-carbonization, replacing the zero-sum stalemating persisting since the 1990s. Fifth, baselines are yearly rolling as 5-year moving windows (year now, 2 years earlier + 2 years following); the dynamic window substitutes for referencing to the 1990 baseline or to other fixed years. Yearly updated windows lays responsibilities with present politicians in office, also governing during rolling terms; this helps in ending the practice of engaging the later administrations, often with an agenda different from the present one. Sixth, yearly-gauged progress is easy to communicate to broad audiences. Overall, the proposed restructuring of the UNFCCC and COP functioning merits further attention.

8. Results and discussion

Act-Now means urgent and drastic change, affecting many human activities and societies' functional infrastructures, institutions, interests, and narratives. This contribution discusses only a few salient 'impeding inertia - reversal response' cases. The analysis and description of each specific case may be deepened and extended.

Four figures intend to imprint the main items discussed. Fig.1 provides a stylized view on the world of actors, driven by and driving Ideas, Interests, Institutions, Infrastructures, with Indispensable energy-technology transformations. Fig.2 conveys the substance of sustainable development, where politics holds a central place (WCED, 1987). Without active politics for the public interest the 3P story is lifeless. Over the last years, global corporations expanded their influence on global climate policy, and the UNFCCC retreated. The reversal implies reclaiming the substantive SD paradigm and effective imposition of SD criteria via sustainability assessments of all significant policies, technologies, and activities. Fig.3 features the end of the fossil and nuclear fuel steam era in power generation, because wind and PV technology harvests electricity from passing wind currents and light waves free of the cumbersome, costly flabs thermal power plants request. Fig.4 presents a regime that structures self-government of the global climate commons, based on insights from the social sciences literature. The proposal obeys Ostrom's conditions on new rules, commitment, and monitoring, for coordinating the mitigation progress of the UNFCCC Parties. UNFCCC should assume the board control position in a polycentric, multi-level governance world. Qua interests, the influence of energy corporations in Europe was mentioned. The electricity companies are reverting their business model toward wind, solar, and hydro, quitting fossil and nuclear fuel cycles. This positive evolution has a dark side when community and household small-scale renewable power investments are crowded out. Considering more cases is worthwhile, for example: the narrative on oil depletion while oil abundance is stirring wars for pushing oil supplies from the world market; nuclear interests advocacy via IAEA and IPCC; transport and building infrastructures in urban and country environments; the institution of neoclassical climate policy instruments proposing a global uniform carbon price via a world tax or a world spanning emissions trading.

With sympathy for climate activists' clarity and endurance, revisiting the penultimate warnings of 45 years ago enlarges insight on the present 'Act -Now' imperative. The sobering lessons of that time still hold. Today's ultimate warnings for humankind trespassing the limits of nature's resilience fall in many deaf ears. The inertias in change are strong, as illustrated for a selection of infrastructures, institutions, interests, and ideas. Only 'urgent and drastic' reversals can keep human life circumstances sound.

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