The Environmental Justice Atlas may be a good resource with which to start.) organize and keep up-to-date information on active campaigns and their needs. movement support role for someone who can't be on the front lines would be to campaigns, then research their effectiveness at stopping fossil fuels. (A useful such work, so you'll need to ask around or search online to find groups and infrastructure. The movement isn't organized about tracking and coordinating Unfortunately, there's no simple way to find and support activism against critical

considerations: actions, but finding them may be difficult. Crimethinc offers useful Joining with even one or two others allows for more sophisticated and effective Solo underground activists can carry out some useful actions on their own.

such communities. standing friendships and experience acting together, with ties to other In the long term, strive to build up a community of people with longshare the same priorities and commitments and have nothing to prove. your safety and the safety of your projects to level-headed folks who know for a fact they are who they say they are. Make sure only to trust strengths and weaknesses and the ways they handle pressure—and you best companions for direct action, as you are familiar with their you grew up with, if you still have any of them in your life, may be the traced, and what others' experiences with them have been. The friends involvement in your community and their lives outside of it can be Be conscious of how long you've known people, how far back their

join Stop Fossil Fuels in our work. It you can help with researching or with spreading our analysis, please

outreach, visit our "Help Wanted" page and get in touch! strategy to those who may take action. If you enjoy researching, writing, or of infrastructure critical to fossil fuels, and disseminating our analysis and We aim to support effective action by researching bottlenecks and vulnerabilities

.ssanavitoaffa from the business world to maximize our personal & organizational Just as we must learn from military strategy, we should draw on lessons

other to do what they say they'll do, group efficiency increases synergistically. consistently responsible for their tasks and obligations, and able to trust each impressive for individuals, and even more dramatic for a group. With members time to find a productivity system which works for you. The payoff can be If you aren't as organized, efficient, and productive as you could be, invest the

Resources and systems abound, but good starting points are:

- Getting Things Done https://gettingthingsdone.com
- Deep Work http://calnewport.com
- Mark Forster http://markforster.squarespace.com

Why We Must, How We Can STOP FOSSIL FUELS

Maximize personal & organizational effectiveness.

Become familiar with digital security tools.

Security culture is more important than any technical tools.

Join Stop Fossil Fuels in our work.

Serve on the front lines.



The sooner we put on the brakes, the gentler the transition. 9 Life will be better in a post carbon world. 9 Peak oil won't reduce carbon emissions fast enough. G Governments have yet to take meaningful action. G Paradoxically, energy efficiency increases fossil fuel use. ₽ Green tech isn't slowing fossil fuel combustion, and isn't a solution. ₽ We've waited decades. We can no longer rely on hope of a mass awakening. 3 7 3 3 We must stop fossil fuels to defend those we love. We are in the midst of global ecological collapse. Fossil fuel pollution and climate disruption kill millions of humans each year. Climate change is wreaking devastation now, and will get much worse. 7 Why stop fossil fuels?

18	Your first choice is your most important: above or underground?					
от	underground.					
81	There must be a strict firewall between those working aboveground and those					
18	We need a grassroots spreading knowledge of effective strategy and tactics.					
LΙ	We can all provide loyalty and material support to those doing the necessary work. 17					
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9ī	We must use hit and run tactics to trigger cascading failure.					
JΣ	Careful target selection of specific infrastructure is necessary.					
₽ĩ	The electric grid is uniquely vulnerable to cascading failure.					
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13	Militant resistance has shuttered 10-40% of Nigeria's oil production.					
15	Ecosabotage allows activists to take the offensive.					
15	Civil disobedience has some limited applications.					
10	We must use a cascading failure strategy to disrupt a fragile technological system.					
6	Military analysts have derived principles of strategy from which we can learn.					
6	A strategy of attrition is inappropriate given our numbers and resources.					
8	It's time for an intervention: we must physically shut off the flows ourselves.					
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Why stop fossil fuels?

Climate change is wreaking devastation now, and will get much worse. The idea of a "carbon budget" for the coming decades is delusional; we're already deep in carbon debt.

Climate change is already increasing the frequency and/or severity of fires, floods, droughts, and hurricanes. Sea levels have risen 8" with more to come. Ocean acidity has increased 30%, and coral reefs worldwide are suffering unprecedented bleaching. From 2008 to 2017, 21.3 million people each year were displaced by climate and weather-related disasters, and perhaps hundreds of millions will be climate refugees by 2050.

The devastation we're experiencing today results from only 1°C of global warming since the 1800s. Scientists argued decades ago that limiting the increase to 1°C was the safest option, but that was considered



Our future: wasteland or life?

infeasible. The Paris Agreement aims for "well below" an arbitrarily chosen 2°C, and professes it still feasible to keep warming below 1.5°C.

Pretenses of politicians aside, we've already locked in an increase of 1.5 to 2°C even if we stop burning all fossil fuels tomorrow:

- The earth has already warmed $1^{\circ}C.$
- Fossil fuel combustion produces cooling aerosols. When the combustion stops (as it must to limit damage), the earth will eventually warm an additional .5°C-1.1°C, best estimate .7°C.
- Positive feedback loops of melting permafrost, decreased ice and snow cover, phytoplankton collapse, and loss of vegetation to drought and fire will add to warming.

Conditions, already dangerous for hundreds of millions of people, will inevitably worsen. We simply can't afford to burn any more carbon. We have a practical and moral imperative to stop fossil fuels now.

Fossil fuel pollution and climate disruption kill humans: more than 6 million annually, and climbing rapidly.

Industral pollution—air, chemical, soil, and occupational—killed 5.5 million humans in 2015, a rate increasing an average 50,000 per year since 1990. (*Lancet* Commission on pollution and health, figure 7)

As of 2012, climate disruption killed 400,000 humans each year. Projections are for nearly 700,000 deaths per year by 2030. (DARA Climate Vulnerability

sharing their deliberations only with fully trusted friends and family, and anonymizing related web browsing and posting.

Activists, especially those considering underground action, should *use digital security tools* for anonymity and encryption of communication.

Even if you don't have a pressing need to protect your online activity, normalizing privacy assists activists who do. If only those with "something to hide" secure their data, their activity will draw suspicion. As more people use digital security tools, underground activists will better blend into the crowd.

Prism Break provides a comprehensive list of available tools, and Freedom of the Press Foundation has links to many guides. Important concepts are:

- anonymity vs pseudo anonymity vs privacy
- end to end encryption (E2EE) vs client to server encryption

Free tools with which to start:

- Tor browser: anonymous web browsing
- DuckDuckGo: The search engine that doesn't track you
- Signal: E2EE of texts (easy drop-in replacement) and voice calls
- Riot: E2EE of instant messaging
- Wire: E2EE of instant messaging, voice calls, conference calls, and video
 Enigmail with Thunderbird or Mailyelene or CPC4USB or ProtonMail, E2E
- Enigmail with Thunderbird or Mailvelope or GPG4USB or ProtonMail: E2EE of email with different pros and cons for each tool

Security culture is more important than any technical tools. All activists should learn these simple yet powerful guidelines.

The first line of defense is the firewall between aboveground and underground activists and groups. Law enforcement routinely investigates and surveils aboveground protesters and their associates. Underground activists must maintain distance from the aboveground to stay off law enforcement radar.

Share information on a "need to know" basis. Only those directly involved should know about illegal activities or the people committing them. Others should neither ask, talk, nor speculate about illegal activity or underground individuals and groups. Activist cultures should ingrain a code of silence.

Whether you're aboveground, belowground, or completely uninvolved in the movement, never speak to law enforcement agents about investigations. Know your rights, politely say you don't want to talk with them, then end the conversation.

Carelessness is dangerous to activists, but so is paranoia. Establish behavioral norms within your group, and procedures for dealing with disruptive transgressions including sexism, racism, abuse, creation of conflict and division, and violations of firewall or "need to know" boundaries. It doesn't matter whether or not someone is an infiltrator; the group must simply address and end problematic behavior.

Those taking underground action must intensively study operational security, and carefully design and implement countermeasures to expected adversaries.

If you can serve on the front lines, the movement needs you.

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19/20 - Stop Fossil Fuels

Monitor, 2nd ed)

critical condition. tossil tuels. Forests, prairies, oceans, and the very web of life are in We are in the midst of global ecological collapse, caused and enabled by

transportation to use to polluting aftereffects. Fossil fuels destroy landbases at every stage: from extraction to processing to

year in the US alone. Pipelines routinely spill toxic substances, at over 300 "significant" accidents per project on earth. Refineries and gas processing plants pollute their environs. habitat, and the hell on earth that is the Alberta tar sands—the largest industrial buried in the exploded remnants of mountain tops, millions of wells fragmenting Massive equipment rips open the ground, leaving behind Appalachian streams

over-exploited or already crashed. up 80% of annual fish catch, resulting in 84% of ocean fisheries fully exploited, festering tailings ponds visible from outer space. Industrial operations vacuum replenishment rate. Massive open-pit and strip mines create gaping wounds and contributes to massive algae blooms, and erodes topsoil at 10-100 times the Industrial farming converts complex habitats to monocultures for humans, growth forest, with another acre of natural forest lost every two seconds. make possible. The world has already lost approximately 80% of primary old Worse than the direct environmental harm is the industrial activity fossil fuels

.elsui fissoi qots tsum to an already impoverished 1970 baseline. To stop further loss of the wild, we populations, and probably comparable numbers of insects and plants, compared biological annihilation. By 2014, Earth had lost on average 60% of vertebrate These fossil fueled pressures have brought on a sixth mass extinction and

.9vol uoy 92011 bn9f9b ot 219ul lizzot qotz tzum ecological community, an endangered species, or future generations, we industrial economy push us 10 steps back. Whether your passion is an Our work is Sisyphean. For each step forward, climate disruption and the

place and species we have been able to protect. community across the world is in decline, and climate disruption threatens each losing the overall war. Despite decades of environmentalism, every ecological creatures we love. We win important battles here and there, but we're badly Grassroots environmentalists work hard and fight fiercely for the places and

pipeline in place, there's no undoing the damage. until they get what they want. Once the forest is cut, the land bulldozed, the one year, but the profiters come back the next year, and the next, and the next, permanent. We may stave off one clearcut or development project or pipeline We're losing because we fight defensive battles, with wins temporary but losses

planned or under construction at the beginning of 2016. US completed 17,000 miles of pipelines from 2009 to 2014, with another 23,000 Pipelines, a combined 2000 miles of planned pipeline expansion. Meanwhile, the grassroots efforts won temporary delays of the Keystone XL and Dakota Access to let many others proceed unopposed. For example, in the US, massive There are relatively few of us, so for every one project we try to block, we have

Fossil fuels are at the root of the ongoing threats to the places and people we

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underground? Underground activists can and should protect themselves

The company quickly fingered the two women who eventually claimed

or even associate with aboveground members.

and distributing printed material.

has heard of it. It's up to us to change that.

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consider whether they may ever want to work underground. disobedience, or joining a radical aboveground group, activists should carefully increase the risk. Before publicly supporting ecosabotage, carrying out civil Aboveground involvement doesn't rule out future underground work, but does

Your first choice is your most important: will you work aboveground or

responsibility, suspects due to their history of civil disobedience against DAPL

dozens of known protestors following sabotage of the Dakota Access Pipeline.

underground actions. For example, private security firm TigerSwan surveilled

radar of law enforcement, they can't safely participate in aboveground activism,

Underground activists operate illegally, keeping a low profile. To stay off the openly and publicly, often drawing maximum attention to their actions.

Aboveground activists use legal tactics, plus civil disobedience. They work

those underground. The movement needs people on both paths, but

There must be a strict frewall between those working aboveground and

Please help Stop Fossil Fuels get this analysis out by sharing our site with others

to attrition, leverage their visibility to encourage escalation towards cascading

releases and public statements. Though aboveground actions are likely limited

activists on the front lines and with visitors, and broadcast the strategy in press

anywhere else relevant. If you engage in or support civil disobedience, talk with

Whenever appropriate, share this analysis in group or one on one conversations,

simple reason that it works. But nearly no one in the environmental movement

The strategy of cascading failure is used by militaries around the world for the

of activists and citizens must spread knowledge of effective strategy and Mainstream media will never promote stopping fossil fuels. A grassroots

nets and defense funds for those caught and imprisoned by the legal system. underground activists, you can nurture even more effective work. Build safety

worthy campaigns of civil disobedience, or if you know and can safely give to

loyalty, but directly helps their work continue. If you have the means, contribute

supplies, food, money, training, transportation, or housing. Anyone can find

Material support not only strengthens resisters' resolve by demonstrating

social media, letters to the editor, blog posts, comments on websites, and

they'll have very different roles and organizing methods.

associating with such activists, makes one a target for investigations into Publicly exposing one's convictions and willingness to break the law, or

or obvious path. While considering their choice, they should keep a low profile, careful decision, not jumping into aboveground work simply because it's an easy tpose aboveground, activists should spend as much time as they need to make a Zince those working belowground can use much more effective tactics than can

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trom the start.

and other hazards.

Get Involved

love. The onslaughts won't stop until we shift from reactionary defensive actions with temporary victories at best, to carefully chosen offensive battles targeting the root problem.

The environmental movement has worked for decades towards mass awakening, yet nearly everything keeps getting worse. *We can't rely on hope* that this pattern will suddenly change.

The movement, hoping to trigger mass adoption of a sane and sustainable way of living, has tried hard to convince individuals to change their values and lifestyles. Though some people have responded to calls for change, they remain a tiny minority. All measures of global sustainability are going in the wrong direction. Decades of environmentalism haven't even slowed the growth of population, consumption, mining, waste, and atmospheric CO₂ concentration; all are increasing relentlessly.

Rationally, we know it's a mistake to burn the carbon sequestered over millions of years. But it's natural for individuals and for communities, whether human or forest or prairie, to fully utilize available energy and food. Fossil fuels are incredibly dense stores of energy, so it's unsurprising that we've developed a full-on addiction. Although a few individuals may choose to forego the easy energy, the majority will happily burn as much as they can, as long as they can.

There's no evidence of a mass shift in consciousness, and with the world at stake, we can't afford to pretend otherwise. The only way industrial society will stop burning fossil fuels is if it can no longer get its hands on them.

Renewable energy is growing at unprecedented rates, but isn't slowing the much faster growth of fossil fuel burn. *Green tech is not a solution*.

Renewables are only a solution if they actually replace fossil fuels, but as Barry Saxifrage elegantly illustrates, "the new business-asusual is one in which we keep expanding both renewables and fossil fuels at the same time." Industrial society is responding to ecological and climate crises not as a rational actor in control over its decisions, but instead as an energy addict using as much as it can get, whether clean or dirty.

From 2009 to 2016, total world energy consumption increased 15%. New renewables supplied less than 30% of the growth in demand, with the great majority met by fossil fuels. And if you don't consider



Orange: increase in global energy consumption since 2009. Green: increase in hydropower, wind, solar, biofuels, geothermal & biomass.

hydroelectric dams which kill rivers and displace humans to be "renewable," then more than 4/5 of the new demand was met by dirty energy.

We can't wait for "enough" renewables to be in place before transitioning; we have neither the time to spare, nor assurance that more renewables will even decrease fossil fuel use. Regardless of how many solar panels and wind turbines

Get involved

We need people stopping fossil fuels. Broadly, this requires front line activists, loyalty and material support for those front liners, and dissemination of strategy and tactics.

Front line activists directly stop fossil fuels through civil disobedience, ecosabotage, or militant attacks. We need as many people doing this work as we can get.

If you're in a position to take direct action, the planet desperately needs you. It especially needs people thinking and acting towards cascading failure—people capable of going underground to carry out ecosabotage or militant actions.

If you can't engage in underground attacks, civil disobedience can still be valuable. Though an approach of attrition often limits aboveground campaigns, hitting strategic bottlenecks using smart tactics can win real victories. Perhaps more importantly, aboveground actions provide networking and media opportunities to share the strategy of cascading failure with fellow activists and the public.

Most of us can't be on the front lines for perfectly valid reasons. But *we* can all provide loyalty and material support to those doing the necessary work.

At a bare minimum, adopt a motto of "See something, say nothing," a code of silence around ecosabotage and militancy. Encourage others to do the same.

More proactively, give front line activists, especially those working in underground seclusion, the moral courage that comes from community validation. Write and speak out in support of resisters and their actions, especially ecosabotage and militancy. Write letters in solidarity to those imprisoned for taking effective action. Expand the range of tactics considered possible and respectable.

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Criticality: How important is the element to the system?

 ${f A}$ ccessibility: How easy is it to get to the element?

Sther damage to the element? Kecuperability: How quickly and easily can the system resume functionality

Snoqsew Vulnerability: How easy is it to damage the element with available tactics and

Lifect: What unwanted side effects may result?

such as a dark rainy night? ${f R}$ ecognizability: How easy is it to identify the target under adverse conditions,

material impact of successful action. consider not just the ease of accessing and damaging targets, but also the matrix to potential targets with the goal of triggering cascading failure. They'll environmental activists, serious about being effective, will apply the CARVER vulnerable, but neither critical nor difficult to replace. The next wave of environmental activists to date have chosen targets which are accessible and Though their commitment and courage aren't in doubt, most underground

.97ulist infrastructure. We must use hit and run tactics to induce cascading Governments and corporations won't permit us to openly disrupt critical

our own asymmetric struggle: of tactics and operations. Those of guerrilla combat are particularly relevant to From existing military doctrine, we can learn not only principles of strategy, but

- term, local superiority in numbers. head-to-head, so must coordinate the people we do have to achieve short armies of public and private security forces. We can't possibly compete • Concentration of force: Covernments and corporations wield entire
- contingencies. thorough and flexible enough to include alternative responses to orders simple, to reduce misunderstanding and confusion. Make them • Planning: Plan each operation carefully and in detail. Keep plans and
- right up to the time of action. • Intelligence: Gather accurate and up-to-date intelligence on the target,
- outside the box to achieve the shut downs they won't allow. without fundamentally disrupting business as usual. We must think and act Surprise: The system only sanctions tactics which it can co-opt or absorb
- their purpose quickly. police or private security forces show up, surprise actions must achieve • Seek quick decisions: Since we lose local superiority in numbers once

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population at large to avoid reprisal. • Dispersal: After an action, participants should melt back into the

.9Idissoq are installed, we must proactively stop the burning of fossil fuels as quickly as

bang for the buck increases incentive to use resources. Paradoxically, energy efficiency increases fossil fuel use. Getting more

surfaces. Not only does this rebound billboards, and entire building technology colonizes clothing, unlimited wants, that same lighting pecause consumer society has electricity with an efficient LED. But a room each night, will use less with a specific need, such as lighting reduces fossil fuel use. A household is only a solution if it actually As with green tech, energy efficiency

the technologies and tricks we

pollution soars.

all such efficiency measures. Despite Unintended consequences undermine

effect negate conservation, but light



York illustrates with a simple thought experiment: end our use of fossil fuels. Worse, it may actually amplify their harms, as Richard energy consumption increased exponentially. Clearly, efficiency on its own won't developed in the last century, global

they use 50 gallons to go a single mile. Which world uses more energy? Imagine two worlds. In one, cars get 50 miles per gallon; in the other,

we see) to a sprawling network of energy hungry machines. provision of their needs. Paradoxically, the world with efficient cars gives rise (as highways. They would instead build societies optimized for walking and local malls stocked via global supply chains, all connected by cars, roads, and motive nor the means to build houses distant from work and from shopping In the world with highly inefficient vehicles, humans would have neither the

in transition. the use of fossil fuels must be primary; efficiency will then play an important role "more" while still using every bit of obtainable energy is not a solution. Ending We're offered efficiency as a way to sidestep fundamental change, but doing

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.lliw reversion that they ever will. Governments have yet to take meaningful action to reduce fossil fuel



emissions. Not only did they fail to haven't actually cut carbon agreements. Yet somehow, they proudly announcing symbolic encouraging more research, and official names, holding meetings, have excelled at forming bodies with climate disruption, governments warnings about the dangers of Through decades of scientific

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adopt the precautionary principle as Governmental inaction as carbon scientists debated just how big a mounts up problem global warming could be, but they didn't take meaningful action even after scientific consensus made clear the looming catastrophe.

The most recent accomplishment, the 2015 Paris Agreement, is non-binding, with hypothetical emissions reductions far in the future. Like under the Copenhagen Accord before it, governments have no legal mandate to do anything substantive. Meanwhile, investors are pouring money into a 30% global expansion of coal power capacity; the smart money doesn't believe governments will put a halt to burning coal any time soon.

We all know that governments take better care of corporations than they do of people. Fossil fuels are the life blood of the industrial economy. We'd be fools to trust that politicians will suddenly decide to do the right thing after all this time. We must shut down fossil fuels ourselves.

Fossil fuels are finite resources, so their use will inevitably decline. But peak oil won't reduce carbon emissions fast enough.

We can't maintain the ever increasing extraction of oil, natural gas, and coal on which our growth economy depends. Once peak oil forces a reduction in energy use, we'll see an escalated replay of the 2008 global financial crisis—this time permanent—and a concomitant decrease in fossil fuel combustion.



Unfortunately, although peak oil will eventually throttle fossil fuel use and collapse industrial activity, it could still be a few years off. In the meantime, every day that we burn fossil fuels, we force the climate deeper into chaos, kill more than 16,000 humans, and drive entire species extinct. We have a responsibility to proactively stop fossil fuels; we can't sit back and wait for the system to grind to a halt on its own.

Fossil fuels bring comforts and elegancies to a minority, but at great cost to everyone. *Life will be better in a post carbon world*.

"Collapse" sounds scary, but it simply means rapid simplification of a society, and will actually increase quality of life in the long term. Such simplification is unavoidable; our way of life is unsustainable, its complexity dependent on ever increasing supplies of dense energy. Responding to the myriad problems of globalization, bureaucracy, sprawling infrastructure, and empire, many people are proactively working toward collapse in their efforts to localize food, water, The electric grid underpins every stage of fossil fuel use, from extraction to transportation to processing to combustion. Targeted attacks on the grid could idle coal mining draglines, disable pumping and compressor stations on oil and gas pipelines, halt coal and oil trains, shutter refineries and coal preparation plants, or disrupt project administration.

Since electricity can't easily be stored, grid operators must match supply to demand, second by second. So if, for example, damage to an electric substation were to shut down an industrial park, a power plant somewhere would have to reduce its output or shut down altogether. This would be a win-win for the planet, reducing both industrial activity and carbon emissions.

The grid is exposed. Globally, thousands of miles of high voltage transmission lines traverse remote areas, and hundreds of thousands of isolated substations dot landscapes. Saboteurs can disable lines and substations with attacks as simple as shooting with a hunting rifle, as demonstrated by experiments at Operation Circuit Breaker and by the 2013 attack on the Metcalf, California substation. Powerline towers are bombed or toppled, and substations are hit by arsons and cyberattacks.

Though the grid is designed to withstand the loss of one major node, sometimes even two, further losses overload remaining equipment. In a textbook example of cascading failure, more and more nodes shut down automatically to avoid damage.

Recovery from serious damage is difficult. Replacing high voltage transformers can take up to 18 months, as many are custom manufactured for a specific site and spares are rarely stocked. Transportation of the huge, bulky units is difficult and slow, requiring special equipment and carefully planned routes vulnerable to further disruption.

Careful target selection of specific infrastructure is necessary for triggering cascading failures.

A group may analyze and select targets at multiple scales before taking action. The group may decide to shut down a particular coal mining site, which might lead them to shut down the site's electric supply. They may then identify a particular substation to take offline, and may ultimately plan their action around vulnerable transformers in the substation.

At each level of analysis, activists identify bottlenecks, elements without which the system can't function. Obvious bottlenecks are single points of failure, such as the electric supply in this example. Where elements are networked with redundant nodes, activists look for nodes with the highest volume and most connections.

United States special operations forces developed the CARVER matrix for target selection:



technological gadgets is difficult to resist until they're not there. freedom to explore alternative paths. The lure of shiny trinkets and pressures keep most people busy as cogs in the machine, constricting their States actively suppress efforts which threaten to redistribute power. Economic gain much traction until the centralized systems are starved of fossil fuels. It's valuable to build the foundations for local structures now, but they won't

a better future: innovations, birthing localized solutions. As Tom Murphy writes, we'll move into fossil fuels slow to a trickle, necessity will marry existing wisdom to new But the knowledge of how to live sustainably is widely available. As flows of

instruments; rain catchment; canning; craftsmanship; repair; durable goods. picycles; train rides; pies cooling on the sill; music; singing and playing musical sunrise/sunset; local governance; mom & pop stores; crafts; goats and chickens; breezes; seasonal adjustment; blankets; wool socks; sweaters; connection to community; fishing; whittling; lemonade; sitting on the front porch; cross-Expect More: Reading; story-telling; gardening; connection with nature;

effluent; credit card debt. consumerism; faddish gizmos; cheap plastic crap; outsourcing; industrial charges; traffic jams; identity theft; freeway noise; advertisements; banks; capital gains; disposable junk; junk mail; species extinction; minibar Mart; fast food; strip malls; four-car families; climate disruption; dominance of Expect Less: Waiting for airplanes; commuting; abstract/meaningless jobs; Wal-

transition. crash is inevitable. The sooner we put on the brakes, the gentler the impact on global ecology decreases world carrying capacity every day. A Human population is already in overshoot, and growing. Meanwhile, our

match it, humans are behaving, naturally, like every other species, reproducing contemplating a sustainable global carrying capacity and charting a path to larger slices of the pie which they hope will keep growing. Far from each family sustainable level, the vast majority of humans, understandably, compete for from competing to most quickly reduce their annual income to a globally ecological and human communities. But that's not the path we're choosing. Far consumption and population—a managed crash—might just stave off disaster for the world came to our senses: aggressive, proactive, unanimous reduction of We're carrying out an experiment in madness. It would be great if everyone in

to match their current food supply.

we'll overshoot, thus the less wrenching will be our adjustment. collapse populations of fish and wildlife. The sooner we stop fossil fuels, the less and logging erode topsoil, destabilize the climate, toxify the environment, and here. Industrial development, manufacturing, transportation, farming, fishing, time, fossil fuels undermine the planet's ability to support even those already Every day, a net 220,000 new humans join the global population. At the same

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bpd since 2006 Militant resistance cut Nigerian crude extraction by a sustained 200,008

working for the greater good. Though of course we want to minimize the use of violence, militant resisters are per day of oil extraction, far outweighing the number of lives they've taken. saved 500 to 1900 lives per month by shutting down 200,000-800,000 barrels and corporate militaries. However, rough calculations suggest the militants have The Niger Delta militants have killed oil workers and members of government

understand industrial systems and their vulnerabilities. our limited resources to target critical infrastructure. We must Stopping fossil fuels doesn't require violence. It does require that we use

which can be exploited. telecommunications, and just-in-time supply chains. All have vulnerabilities and ports. Less visible are systems of administration, finance, include wells, pipelines, rail lines, roads, storage tanks, refineries, power plants, transportation, processing, distribution, and combustion. Obvious elements Critical infrastructure is that on which fossil fuels rely for extraction,

accessible to anyone. Some attacks require extensive knowledge and skills, but many are simple and can reach more targets, with more damaging and longer lasting disruptions. lines, can impact a subset of critical infrastructure. Ecosabotage and militancy Civil disobedience, such as blockades of pipeline construction or of active rail

.Jnamqiupa transmitters. Cyberattackers crash corporate computers and industrial optic communication cables, topple cell and radio towers, and torch pouring concrete or felling trees onto tracks. Underground activists cut fiber by damaging rails, connecting them with jumper cables, sabotaging cables, and drunk) shoot holes in pipelines with rifles. Monkeywrenchers disrupt rail traffic Militants frequently bomb wells and pipelines. Saboteurs (and the just plain

The electric grid is uniquely vulnerable to cascading failure. It may be

the most critical infrastructure on which fossil fuels depend.

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How to stop fossil fuels



Valve Turners shutting down a pipeline

Industrial society has had decades to transition voluntarily from fossil fuels and their known hazards, but is too addicted to give them up. It's time for an intervention: we must physically shut off the flows ourselves.

The consequences for humans and non humans are already dire, and getting worse. As a society, we've known this for a long time, but haven't shown an ability to change.



The only year in which the world decreased fossil fuel consumption was 2009, the result of global recession. Unless forced into decline by circumstances out of its control, the economy burns more and more every year. The only timely solution is to force decreases.

Giving up faith in indirect, sanctioned, false solutions—voluntary mass transformation, governmental action, green tech, energy efficiency—frees our

actions, hoping to win hearts and minds for the cause. But we'll never sway the general public to support the necessary 90% cut in fossil fuel use, so we shouldn't temper effective action for their sake. Actionists who work underground, striking surreptitiously then melting into the night without reprisal, can fully apply the principles of strategy summarized above.

Unfortunately, most acts of ecosabotage have been limited to attrition, with targets chosen solely to stop the damage they directly cause, or even for symbolic value. When infrastructure is attacked, it's only in one place at a time, and the disruption is usually quickly repaired.

To shift to a strategy of cascading failure, ecosaboteurs might learn from militant resisters to learn how they target entire systems of infrastructure.



Sabotage of DAPL pipeline construction

In the Niger Delta, *militant resistance has shuttered 10-40% of the country's oil extraction* since 2006, an impact unmatched in the history of the environmental movement. The militants use violence, but have saved many more lives than they've taken.

Militant resistance provides, by far, the most successful examples of inducing cascading failure and stopping fossil fuels. The best comes from the oil drenched Niger Delta, where residents suffer the worst effects of pollution and spills: contaminated air, soil and water make forests, fields, mangroves and rivers unable to support human or nonhuman life. An estimated 11,000 infants die each year due to on-shore oil spills. Despite immense riches made from oil extraction, the general population doesn't benefit—a large majority of Nigerians live in poverty, with life expectancy nearly the lowest in the world.

Decades of nonviolent tactics failed to achieve justice, culminating instead in the Nigerian military regime and Royal Dutch Shell conspiring to execute nine movement leaders in 1995. The resistance movement escalated its tactics in response, by 2006 regularly sabotaging and bombing oil infrastructure and government buildings, kidnapping foreign oil workers for ransom, engaging in guerrilla warfare, and launching surprise attacks using speed boats. Multiple groups have been systematically and accurately selecting targets to completely shut down oil extraction and delay or outright halt repairs.

Cascading Failure	Attrition	Characteristic
Нідһег	Lower	Severity of consequences if caught
Disproportionately disrupted	damage Reroutes around	System response

beyond the merely symbolic can win some victories of attrition. achieve cascading failure, sustained blockades with enough people going t'nes yedience has some limited applications. Though they can't

relatively cleanly. failure. At best, they'll tolerate attrition until they can disperse the blockade never allow protestors to disrupt business as usual to the point of cascading and filing lawsuits. But governments, corporations, and the general public will Civil disobedience¹ escalates legal opposition such as petitioning, protesting,

unheard of. Access Pipelines became well known, but one hundred other projects are nearly attention to go around. In the US for example, the Keystone XL and Dakota coverage and public sympathy can raise volunteers, but there's only so much of people must participate both on the frontlines and in support roles. Media campaigns must maintain disruptions for days, weeks, or longer. Large numbers glitches. For civil disobedience to have material impact, not just symbolic, system has enough redundancy and buffering to be unaffected by temporary One-off direct actions have little if any effect on fossil fuel combustion; the

45,000 barrels per day. Nigeria, where for months hundreds of people shut down oil fields producing where the local community perceives more harm than benefit, as in Beleme, aside. Occupations of operational infrastructure can be successful in cases and support, has made it much more difficult for the government to sweep them Their legal basis for opposition, combined with widespread grassroots sympathy disobedience, blocking the bottlenecked path of multiple pipelines for years. The Unist'ot'en Camp in British Columbia demonstrates successful civil

activists. contemplate the necessary frewall between aboveground and underground want to work underground towards cascading failure. Carefully read about and Before engaging in civil disobedience, consider whether you may in the future

strategies, we use "civil disobedience." ↔ "nonviolent direct action" lumps together tactics suitable for distinct also includes ecosabotage with its potential to go beyond attrition. Since 1. The term "nonviolent direct action," though similar to "civil disobedience,"

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largely unprotected infrastructure. cascading failure. It leverages limited resources against sprawling, Ecosabotage allows activists to take the offensive with a strategy of

proudly accept the consequences of their social change movements. Law breakers Civil disobedience has a noble history in

strategy and tactics to physically stop fossil fuels. imagination. Our work becomes a relatively straightforward exploration of

resources. entirely inappropriate against a system with far greater numbers and The environmental movement has been pursuing a strategy of attrition

the rate at which they we're merely slowing industrialism; at best buipuedxə suoitutitsni adt don't actually weaken occasional victories we're losing. Our project at a time. But oppose one destructive react defensively and eease to function. We degradation until they environmental the forces of goal of wearing down slow struggle, with the Attrition is a protracted

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Asymmetric forces, unsuitable for attrition

attrition, we don't have the time. Catastrophe is imminent. Even if we had the people power to wage a war of acceptable, or sustainable about today's rising CO_2 and declining biodiversity. gradual losses to acceptable and sustainable levels. But there's nothing gradual, Attrition only works if one grinds down the opponent while limiting one's own oil fields. But even if we achieved that, our strategy would still be a failure. industrial expansion, but to force closure of existing pipelines, power plants, and

To begin winning our campaign of attrition, we'd need not only to block all

and governments can predict our tactics. easily budget to overcome the obstacles we place, especially when corporations trying to make a project uneconomical. But multi-billion dollar investments can from companies, blockade pipelines, and lock down to construction equipment, At a tactical level too, we rely on attrition: we file lawsuits, boycott and divest

movement, we must escalate beyond piecemeal attrition. Our work is the very definition of asymmetric struggle. As individuals and as a

apply what they've learned to our own work. and tactics. Though our goal of stopping fossil fuels is unique, we can Over the centuries, military analysis have derived principles of strategy

- **objective**. Every campaign and action must further the ultimate goal. Direct every operation toward a clearly defined, decisive, and attainable
- •sunsind • Intervene with an economy of effort. Eliminate any unnecessary secondary
- the opponent's terms, go on the offensive. • Seize, retain, and exploit the **initiative**. Rather than reacting defensively on

How We Can

- Use your initiative to choose fights where you can **apply strength to their weakness**. Concentrate your forces on their vulnerabilities.
- **Surprise** your opponent by striking at an unexpected time or place or in an unexpected manner. Surprise is a temporary but powerful force multiplier.
- Strike **multiple targets at once** for maximum impact and to keep your opponent off balance.
- Keep actions of **short duration**, then withdraw. Avoid prolonged engagement from fixed positions.
- Aim for **unity of command** to coordinate all your forces to maximum effect. If this isn't possible, ensure unity of effort by following a shared plan.
- Maintain **security**, never allowing your opponent to acquire an unexpected advantage.
- Gather **intelligence**. Understand your opponent's systems. Know what you're doing and the likely effects.

To stop fossil fuels in this asymmetric struggle, *we must employ a strategy of cascading failure* to disrupt a fragile technological system.

Military historian and strategist Liddell Hart summarizes our work:

"It should be the aim of grand strategy to discover and pierce the Achilles' heel of the opposing government's power to make war."

"A strategist should think in terms of paralyzing, not of killing."

We needn't dismantle every factory, destroy every bulldozer, tear up every highway. We just need to paralyze their infrastructure. The war against the planet, against the global majority of humans, and against future generations runs on fossil fuels. To move beyond a strategy of attrition, we must think in terms of systems, flows, nodes, and bottlenecks. We must understand how oil, coal, and gas are extracted, transported, processed, distributed, and burned; and where we can intervene for maximum impact.

Industrial systems withstand the loss of an element or two without experiencing further damage, and quickly repair problems. But these systems are designed for efficiency, not resiliency. When enough critical pieces break at once, the failures cascade through the system like a series of dominoes, causing more and more elements to fail. Impacts increase exponentially the longer disruptions persist. Under the right circumstances, the whole system grinds to a halt. With follow up actions, it may never restart.



Cascading failure

Attrition vs Cascading Failure

These are general trends; specific campaigns may vary.

Characteristic	Attrition	Cascading Failure	
Target type	New project in the works	Operational infrastructure	
Why target chosen	Immediate damage caused by project	Criticality to the system	
Campaign goal	Stop this project	Stop this piece of infrastructure, plus others dependent on it— trigger domino effect	
Initiative	Defensive	Offensive	
Element of surprise	Minimal	Maximal	
Target's role in system	Any	Bottleneck or interconnected node	
Number of targets attacked	One at a time, isolated	Multiple, attacked simultaneously for synergistic effect	
Targets available	Many and interchangeable	Few and unique	
Tactics	Blockades & occupations	Hit and run	
Goal of actions	Delay project completion. Make project uneconomical.	Damage or destroy infrastructure, and delay or prevent repair. Make operations physically impossible.	
Duration of disruption	Shorter	Longer	
Knowledge of system needed	Limited	Extensive and deep	
Skill, planning, & caution needed	Less	More	
Actions, resources & people needed	Much more	Much less	
Suitability for aboveground actionists	High	Nearly impossible	
Suitability for underground actionists	High	High	
Risk of consequences for actionists	More, if done openly	Less, if done surreptitiously and carefully	