SUSTAINABILITY AND FREEDOM

Sustainability is not a goal, process, or philosophy. It is a measure of freedom of choice.

Mark Lee Ford

"Nothing!"

Ask anyone who has worked in sustainability for some years what he has accomplished, and the answer is likely to be that single word, delivered without hesitation.

The failure is not from want of effort. Earnestness is part of the job. The work is well-meant and large in scale. Those who do it do not hide their disappointment, nor do they blame "the ignorant masses" or "evil capitalists." "Nothing" is an honest report, not false modesty.

What, then, do they do each day that produces nothing? They advocate and they audit. To cheer or to police without power grows wearisome. Morale falls because the large aims never appear. Success remains just beyond reach.

They know something is wrong, yet they cannot name it. If sustainability has inherent merit and advantage, why, after decades and billions of dollars, has it not taken hold? The successes are few. On examination even those successes appear propped up rather than earned. They are, in the language of the field, "unsustainable."

Why?

Sustainability's foundational fallacy

The premise of sustainability contains a clear error. The error is easy to show by evidence, yet hard to accept because it feels wrong to those who hold the premise. That difficulty leaves the idea open to abuse by politicians, officials, activists, and company officers. One contrary fact suffices to disprove any conjecture. Japan is replete with such facts regarding sustainability. The desire for sustainability, however, is widespread here and grows stronger.

The error is to treat the physical quantity of a resource as equal to its usefulness. Oil, for example, exists in a fixed amount. Divide the proven reserves by present use and the date of exhaustion appears. The calculation looks sound. More persuasive to us, it also feels sound. When the purpose is to save the planet and the purpose carries political weight, feelings decide.

A resource is matter plus a known way to use that matter. This means that the number of atoms in the physical reserve (i.e., stock or supply) of a resource is fixed, but the uses of those atoms are not. Find another way to use the reserve and you create a resource without having added a single atom. The human brain makes the search for new ways possible, but it does not make every timely use unlimited because a search costs time and energy. A search also requires the freedom to try a use that has not already been found and mandated. Restrict that freedom and the known use immediately looks like only the entire reserve.

Usefulness expands through efficiency, substitution, and technical advance, that is, through innovation. To argue that resources must run out and that humanity must then collapse is a basic mistake that confuses resources with reserves. The improperly defined premise that Earth's resources are finite quantity of atoms leaves out the essential variable about what the mind can do with those atoms. When advocates treat the reserve of something as a fixed or shrinking pie, they commit a static error.

The usefulness of a reserve is bounded by the innovation applied to it, not by the quantity of the reserve's atoms present. The pie is not fixed unless we allow it to be. And we have allowed it to be for decades, which is why the desire for sustainability continues to rise.

Two camps

The appeal of sustainability to the intelligentsia and others of the educated and managerial class is not surprising. That class lives in comfort and writes the rules for the rest of society. "Frugal" is not the first word that comes to mind when describing members of this class. Their dominant view treats man as perfectible (inherently good) and resources as fixed. If one can find the right intelligent and virtuous persons—central planners—and let them divide the resources, the result, it is said, will be Utopia: justice over injustice, equal outcomes, fairness, comfort. The pie is fixed, the solution is perfect, and the ending is happy. Of course, the holders of this view are clear about who the planners should be: themselves or people like themselves.

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The weaker, less popular view is not so rosy. Man has been flawed from the day he first walked the Earth; it is his nature. There are no solutions in the Universe, only trade-offs. The problem of choosing among trade-offs has infinite variables, far too many for any person, politburo, or computer to solve. Only when people decide for themselves according to their own interests does the benefit to the largest number increase. At best there is a better ending for most, albeit always volatile and at risk, and there is no happy ending for all and certainly no Utopia. Despite the disorder of private decisions, the pie is not fixed. This view is common among those who have little and must be frugal and innovative with what they have.

The desire for sustainability

The desire for sustainability means that some authority has closed the search for new uses of a resource. It does not mean that the world is running out of matter.

A service is what people want, such as heat, food, a material. A known use is one way already found to obtain that service whereas a search is an attempt to find another way, a way no one has mandated. A creation is an attempt at a new way that succeeds. The search for a new way ends when the person doing the work of the search is no longer free to try.

Shut down the search and new creations stop so the reserve looks like a pie that must be jealously guarded and rationed. People are forced to keep the known way because no one is looking for another, and that coercion leads to a self-perpetuating desire for only the known way. Because creativity is eradicated when authority closes the search, people mistake the absence of creations for a limit of nature. Though the resource is not finite, people think it is. Ironically, they *choose* to treat the pie as fixed.

A listed reserve is not the planet's inventory. It is the part already found and worth using at the present price and method. Divide that part by present consumption and the resulting date of physical exhaustion of the reserve measures mainly ignorance and a low price. Where someone can charge for scarcity, the price pays for more search, for poorer ore, and for substitutes. To treat today's reserve as the pie is the mistake.

Meiji and Taishō industry is the exhibit of what works

Kunihiko Iwadare, the son of a domain samurai and one of Thomas Edison's many protégés, later co-founded NEC. Iwadare added a use Japan did not yet have for several of its natural reserves.

Until Iwardare's entrance, Japan was dominated by Edison's DC equipment through the Tokyo Electric Light Company, Japan's first utility monopoly. Another of Edison's protégés, Ichisuke Fukuoka was Tokyo Electric Light Company's Chief Engineer, and was fiercely loyal to Edison. In 1891, Osaka Dento (the analogous utility in Western Japan) hired Iwadare as an electrical engineer upon his return to Japan from Edison in the United States. At that time, a "War of Currents" between Edison (who favored DC) and Nicola Tesla and George Westinghouse (who favored AC) was peaking in the West and spilled into Japan. Edison wielded an immense amount of intellectual, commercial, and cultural soft power that heavily steered Japan's early elite class on certain matters during the Meiji era, electrical power being one of them.

Iwadare made a highly controversial move. Rather than purchasing the DC equipment that Edison insisted upon, and which Fukuoka had already taken up as Japan's de facto standard, Iwadare bought AC generators from Thompson-Houston, a chief rival of Edison. Because DC could provide electricity only within a few kilometers, access to it was severely restricted to pockets of wealthy households, banks, and major businesses in a few large cities. The adoption of AC expanded access to electricity throughout the country, accelerating the modernization and industrialization of Japan during the Meiji era. A furious Thomas Edison temporarily severed business relations with Iwadare.

The copper, water, and coal reserves for DC power generation were already present, but the new use was not. Iwadare created the new use from the same finite reserves by refusing the method in front of him: Edison's direct current. Iwadare—and Japan—were lucky. Though DC was dominant and Iwadare was strongly urged or perhaps even intimidated by the principals of the story to take it up, the way of DC was not mandated by the Meiji government. Iwadare was still *free to choose* or create a new way.

Iwadare likely lived (as most people of the day did) in sensible frugality, but he would have rejected the word sustainability. The words frugality and sustainability seem blurred for many in our time. Frugality is the careful use of what one already has, whereas rationing of what one has is more akin to the erroneous premise of sustainability.

Households from the Meiji era through postwar Japan acted in the same way without a sustainability program. A jar became a container. A board became a shelf. A shirt became rags, and one of those rags became a filter. The person doing the work was free to try a use that was not listed. The moment an authority would have specified the approved

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uses and forbade the rest, the jar, the board, and the shirt would begin to look like a fixed reserve that must be conserved.

Consider the example of gold. Almost 100% of all the gold in use today has been from historical mining. True, the available reserve grows by mining, but the contribution is negligible.

Gold is melted, recast, re-alloyed, and put to new work: coins and jewelry in Nefertiti's time, iPhones and satellites in ours. The Earth's accessible reserves of gold are already above ground and in use with us, and have been so for a long time. Did a ministry assign its next use? Did a law mandate its next form? The metal moved because someone wanted a different service from it and was free to try a new way. Seal off attempts at new ways of use, and the known way (e.g., gold used smartphones) creates the illusion of the fixed pie. The metal looks scarce. Leave attempts open and the same metal no longer looks so.

Life on ships and spacecraft illuminate the limit of innovation because the time is short. Remember, one needs time and energy to search for new ways. Regardless, crews rework fittings, food, and fuel under rules that are physical, not politically imposed. Apollo 13 is an instructive case. The astronauts and ground team created a new use for materials already on board the space capsule to restore life support and power systems because the mandated way had failed. No sustainability order was issued. The search remained open under pressure, and humans created new ways to use extant reserves at hand. The limit was matter and time, not an order that the known method was the only method.

Post-war Japan is the larger version of Apollo 13. Capital, raw materials, and foreign exchange were short and infrastructure was obliterated. Recovery did not come from treating the remaining reserves as a pie to be rationed, as was done initially and unsuccessfully. It came from people free to try uses that had not been mandated—importing methods, reverse-engineering, building machines not on the list.

Japan has abandoned *mottainai* and frugality

Mottainai is the sense that residual value is being left unused. The word evokes regret that an object, a material, or a skill still has utility left in it, but it is being discarded. A jar, a board, a length of cloth, a motor that can be rewound—the person who says "mottainai" sees that the service is not exhausted and knows that another use is possible. Nowhere does it say that the known use is the whole reserve.

Mottainai keeps the door to searches of new ways of use open, treating the reserve as still available for a new creation that has not already been discovered and mandated by authority, all of which is contrary to the situation where searches have been closed. The modern sustainability program takes the same word and reverses the direction. It turns the regret into a duty to keep the known use going at the expense of new ways, and it hands the decision about allowed uses to an authority that can count, check, and blame. The residual value (that mottainai recognizes) ceases to be an invitation to try a new way and, instead, becomes a reserve that must be guarded and rationed so the mandated use can continue.

Iwadare would have recognized the first version. A spare part that still works, a machine that can be rebuilt, a method that can be improved. These are mottainai in the ordinary sense. He would not have recognized the second version, in which the known use is declared as the whole reserve and other attempts are treated as waste. Gold, the household jar, the ship's fittings, and the materials on Apollo 13 all move under the first version. Residual value is seen and a new use is tried. None of them required a sustainability directive.

Mottainai left to the person who sees the residual value is frugality plus an open attempt at a new use. Once captured by a program that assigns the use, however, mottainai becomes an indicator that the search for new ways has already been closed.

Plastic bags—all noise, no signal

An authority's intention is to reduce oil consumption and plastic waste while keeping residual value in use. The method for doing so is to assign a way: collect, sort, charge, ban, or divert. What is then measured by the authority is compliance with the way it has mandated, not whether residual value is still being tried or whether total material and energy used has fallen. Only the way to implement the intention is measure, not the trade-off.

When the mandated way destroys the usable remainder, shifts the waste into another form, or merely adds a cost without changing the underlying use, the intention is inverted. The search that would have found another use is closed and the known stream is guarded, thereby pushing the desire for the program higher because the results look worse.

The government-mandated charge for supermarket bags is the wrongheaded policy in small form.

The politicians and bureaucrats' intention is fewer bags in the waste stream so they impose is a fee that makes the free bag costly. Fewer free bags are handed out at grocery stores, for example, which is easy to count and audit. But the actual result is often a shift to thicker bags used once and discarded, or to other packaging that is not charged, or even

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to bags brought from home that are themselves used only once. Indeed, sales of plastic bags on Amazon skyrocketed after the fee for plastic bags was imposed, thereby *increasing* the number of bags in the waste stream. The thin bag that a household once reused for trash, storage, or odd jobs is now either paid for or replaced by something heavier. The residual use that mottainai would have noticed is taxed or removed. The regulator obtains its number for audit purpose and checks a box. The material does not disappear; it changes form and often increases, as with the case of plastic shopping bags.

What sounds good is the reduction in free bags. What works is an open attempt to obtain the service—carrying goods, lining a bin, holding scraps—with less material or a better method. The charge does not open that attempt. It assigns one method and measures compliance with it. The adage "The road to Hell is paved with good intentions." is apt. Here, the road to Hell is paved with the countable result that looks like the intention while the non-mandated uses are stopped.

The avenue for attempts at new ways was left open for Iwadare because the result was not ordered by an authority. A bag charge, however, can be ordered. Mandates are easy, almost impossible to reverse, and do what proponents claims (Table 1).

Innovation depends on freedom of choice

Freedom to choose is freedom to pursue the problem, not freedom to select from a menu of resources approved and mandated by an authority, whether central planners in government or the chief executive and his temporary supporters in a company.[1]

Nobody spends someone else's freedom as carefully as he spends his own. Authority assigns a method for two reasons: control of a countable result, and insurance against a feared fixed pie. Securing the known result destroys attempts that would make control less necessary. Authority keeps the limit as insurance for the known creation. The missing creations then make the resource look like a fixed pie. The call to guard the resource grows louder, and the louder call justifies a tighter limit.

As the alliance between government and business has grown since the 1960s, and as the bureaucratic habit has spread, restrictions on freedom of choice have increased and have hampered invention.

Authority assigns the way because it wants a result it can count, check, and blame. An open search promises no creation. It may fail. It may miss the target. It may create a use the authority did not choose. A planner, a ministry, a company, or a law therefore names the method and enforces it by order, permit, quota, or penalty. Ingenuity is not limited inside the brain. It is limited by the order.

The limit remains because authority fears a fixed pie. Other attempts look like waste or like a risk to the stock. The limit protects the known creation by stopping the search that would create another. The closed search makes the scarcity look more real, and the call to sustain the known way grows louder. The more people focus on sustainability, the less free they are to choose. More focus produces a tighter limit; a tighter limit produces more focus.

Control can protect a known creation, but it cannot order or create the next one. To be valid, a creation is an attempt at a new use that must be free to be wrong. Iwadare's choice of alternating current could have ended his career. The trade-off for being successful at control is failure at being innovative.

Two limits remain and should not be romanticized. If no one owns the reserve, the price never rises and the search for new ways of use is never paid for. Searches take time and can lose to the clock. These are limits of institutions and of time, but do not mistake them for a fixed pie, which is ingenuity under orders.

How does it all fit together?

Quite simply, control by authority is the motive, the limit on personal freedom is authority's instrument, and an increasing desire for sustainability among the population (or portions of it) is the result. None of the three means that matter is infinite, but it does show that the desire for sustainability runs inversely to freedom of choice. Treat a loud sustainability program as a report that tells you where the freedom to try has already been spent and shuttered.

The proper job of executives and managers in corporate sustainability

Some who work in corporate sustainability departments will feel defensive after reading this far. Others will argue against the facts. A third group will feel lost.

My advice is simple. You have been working on programs built on a totally false premise. That premise has been magnified by politics to the point that you have been fighting for years against the ghost enemies of the so-called evils of

[1] Falsifiers of my conjecture: (i) the menu truly cannot grow; (ii) the authority's mandated uses and outside creations still appear at the same rate; and (iii) desire increases with the actual drawdown of the reserve, not the fall in non-mandated attempts to create a new use.

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capitalism and consumption. All the while, the real enemy has been hiding in plain sight, under your nose: usurpation of freedom and the subsequent loss of frugality and mottainai.

Your proper work, both scientifically and ethically, is to identify the shackles on freedom of choice and to break them. That is the kind of audit and the advocacy that will actually contribute to the betterment of society, which is what you purport to want. To continue otherwise only adds to the damage of the original error.

This is a large change of direction anywhere, and especially in Japan, where sustainability has moved from small activist circles into a fixed bias written into law, regulation, and company policy. People have done harm for a long time while believing they were doing good. Politicians have used that belief. No politician is elected on a platform that opposes sustainability.

You cannot undo the structural bias at once so begin with yourself. Stop. Admit the error. Do not continue a bad idea. You accepted the claims at face value, did not examine the evidence, and joined the prevailing view. Nothing written here is new; the points have been known and debated for decades. It is unpleasant to be wrong. People are more willing to forgive those who admit a mistake and correct it than those who obscure, deny, or argue while everyone loses.

When you feel without direction, look at the periods in Japan's history when most people lived according to mottanai, frugality, and creativity, and innovative entrepreneurs changed the country for the better: the Meiji era, the Taishō era, and the early post-war years. The lessons are there. No large new effort is required. Your grandparents and great-grandparents already practiced the common sense and humility that sustainability programs have set aside.

THE INEVITABLE FAILURE OF SUSTAINABILITY

REGULATION	INTENTION	METHOD	ACTUAL RESULT (TRADE-OFF)
Plastic straw bans	Less plastic in the waste stream	Prohibition of the thin straw	Restaurants switch to thicker plastic, paper that disintegrates and is discarded after one use, or metal that is lost or not returned. Total material per drink often rises. The residual use of the thin straw—reused, or simply lighter—is removed. Compliance is measured by the absence of the banned item. The service (a straw that works) is not improved.
Mandatory recycled-content rules	Keep material in use	Imposition of a quota: a product must contain a set percentage of recycled feedstock	Manufacturers use lower-grade material that fails sooner or they import scrap to meet the number while virgin material continues for the performance-critical parts. The product lasts less time. Residual value is destroyed to hit the percentage. The open attempt at a new use—designing for longer life or easier repair—is not rewarded. The quota is.
Food-waste diversion mandates	Less edible material in landfills	A required collection stream for businesses above a threshold	Food that could have been used the same day, or sold at a discount, or given away, is instead sorted, trucked, and composted or digested at a net energy cost. Contamination ruins batches. The countable tons diverted rise. The residual use a kitchen or a store would have found is replaced by the mandated route. Mottainai is converted into a compliance log.
Extended producer responsibility schemes that set collection targets	Producers design for recovery	Fee or a target based on weight or units placed on the market	Producers pay the fee and continue the same design, or they make the product lightweight in ways that make repair or reuse harder. The fee is collected. The product is not redesigned for another use. The attempt at a new use inside the company—changing the method because it is better—is replaced by the payment that satisfies the target.
Corporate sustainability reporting mandates	Better resource use	A required disclosure of metrics chosen by the authority or the standard-setter	Companies hire staff to produce the report. The metrics become the work. Decisions that would have changed a process are delayed or shaped to fit the next reporting cycle. The countable pages and percentages rise. Attempts at new uses are pushed out by the mandated document. The desire for more reporting then grows because the underlying use has not changed.

Table 1: The Inevitable Failure of Sustainability. Because the premise is false, any positive outcome is not produced by the mandated way of use. Each programme assigns a mandate of use, measures compliance, and closes free attempts at finding new uses, thereby reducing any reserve to the utility of its current, approved use. One has chosen to fix the pie. The countable, auditable result replaces the open search for innovative new ways of use. The program delivers the mandated use only, never the innovative uses that the authority did not specify.

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The Sensible Iconoclast Series

Orthodoxy is examined against evidence, not against political or business fashion. Meiji, Taishō, and the early postwar periods supply what worked under constraint rather than what sounds good. *Sustainability and Freedom*, the first essay, shows that the desire for sustainability indicates where freedom of choice has already been closed. Later essays apply the same test to related claims. Written for executives, managers, and those who prefer a clear account of what worked to a defense of what is currently required.

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