

Competitive sustainability or sustainable competitiveness: the nontrivial triviality we are all searching for

Csilla Mile

Obuda University, Keleti Károly Faculty of Business and Management
mile.csilla@uni-obuda.hu

Zoltán Bodrog

Obuda University, Keleti Károly Faculty of Business and Management
zoltan.bodrog@uni-obuda.hu

Abstract: Almost as a triviality, all the scientific community used to handle sustainability as a key factor in near future's competitiveness. This stems from the benign expectation that the picture which lives in the minds of microeconomic actors about their short-term (or middle-term) goals and the short-term goals of our communities and our society are tightly parallel, or at least not contrary to each other. And indeed, sustainability is the key for our society in coping with the challenges of our age. But is this picture in researchers' minds about the picture in people's minds valid at all? Everything in our recent research, from consumers, through SME's, up to policymaking and global politics, points to the conclusion that the answer is not that clear. Sustainability and competitiveness are generally contradictory in practice. Not being conscious about this contributes to the effective scholarly support of an ongoing double-voiced discourse on sustainability. We should be aware of this contradiction, and we should search for patterns, practices, methodologies and initiatives which can promote sustainability and competitiveness at once. One of these can come e.g. from SME's of organic agriculture, another from military logistics, but we have to keep an eye on many socioeconomic subsystems and gather all the patterns connecting sustainability and competitiveness that finally come together as the overall systematic solution.

Keywords: sustainability, unsustainability, competitiveness, cooperativeness, sustainability crisis

1 Introduction

While the very future of humanity lies in complying with sustainability conditions, which have become quite well defined on large (global) scales [1–8], breaking down this strategic envelope to operational and short-term microeconomic requirements remains systematically troublesome. Rather trivially, this systematic shortcoming can be identified in the background of the fact that we have missed the 1.5-degree global target of the Paris Agreement. Sustainability, while nowadays a trivially important and central target of humanity at all scales, from local to global, proves to be an elusive vision.

However, the ever deeper analysis of this phenomenon should not stop until we find and solve the fundamental problems. With this paper, we aim at contributing to this by focusing on the pervasive nature of the contradiction between competitiveness and sustainability (more fundamentally: competition and cooperation) in multi-party activities (mathematically: games) at every scale, at every level of socioeconomic systems. In order to do this, we review our recent research activity in sustainability as a series of snippets which quite well illustrate that at whatever level we study cooperative targets overshadowed by individualist goals, the dominant pattern is some form of competitive advantage winning over the attractiveness of cooperative optima.

This can be well identified with a structural antagonism between competitiveness and sustainability; in a clear contradiction with any lukewarm picture about these two being compatible without immense efforts in that direction. This all should not be seen as some proof of an exclusive relation between sustainability and competition, rather as the first step of lifting such an apparent exclusiveness. We should not hold either a total contradiction or a lack thereof trivial. The solution to the problem of such an exclusive relation begins with identifying the problem, thus leaving the denial or lukewarm neglect of it, and trying to show the way out of it.

2 Methodology: identification of the same pattern at all levels and scales

Competitiveness counts among the topmost important and valuable maxims of current economic discourse. [9,10,11] It is the chief indicator of every subsystem or process which we investigate from an economical point of view. It is related to the present performance of these systems or processes in our present socioeconomic paradigm; and we want these to be as successful as possible. Therefore the goal of studying competitiveness is finding the ways of making everything as competitive as possible. This is the result of our (socio-) economic ‘hypersystems’ being

competitive at every scale: systems where many individual actors (subsystems) compete against each other for success, gain, and resources in (partly) zero-sum games. There are winning and losing sides, and naturally, every actor's goal is being on the winning side.

The benign (lukewarm) interpretation of the relation between competitiveness and sustainability sees the latter as the ability of continuing our present successful (i.e. most competitive) activities into the (near) future. [12,13] This interpretation treats the two as counterparts in a timely distribution: what is competitive now, should be somehow future-proof, and this guarantees sustainability then. As a result, sustainability on its own easily loses attention, as it is merely a hopeful continuation of the topmost important goal now: competitiveness. It must be noted that this interpretation is very hard to find as an explicit statement. It is rather the implicit background of a sensation that it is enough to take care about competitiveness now, sustainability is something that comes some time later into consideration.

The mathematically underpinned (real) relation between competitiveness and sustainability is, however, not only far from the above lukewarm connectedness, but also fundamentally a conflict. The most emblematic representation of this is the so-called "tragedy of commons" as a multi-party game theoretic model. [14] This model leads to the conclusion that every competitive process leads to patterns or results described as "race to the bottom", i.e. the competitively advantageous participation of individual actors in these settings necessarily leads to the demise of "common good", the rational targets which can be set for the community of individual actors. This does not mean that reaching common optima is not possible, but that it is far from trivial to reach them if competition, instead of cooperation, remains the strongest relation between individual members of the community.

It cannot be emphasized enough that the mathematical necessity of the (detrimental) prevalence of competitive behaviour is further strengthened by human nature itself. Throughout (human) evolution, competitive advantage has been of core importance in our success, [15] and it is corroborated by every other aspect of human nature, e.g. our perception of the present-future duality: cognitive selection (biases) turn our focus to present (over future), [16] not independent of what proved to be advantageous in our evolution in the wild. As a cultural reflection and result to this all, (wasteful) consumerism as the realization of perceived wellbeing is also intensifying the prevalence of competitive behaviour over cooperation.

3 Results: sustainability (cooperation) as the losing side in our research

Let us then see our snippets of research on sustainability losing ground to competitiveness at all scales and aspects of human activity. These will serve as

model examples through which we illustrate what kind of change in aspect can lead to cooperativity, and then sustainability prevail.

Lifestyle and consumption patterns of generation Z

Generation Z is going to have the strongest influence on the global sustainability crisis and its management, as they will be the active managers at the top of their careers in the middle of 21st century. Is their present lifestyle reflecting what we know as sustainability now? Our survey [17] has managed to discover the slight emergence of sustainable patterns there, nothing more.

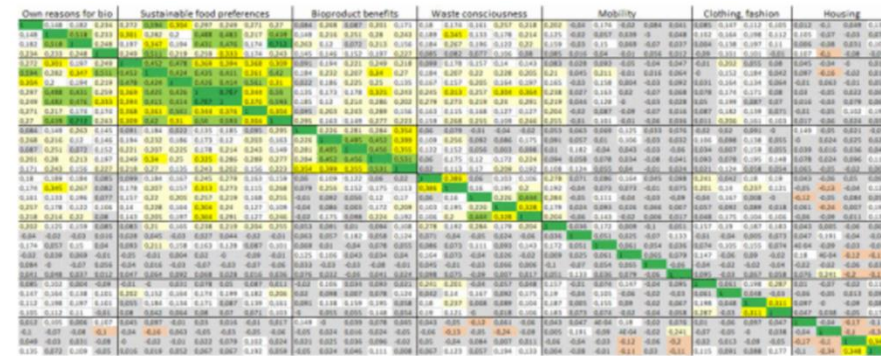


Figure 1.

The 'correlatedness map' of lifestyle sectors of generation Z. Columns and rows are the (same) sectors and particular aspects of life (e.g. the first sector containing four questions about reasons of organic product consumption). Greens are well correlating, yellows partly, greys are not. (Self-compiled figure from [17].)

The slight pattern of an overall sustainable lifestyle emerges around the consumption of organic food. The survey oriented to this aspect showed weak consistency in sectors of this, and among different sectors of organic food consumption (reasons, food preference, perceived benefits), and this pattern partly radiates out into waste consciousness, but any other extension of it has failed to appear. This shows the fact that generation Z is still a part of our unsustainable, competitive consumerist society, while organic food as some kind of quality product can penetrate into this with the message of sustainability.

The ‘upstream’ side of organic food industry: does it really work for sustainability?

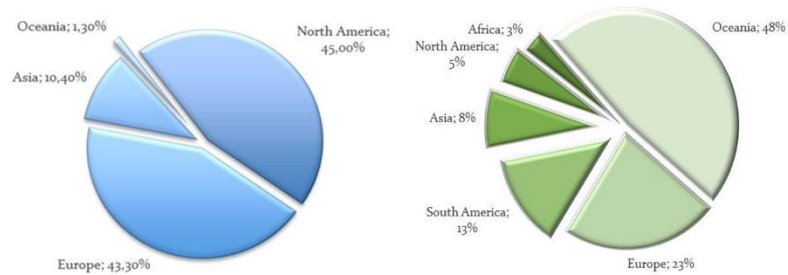


Figure 2.

World distribution of organic food market. Left: consumption, right: production. The asymmetry is prominent; resulting in an intensive global mobility of goods. (Self-compiled figures from [statista.com/FiBL](https://www.statista.com/FiBL) data in [20], and further references therein.)

As we have mentioned above, organic products can bring the concept of sustainability into the consumerist society. But is this a conscious target of it? Or can it be? This can be attested by showing already existing sustainability patterns in the organic industry. As for the global distribution of the organic market, the answer is negative. The vastly asymmetric distribution of production vs. consumption alone makes the whole system unsustainable by an excessive movement of goods. [18]

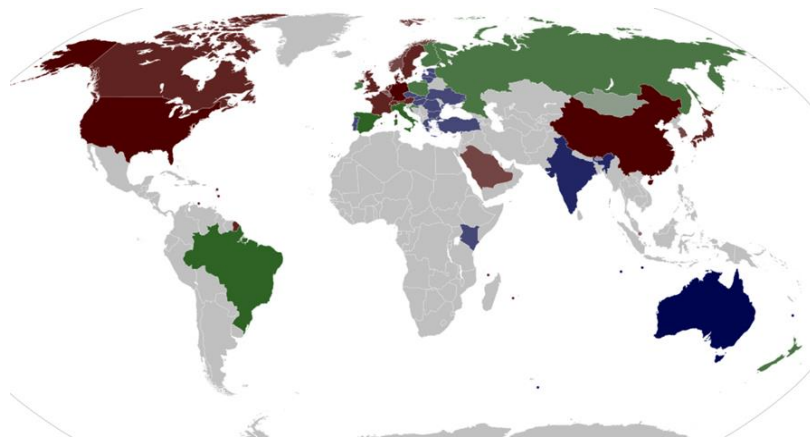


Figure 3.

The asymmetric global market of organic products realized. Greens are mostly exporters, reds are importers, blues are balanced (exports vs. imports differ at most by a factor of two). (Own work from [statista.com](https://www.statista.com) and FiBL data, originally in [18])

However, at the microeconomic scale, there can be sustainable preferences, concepts, and strategies identified among farmers, the producers on this market. Through deep interviews and private conversation there seems even a societal emergence of sustainable practices, strategies and lifestyles; giving the source of hope in this field. [19]

Competitiveness vs. sustainability choices of agricultural SME's in the Hungarian organic industry landscape

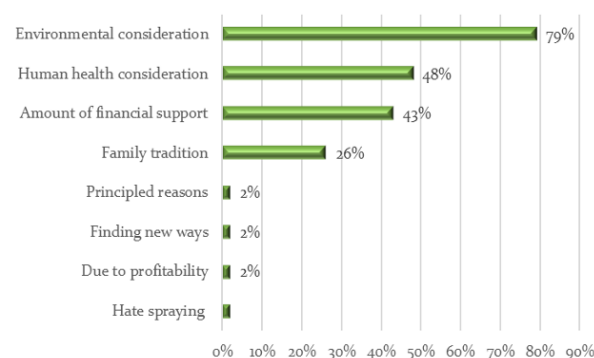


Figure 4.

Reasons for organic production in Hungarian organic farmers. Community reasons dominate only within their circles. (Own work originally in [20])

Our impression about the big picture in the organic farming industry of Hungary is that while sustainable thinking is quite prevalent, the reality is still driven by market competition: higher available profit is a decisive factor (at no surprise, of course, but clearly showing a market environment which is not yet ready for an organic takeover). [20] While farmers of the organic sector are enthusiastic and convinced about their choice of methods, their situation is by no means attractive to producers outside their circles. Many of them fluctuate on the boundary of the organic sector; reducing organic production, or even giving up is on the table when difficulties arise, but the high barrier against such a change (stepping into or out of organic farming), the connected sunk costs, and their favourable mindset decrease the chance of negative decisions.

On the connected consumption side, Hungarian consumers are especially focused around their own health consideration, instead of the environmental benefits (European reference: French respondents to a such survey are still preferring health, while in Germany, environmental aspect has the leading role).

In total, Hungarian organic sector is a tiny sector embedded in a large, highly competitive system, no potential for quick growth appears, but the deep conviction of organic farmers, and especially their openness to even stronger sustainable

technologies (permaculture), and to a self-organizing organic farming society gives the hope of a stronger, and more sustainability-oriented agriculture in Hungary in the future. Of course, these fundamentals should be complete with regulatory instruments, etc.

Time as a finite or infinite resource

This topic is mainly in our research agenda, rather than a part of the (recent) past; however, the important preliminary framework has been set up in a proposal: sustainable management should resemble military logistics. [21] Why? Simply because in the XXth century, when environmental resources seemed to be available infinitely, large-scale strategymaking has lost the ability of handling time as a finite resource too. The largest projects of development, e.g. infrastructure projects, systematic transitions of large structures have not only failed to keep deadlines, but also simply lacked such a concept. It is also now widespread: if a railway line, or a hospital is not built today, having it ready tomorrow is still an equally feasible option.

Contrary to the above fundamental strategic management pattern, the sustainability crises of the 21st century come with serious and more or less well-defined deadlines. As the most important example, reductions of greenhouse gas emissions are not only necessary, but they are necessary in time. The failure to keep with the 1.5-degree goal of the Paris Agreement is a worrisome illustration of this.

Our task is then pointing out the problem, and searching for the existing pattern which can be the model for the necessary solution. This can be found in military logistics: materiel after the action is no materiel. Resource after the time of usage is no resource. Solution after the deadline is no solution. Of course, very hard to implement, but the model exists and it has been working for millennia. It should be used in sustainability management.

Technology for technology itself, or technological retreat for sustainability?

The competitive perception of technological advancement is once again a race for goals other than sustainability. In our example, [22] what is more useful for the suburban extensions of a metro line in Budapest? Extensions using the totality of technologies that belong to a fully-fledged metro line (even according to 'heavy' standards of the 20th century), or implementing a subset of them at the cost of minimal compromises in service performance?

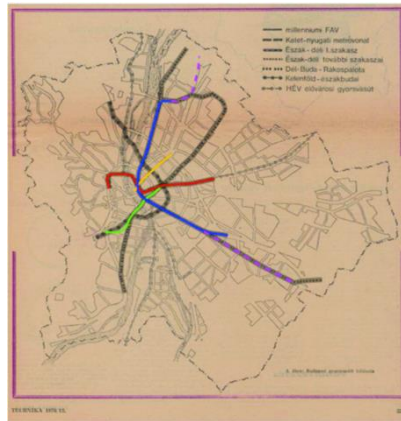


Figure 5.

Will Budapest's blue metro line ever have the purple extensions? Using some light rail technology, it is possible. Keeping to the 'perfect' technology prevents their realization. (Grey lines are other historic examples of never realized full technologies; own work superimposed on historic material, originally in [22])

The decisive factor in this dilemma is the timeframe. The cost-benefit ratio of the full technology will never underpin the feasibility of these extensions. Currently, they have been partly given up (to the south), partly kept in a huge struggle for adjusting feasibility studies to expectations, instead of reality (to the north). Based on current activities, any extension can be scheduled well after the middle of the 21st century, if not impossible ever. But a metro line of a city is a tiny subsystem of some subsystem of some subsystem of global economy, which has to make the transition to sustainability until the middle of the century.

This is a result of not only a competitive interpretation of technological advancement and technology usage, but a competitive distribution mechanism of (chiefly financial) resources for development projects (not independent of the deadline-lacking strategymaking of the 20th century). Projects should be as large as possible, in order to accumulate the most possible development for *this, here, and now*; aspects of cooperation (common optima with other projects, other regions, other subsystems), and continuation into the future play a secondary or even less important role in consideration.

United Nations sustainable development goals for the (false) success of competitive society

In the front of the global struggle for sustainability, there are the 17 so-called sustainable development goals of the United Nations. They comprise particular goals for environmental, societal, and economic sustainability. If all these are achieved, we reach global sustainability: all aspects of the resource usages of all of

our socioeconomic systems will be moderate enough to ensure this. A crucial part of this transition is the consistency of these three sectors of sustainability.

But are we handling this all in a consistent manner? Our investigation into the correlation of which country does well in which SDG indicator shows a more than worrying landscape. [23] While SDG's belonging to the economic and societal legs of sustainability are compatible with traditional (let us call it even "20th-century-ish") welfare, environmental ones show a conflict with it. This is clearly reflected in our statistical analysis: by correlation patterns, the SDG's split into two groups. The first—overwhelmingly dominant!—group correlates well with traditional welfare indicators, like GDP per capita, and ecological footprint per capita (either in the consumptional, or the productional sense, connected to traditional welfare by the lack of decoupling [24]); the second group, which consists of only four SDG's (climate action, "responsible consumption", life in land, and water) shows an anticorrelation with the other group. And the second group contains environmental sustainability.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Prod	Cons	GDP
1	1.00	0.49	0.74	0.73	0.36	0.60	0.75	0.51	0.69	0.42	0.53	-0.46	-0.23	-0.15	-0.25	0.56	0.12	0.34	0.37	0.39
2	0.49	1.00	0.76	0.62	0.79	0.81	0.50	0.55	0.79	0.06	0.64	-0.43	-0.35	-0.25	0.07	0.68	0.12	0.53	0.61	0.49
3	0.74	0.76	1.00	0.82	0.70	0.85	0.83	0.63	0.89	0.17	0.85	-0.67	-0.50	-0.18	-0.03	0.85	0.29	0.64	0.70	0.68
4	0.73	0.62	0.82	1.00	0.57	0.75	0.81	0.67	0.76	0.11	0.67	-0.52	-0.30	-0.14	-0.29	0.67	0.16	0.42	0.45	0.42
5	0.36	0.79	0.70	0.57	1.00	0.80	0.52	0.52	0.68	-0.12	0.72	-0.46	-0.38	-0.13	0.18	0.64	0.28	0.60	0.63	0.56
6	0.60	0.81	0.85	0.75	0.80	1.00	0.74	0.63	0.80	0.03	0.79	-0.54	-0.38	-0.12	0.15	0.76	0.41	0.61	0.64	0.61
7	0.75	0.50	0.83	0.81	0.52	0.74	1.00	0.53	0.70	0.13	0.72	-0.51	-0.27	-0.09	-0.16	0.67	0.33	0.42	0.44	0.45
8	0.51	0.55	0.63	0.67	0.52	0.63	0.53	1.00	0.59	0.30	0.59	-0.20	-0.02	-0.04	0.07	0.65	0.37	0.33	0.34	0.30
9	0.69	0.79	0.89	0.76	0.68	0.80	0.70	0.59	1.00	0.18	0.74	-0.75	-0.58	-0.24	-0.09	0.79	0.09	0.69	0.77	0.75
10	0.42	0.06	0.17	0.11	-0.12	0.03	0.13	0.30	0.18	1.00	-0.02	-0.06	0.09	-0.14	-0.03	0.23	-0.12	-0.10	-0.07	0.00
11	0.53	0.64	0.85	0.67	0.72	0.79	0.72	0.59	0.74	-0.02	1.00	-0.62	-0.47	-0.14	0.22	0.80	0.45	0.67	0.72	0.71
12	-0.46	-0.43	-0.67	-0.52	-0.46	-0.54	-0.51	-0.20	-0.75	-0.06	-0.62	1.00	0.85	0.15	0.10	-0.62	0.01	-0.70	-0.76	-0.86
13	-0.23	-0.35	-0.50	-0.30	-0.38	-0.38	-0.27	-0.02	-0.58	0.09	-0.47	0.85	1.00	0.10	0.06	-0.48	-0.00	-0.81	-0.82	-0.83
14	-0.15	-0.25	-0.18	-0.14	-0.13	-0.12	-0.09	-0.04	-0.24	-0.14	-0.14	0.15	0.10	1.00	0.23	-0.10	0.16	-0.07	-0.11	-0.07
15	-0.25	0.07	-0.03	-0.29	0.18	0.15	-0.16	0.07	-0.09	-0.03	0.22	0.10	0.06	0.23	1.00	0.16	0.46	0.08	0.12	0.16
16	0.56	0.68	0.85	0.67	0.64	0.76	0.67	0.65	0.79	0.23	0.80	-0.62	-0.48	-0.10	0.16	1.00	0.38	0.59	0.65	0.69
17	0.12	0.12	0.29	0.16	0.28	0.41	0.33	0.37	0.09	-0.12	0.45	0.01	-0.00	0.16	0.46	0.38	1.00	0.20	0.18	0.20
Prod	0.34	0.53	0.64	0.42	0.60	0.61	0.42	0.33	0.69	-0.10	0.67	-0.70	-0.81	-0.07	0.08	0.59	0.20	1.00	0.95	0.81
Cons	0.37	0.61	0.70	0.45	0.63	0.64	0.44	0.34	0.77	-0.07	0.72	-0.76	-0.82	-0.11	0.12	0.65	0.18	0.95	1.00	0.90
GDP	0.39	0.49	0.68	0.42	0.56	0.61	0.45	0.30	0.75	0.00	0.71	-0.86	-0.83	-0.07	0.16	0.69	0.20	0.81	0.90	1.00

Figure 6.

Correlation "heat map" of SDG's and traditional welfare indicators. Red colours show correlation, blues show anticorrelation. Numbers 1 through 17 are SDG indicators, the other three are production, and consumption footprint, as well as GDP, all the latter three per capita. Colours show a clear twofold-split pattern. (Own compilation from multiple sources, originally in [23])

And why are there quotation marks around "responsible consumption"? Simply look at figure 7. The indicator associated to this SDG shows nothing else but poverty. Countries doing well at this SDG are not responsible, but poor. As a consequence, development (even 'sustainable development' in the sense of societal and economic SDG's) goes against the "responsible consumption" SDG. This is a prominent illustration of how traditionally aligned SDG's are realized at the expense of environmental ones.

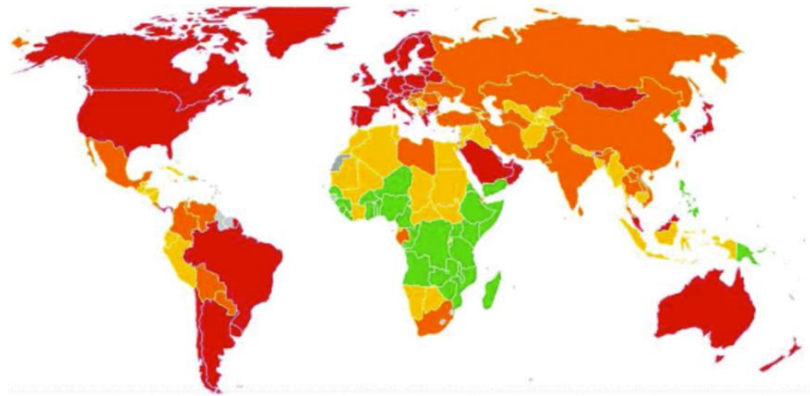


Figure 7.

Countrywise visualization of the “responsible consumption” SDG index. How would we describe the countries bearing green colour here? (From UN SDGi data visualization, referenced in [23])

The majority of UN SDG’s are nothing else but the targets of our competition-based 20th-century welfare economy. Realization of them will certainly not be compatible with environmental sustainability. The solution to this problem, which we plan to include in our research too, is realizing that areas of sustainability should be treated in a hierarchy, environmental sustainability taking the preference over societal and economic sustainability. This is nothing else but a further realization of the well-known concept of strong sustainability: a factor of sustainability cannot be improved at the cost of others.

Global politics: competition as the real rationality

Last but not least, our paper from this very same conference last year has dealt with the rational nature of the perceived irrationalities of the recent global policy of the United States. [25] Better called ‘irregularities’, these changes aim at serving less the global common good, and more the individual interests of the United States as the by far largest international player. Thus, the apparent disintegration of the 20th-century ‘Pax Americana’ is not about giving up the leading role as the sole superpower, but strengthening it by changing to an extremely individualist (competitive) perspective.

Regardless of the future (selfish) efficiency of this behaviour, it has to be pointed out that given the global politics and global sustainability precisely as an implementation of the tragedy of commons, it is quite a rational individualist strategy not to participate in global sustainability efforts (most prominently, the Paris Agreement). Treating this irrational is a misinterpretation of reality, and therefore leads to incorrect answers. Another proof of the rationality of this individual approach of the US (as well as a remarkable sign of the consistency of its political elite) is that an individual strategy anticipating and leveraging a collapse

of global cooperative sustainability efforts can be observed e.g. with the carbohydrogen market policy of the Democrats too (naturally, continued by the Republicans). Imports and exports of oil, and derivatives, and natural gas in all forms have been always the subject of global unsustainability strategies, regardless of the partisan stance of the current government.

Conclusion

First of all, there is a problem so large, widespread and fundamental, that we better ignore it than look at it, identify it, and deal with it. It is (global) sustainability, and the deeply structural socioeconomic reasons behind the seriousness of this problem lie in mathematical facts, as well as deeply embedded properties of human nature. All the toughest reasons a systematic problem can have. Moreover, this immense task comes with quickly approaching deadlines for humanity.

This horrible situation should not be seen as hopeless, however. After turning to it, every pattern in every socioeconomic subsystem (even if small) which can be applied to solve it should be noticed, analysed, and finally leveraged to construct cooperative answers to it (at large scales too). The cooperative nature of the solution is clearly contrary to competitiveness in the strict sense, which we still keep as our target in almost every economic effort; but this should come as a task, not as a problem, as a scary system of ubiquitous problems.

Certainly this is the greatest management problem humanity has faced so far; but it can also be identified if we want to, and there are parts of the solution available too, waiting to be applied, scaled up and adapted.

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