

⋮



Module 6 visual exercise

57 57

[Dan Wilton](#)
[All Sections](#)

The power of pictures

Each week we encourage you to seek out and select a different image describing that week's key topics. Try using the internet to find an existing graphic, map, cartoon, diagram, graph, or photograph that illustrates some element, pattern, or regularity of "energy democracy." Alternatively you can sketch, draw, paint, photograph, collage, or upload an image or short audio podcast from your digital camera, scanner, or phone camera that speaks to that weekly topic.

Take a few minutes beforehand to consider how you think "visually" about the week's issues based on your viewing and reading. In Module 6, we have been talking about questions of renewable energy, community ownership and how that relates to energy democracy.

Your optional exercise is to find or create an image of any one or more of these topics, post it to the CANVAS discussion file marked Visual Exercise. (Note that small files are better). Tell us where you found the image. If you like, add a sentence or two explaining what the image means to you in terms of the course.

Then, explore and comment on your classmates' postings. Done well, the exercise should become a bit like crowd sourcing an idea. Try to comment on a few of the postings by your MOOC-mates (more than "well done" or "nice one"—try to be analytical and share any feelings invoked by the images!).

How to embed an image

[See this FAQ from the Help and FAQ forum](#) for tips on embedding an image into your post.

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[CJ Holden \(https://learn.canvas.net/courses/2527/users/906739\)](https://learn.canvas.net/courses/2527/users/906739)

May 11, 2019



My partner has been working for a year now, in cooperation with the local electric co-op to create a Community Energy project: a 300 megawatt solar array, owned by the community in perpetuity. Sorry, no photo available. Only drawings that don't translate well to this format.

Our state, New Mexico, has great renewable potential. And our legislature just set new standards for conversion to renewable energy: 50% by 2030. This is not aggressive enough, but it is a beginning. There are currently more than 500 large solar array projects under consideration here -- but the total investment costs will be more than \$5 billion to build out all of these projects. The state will not do this, only private investments. Fortunately there is a lot of financial interest in renewable energy right now --- much of it former oil/gas monies.

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Mike Gismondi (<https://learn.canvas.net/courses/2527/users/227458>)

May 13, 2019

I am curious CJ Holden, in their discussions of CE do the local cooperators value social benefits or discuss energy democracy, or have some sort of social accounting in their energy project, or is it primarily a business argument? I am keen to know too about capacity building in the community energy sector? How is this done?

regards

Mikeg

[← Reply](#)



Julie MacArthur (<https://learn.canvas.net/courses/2527/users/438170>)

May 31, 2019

Thanks for your post CJ.

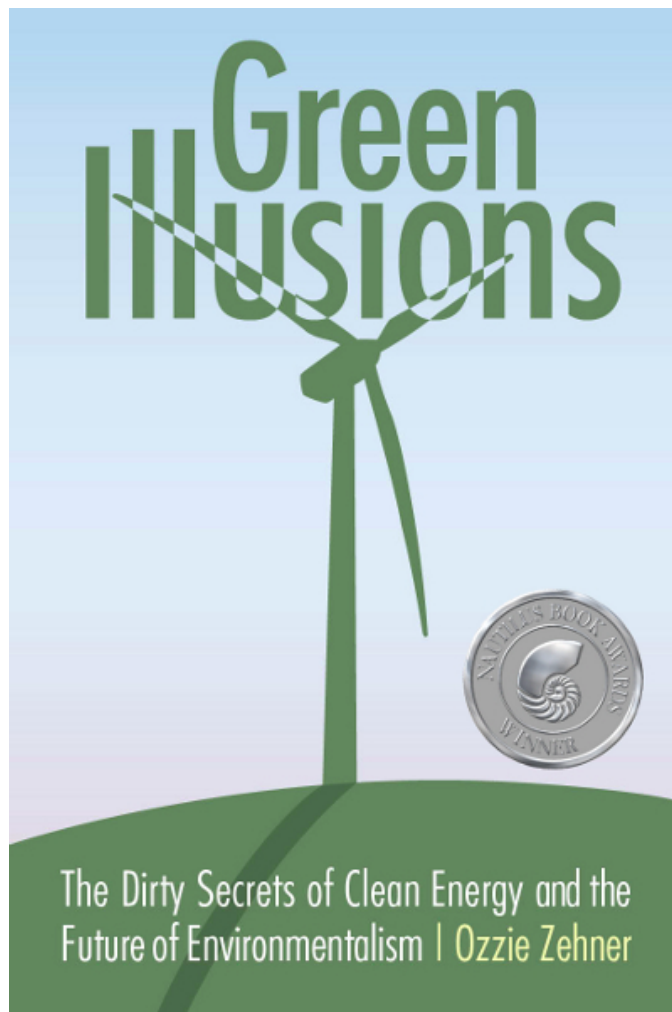
Certainly renewables policy targets open up space for new developments of many sorts, including community owned ones. We've found in other jurisdictions that community projects can face stiff challenges from other actors with deeper pockets in security sites and moving to operational capacity, unless they are partner with cities/towns or other established actors. I'm curious, is this the case in your partner's project?

[← Reply](#)



James (Gien) Wong
(<https://learn.canvas.net/courses/2527/users/905142>)

May 28, 2019



If we are to learn from history, then we must be on guard for progress traps (unintended consequences) before any new technology scales. We don't want a repeat of the fossil fuel progress trap. This precautionary principle applies to geoengineering, but to any green technology as well, as it may not be as green as it first appears. Nature is complex and there are many interdependencies. If we do not pay heed, we can be doing more damage than good.

Deep Green energy researcher Ozzie Zehner published [Green Illusions: The Dirty Secrets of Clean Energy and the Future of Environmentalism](http://www.greenillusions.org/) (<http://www.greenillusions.org/>) in 2012. I have not interrogated Ozzie further and a lot can change in 7 years. However, contacting him just last week, he said that he hasn't changed his perspective. Zehner cites a slew of reasons but just to pick a few (discussed in the video below):

Even if solar PV drops in price radically, the PV component is only 1/5 of the installed cost. The other commodity items like glass and steel all depend on (currently) fossil-fuel powered supply chain. If vehicles go all electric to reduce transport costs, then they must also be powered by clean electricity and not coal plants. Many things in the entire supply chain have to be decarbonized simultaneously to avoid these carbon emissions from sneaking in. Another is that theft of solar panels is on the rise, as is the insurance to replace them. Then there is the question of disposal of precious materials used in small amounts, making recovery difficult at EOL (non-circularity). The solar PV industry is likely now the leading producer of hexafluoroethane, nitrogen trifluoride and

sulfur hexafluoride that are used for cleaning plasma production equipment used in the manufacturing process. The first is 12,000x more potent than CO₂, the second is 17,000x more potent and the third is 25,000x more potent. The first lasts 10,000 years in the atmosphere. Zehner cites research that showed that in 2012, nitrogen trifluoride had been increasing in the atmosphere at 11% per annum. This aspect of mainstream PV production isn't very green for what is touted as green energy. While research is going on for reclaiming materials at EOL such as summarized in this [infographic \(https://www.greenmatch.co.uk/blog/2017/10/the-opportunities-of-solar-panel-recycling\)](https://www.greenmatch.co.uk/blog/2017/10/the-opportunities-of-solar-panel-recycling), there are no plants in place yet to handle the huge expected volumes. If we don't put these supply chains in place, we will exasperate the already problematic consumption-based e-waste problem. Rebound effect (Jevon's paradox) will accompany efficiency gains so that must be mitigated with policies and behavior change. Finally, is it green to chop down forests to make way for more tech. This is a question being asked more and more such as [here \(https://www.ecori.org/smart-growth/2018/3/15/a-contentious-battle-green-energy-vs-green-space\)](https://www.ecori.org/smart-growth/2018/3/15/a-contentious-battle-green-energy-vs-green-space).

Zehner concludes his book by saying "Ultimately, clean energy is less energy." Degrowth is a very important subject to discuss concerning an alternative strategy to completely replace fossil fuel energy. Ozzie's book raises important questions about whether low energy density renewables can replace all fossil fuel energy production. Even if is physically possible, would the economic, ecological and embedded (fossil fuel) energy costs make it even feasible to attempt to produce all the support infrastructure required by a green growth agenda. Or would it blow our carbon budget? The main gist of this research is that it is important to apply a holistic analysis that includes economics, waste disposal, resource usage, land use and embedded fossil fuel energy required to develop the clean energy infrastructure to replace dirty energy infrastructure. At the two poles of the energy transition are green growth and rapid energy descent. Where does the actual solution lay to stay within planetary boundaries?

Prof. Kevin Anderson, Tyndall Climate Change Research: Ostrich or the Phoenix
watch the graph at 20 min to 21 min. This is the key graph that shows that in the short term, only rapid demand side reduction is feasible to avoid missing the emission peaks in a few years. If we miss peaking, we will have an almost impossible time to avoid 3 deg or above global average temperatures. Notwithstanding all the unintended consequences pointed out above, supply side change, at the scale imagined, will take years. Without doing this in the next couple of years, we will not avoid a 3 or 4 deg C world. Watch from 21 min. to 27 min. to see some of the lesser known engineering impacts on our global industrialized infrastructure.

<https://www.youtube.com/watch?v=jpbfGaKp4K4> (<https://www.youtube.com/watch?v=jpbfGaKp4K4>)



<https://www.youtube.com/watch?v=jpbfGaKp4K4>

Ozzie's 2012 talk at UBC on some of the research findings from his book:

[Ozzie Zehner - Green Illusions](https://www.youtube.com/watch?v=-OqCMP5nPI&t=3902s) (<https://www.youtube.com/watch?v=-OqCMP5nPI&t=3902s>)



(<https://www.youtube.com/watch?v=-OqCMP5nPI&t=3902s>)

Edited by [James \(Gien\) Wong](https://learn.canvas.net/courses/2527/users/905142) (<https://learn.canvas.net/courses/2527/users/905142>) on May 28 at 4:09pm

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[Julie MacArthur](https://learn.canvas.net/courses/2527/users/438170) (<https://learn.canvas.net/courses/2527/users/438170>)

May 31, 2019

Thanks very much for your contribution James, these are excellent points, and indeed, no energy strategy or infrastructure is materially costless. As you say, more of even 'greener' tech, is not necessarily going to get us where we need to go. That said, in any transition between the current largely fossil fuel driven energy system and the next one, these alternative technologies are very likely to form a significant part. The challenge is, of course, if they're presented as a panacea for environmental degradation writ large (rather than reducing carbon emissions), which they certainly aren't.

← [Reply](#)



[James \(Gien\) Wong](https://learn.canvas.net/courses/2527/users/905142) (<https://learn.canvas.net/courses/2527/users/905142>)

May 31, 2019

Thanks Julie!

I think that ever since Mark Jacobson published his pioneering 100% renewable energy studies and kicked off a debate, the question has not been fully resolved yet. Our colleague Nafeez Ahmed had convened an online symposium on the subject at his Medium page with scientists on both sides weighing in with some excellent articles:

<https://medium.com/insurge-intelligence/postcarbonfuture/home>
(<https://medium.com/insurge-intelligence/postcarbonfuture/home>)

Anticipating these kind of challenges, a group of us wrote a new paper that is currently in pre-press: <https://www.sciencedirect.com/science/article/abs/pii/S0360544219309934> (<https://www.sciencedirect.com/science/article/abs/pii/S0360544219309934>) to try to develop a compass map that can be used to guide the energy transition. Unless large centralized top-down approaches harmonize with bottom-up, decentralized one, there could be risks of inefficiencies and even stranded assets. We examined a number of case studies from BAU large centralized projects to community scale projects. We are looking

forward to applying and refining the compass tool to real world energy projects. We did not look deeply at the degrowth aspect in the paper but will consider it for a future one.

One interesting exercise may be to use this new compass tool and submit these various viewpoints to it, found on Nafeez's website and other research.

Edited by [James \(Gien\) Wong](https://learn.canvas.net/courses/2527/users/905142) on May 31 at 10:19am

← [Reply](#)



[Julie MacArthur](https://learn.canvas.net/courses/2527/users/438170)

May 31, 2019

These look like excellent resources, thanks so much for sharing James, I'll read them with interest!

"Unless large centralized top-down approaches harmonize with bottom-up, decentralized one, there could be risks of inefficiencies and even stranded assets." 100% this. There's a fetishisation of 'new' often that is wasteful in many respects, both in the energy system and the economy more broadly.

One of the other real challenges, as I see it, is translating all this complexity in organisational structures (citizen/public/private/large/small), life cycle emissions, related enviro costs, economic justice, etc in any moderately digestible policy language. As we've seen countless times in recent years, very sensible plans fall apart if we can't communicate them in simple digestible language. Pro status quo forces get an enormous amount of traction with 'it'll cost more/ you'll lose your job'. A focus on new tech fits within the current system enough to allow jobs and growth to be the transition carrot.

Julie

← [Reply](#)



[Murray Hidlebaugh](https://learn.canvas.net/courses/2527/users/895967)

May 31, 2019

Thanks James:

I really appreciate your observations and the videos. I did find it interesting that the concern with growth was mentioned. I agree. However, Prof. Anderson's talk concluded with the need to rapidly expand our production of renewable production equipment.

I agree with his statement that we need to be more creative and we need to have demand side reduction. He also notes it will be uncomfortable. I agree. However, I think we are having a problem imagining an earth with less than 7 billion or more people. Coping is going to become

an new reality that we are going to have to come back to I think.

Hopefully discussions like this course provides will be of some value in preparing.

← [Reply](#)



[James \(Gien\) Wong](#)

<https://learn.canvas.net/courses/2527/users/905142>

Jun 1, 2019

Thanks Murray and Julie,

It's far from clear for me. I'm still muddling through it. I just found some more interesting discussion on the New Left Review. There is a Pro Green New Deal article by Robert Pollin entitled: [De-Growth vs a Green New Deal](https://newleftreview.org/issues/1112/articles/robert-pollin-de-growth-vs-a-green-new-deal) and a rebuttal article by Mark Burton and Peter Sommerville entitled: [Degrowth, a Defence](https://newleftreview.org/issues/1115/articles/mark-burton-peter-somerville-degrowth-a-defence). If you can't access the second article, go to Mark Burton's [Researchgate](https://www.researchgate.net/profile/Mark_Burton6) webpage. He has that plus many more interesting articles relevant to this subject we are discussing here.

I'll probably get in touch with Mark because he also explores a critical field which I think is going to become quite relevant at this time: eco-psychology, eco-sociology and the rapid transition required at this time. Unless we understand the nature of the psychological and sociological connections the the political and economic impasse, I fear we won't make much headway.

← [Reply](#)



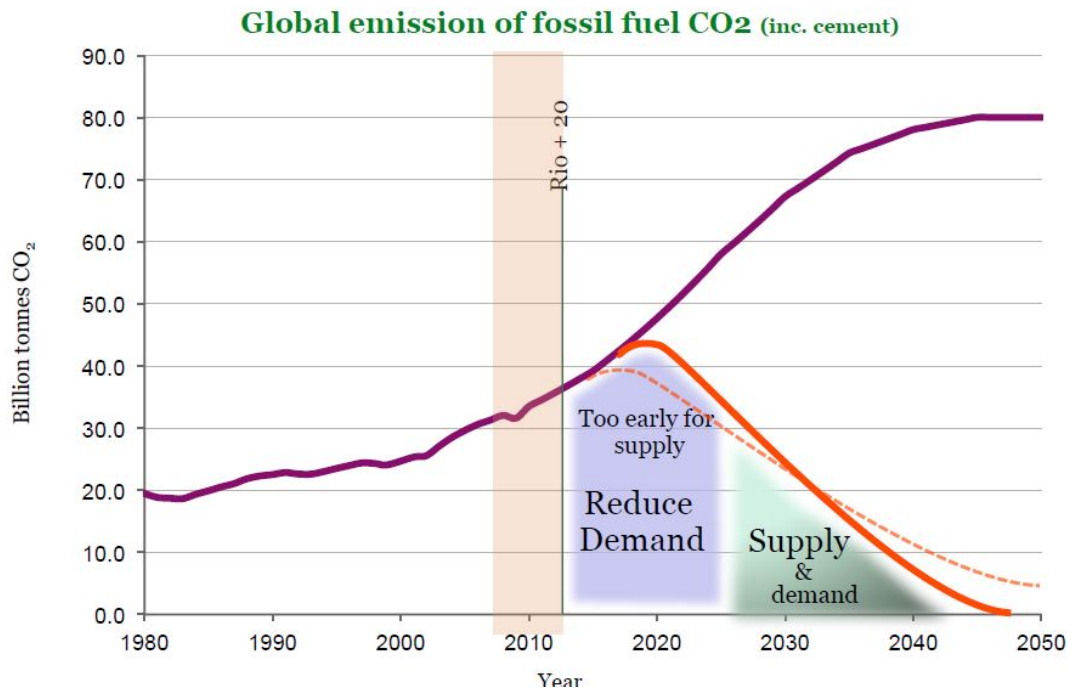
[James \(Gien\) Wong](#)

<https://learn.canvas.net/courses/2527/users/905142>

Jun 1, 2019

Hi Murray,

Kevin Anderson is famous for his "Ostrich or the Phoenix" presentation and he started doing this back as early as 2013. [Here's](https://kevinanderson.info/blog/wp-content/uploads/2013/10/Edinburgh-presentation-Oct-2013.pdf) the Pdf powerpoint of that. The key graph is halfway through the prez. It's the one showing demand side reduction (too early for supply). This is because to replace all that fossil fuel infrastructure with whatever amount of renewables will be feasible will take years, if not decades. Meanwhile, we have to peak emissions. The only way to do that is radical demand side reductions.



← Reply



[Kelleigh Wright \(https://learn.canvas.net/courses/2527/users/897550\)](https://learn.canvas.net/courses/2527/users/897550)

Jun 2, 2019

A hearty thank -you to all who have contributed to this very informative thread. I found it to be full of resources that bring balance to the topic of this module.

← Reply



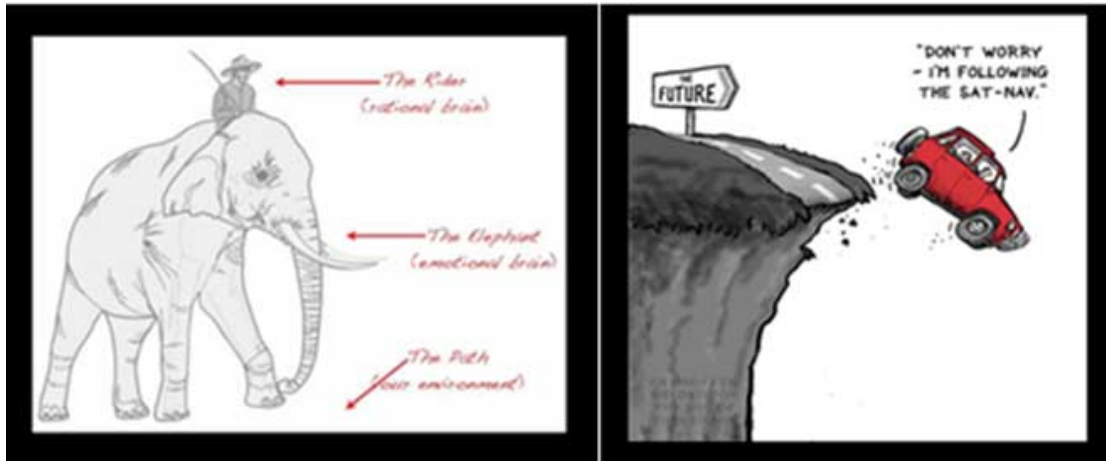
[Murray Hidlebaugh \(https://learn.canvas.net/courses/2527/users/895967\)](https://learn.canvas.net/courses/2527/users/895967)

May 31, 2019

What is Progress? The Path Chosen?

A Large Problem (Environment is key)

Myth of the Technological Fix



I think this module discusses the most important challenge we have facing us. My visual reflects my thoughts that the resource material, in a general way, explored two types of responses to getting off fossil fuel.

The rider and elephant is intended to represent the actions of those who see this as a slow and difficult process. The rider (rational) is trying to direct the elephant (emotional) down a path (the environment) that is becoming increasingly more difficult to see and to follow. The rider represents the small group who are trying to provide leadership. The elephant represents the majority of the population who are concerned about what is happening but are not sure what the problem is or what to do, if anything but plod on. The path leads to the preferred action to protect the environment. I see that as working with the "elephant" on community-based renewable energy projects to replace fossil fuels that gives the community members a feeling of involvement in their destiny.

The second picture represents how I visualize those who promote advanced technology, smart grids, computers, batteries and so forth that are promoted as an easy way to solve the problem of creating a renewable system that will replace fossil fuel.

I think the community based approach is the better place to start.

← Reply



[James \(Gien\) Wong](https://learn.canvas.net/courses/2527/users/905142)
<https://learn.canvas.net/courses/2527/users/905142>

Jun 1, 2019



I think that your images illustrate the two schools of thought out there. First the big corporations working on large utility-scale solar and wind farms, Tesla, etc. Second is community scale projects, like those that started the energy revolution in Germany. Our [paper \(https://www.sciencedirect.com/science/article/abs/pii/S0360544219309934\)](https://www.sciencedirect.com/science/article/abs/pii/S0360544219309934) is an attempt to find a way to harmonize these two approaches, top down and bottom up. It's possible that without bringing both groups of actors to the table, we could have efficiency losses at best and stranded assets at worst. The top and bottom really need to talk and coordinate!

[← Reply](#)



[Murray Hidlebaugh](#)

<https://learn.canvas.net/courses/2527/users/895967>

Jun 2, 2019

Hello James

I am interested in reading your research. I have seen little evidence that corporate top-down support is little more than take-over by stealth. Ruth Sandwell's book 2016 "Powering Up Canada-from 1600" is rather enlightening. It shows how the private sector realized they could make a lot of money if they could convince citizens to give up their right to energy- a common good and turn it over to the private sector. This is the essence of enclosure of the commons. And they have been really successful, including building in government regulations that are to their benefit. Perkins book "Confessions of an Economic Hit -Man" also is informative with regard to CRS, I think. Ray Anderson, Interface founder, indicated that his company's efforts to go fossil fuel free would probably not have been possible if he was publicly traded. (Dodge versus Ford 1919)

In western Canada we have corporate promotion of "sustainable growth", "clean coal technology", SMRs and fusion etc. about to solve our problems. To me these are words and phrases that distract people from the seriousness of the situation we are in. Kevin Taft's book "Deep State" continues from Nancy McLean's "Democracy in Chains" that shows how the oil industry is dominating both the governments and the universities in a very systematic way. We are in the middle of this in Saskatchewan and Alberta. The majority of our citizens are either in deep denial or hope that technology will come to the rescue. They hold that the corporate sector will come to the rescue. I see no evidence that that has ever happened and suggest that past behaviour is a foreseeable indicator of future behavior.

I look forward to seeing what can be done and what debate your research fosters. At least there is some conversation now that didn't exist when "Limits to Growth" was published in 1972. That alone gives me some hope. And I do think there is a way with bottom-up citizen involvement at the community level with top-down support from government who are prepared to rescind the investor -state clause in the current treaties. I think we need transformative change not just incremental change.

[← Reply](#)



[James \(Gien\) Wong](#)

<https://learn.canvas.net/courses/2527/users/905142>

Jun 2, 2019



Hi Murray,

I agree. Let me check with the lead author of the paper. The paper was just successfully submitted last week so I have to see what the protocol is for sharing it. I don't even know where I can get a copy myself yet! :D

Analyzing the case studies we took, including the baseline study of large centralized energy company, we did come to conclusions aligned with your statements above about the enclosure by large corporations. Enclosure was one of the dimensions we used for the mapping. Thanks for the Sandwell reference! I'll look it up. I interviewed John Perkins a few years ago about his famous book that you mentioned.

We are going to try to get an online no-fly global debate on this subject going next year because I think it's a critical issue for the public to get clarity on.

[Reply](#)



[Murray Hidlebaugh](#)

<https://learn.canvas.net/courses/2527/users/895967>

Jun 8, 2019



If you do get a discussion going I would appreciate a link. It would be interesting to hear what others think about the idea of corporate responsibility. I find my questions aren't just related to the developing countries I have been in but also on our First Nations Reserves in Canada as well.

I think open discussion is important. Just that it is not easy.

Always a relief when a paper is accepted? Provides validation. Hopefully it can be circulated on a public platform.

[Reply](#)



[Julie MacArthur \(https://learn.canvas.net/courses/2527/users/438170\)](https://learn.canvas.net/courses/2527/users/438170)

Jun 5, 2019

Hi Murray,

Thanks for your contribution and I'm glad you're enjoying the module. As you and others have not doubt noted, there's so much material to cover as the climate and energy problematic really runs through so many other critical challenges we're facing. So it is a really complex rabbithole and we can all spend many years exploring key aspects.

That said, I've been thinking quite a bit about the top-down/ bottom-up dichotomy because most of my research focuses on community renewable energy (including community energy reduction/efficiency initiatives). One thing my colleagues and I have found is that collectively owned and governed energy can be both large (and public) OR small, and private for profit can exist on these scales as well (think wealthy landowners vs 'the community' more broadly). From an energy democracy perspective then, being attentive to the potential for democratic innovation from the top is an important piece of this massive challenge. I totally agree that corporate energy generally dominates and pushes the green growth agenda, of course, just that other options are out there for multi scaled transitions.

[← Reply](#)



[Murray Hidlebaugh \(https://learn.canvas.net/courses/2527/users/895967\)](https://learn.canvas.net/courses/2527/users/895967)

Jun 8, 2019

I agree with your observations and appreciate your work. Even having Power and Energy crown corporations, as we do in Saskatchewan, doesn't ensure we

have true public control of our energy. Interestingly, it appears there has been little research, in Canada, that analyses government policy that will enhance public democratic control of energy and policy that is blocking it.

Your are a of research on this is very important. One of the ongoing challenges here is how to find out about it, If it wasn't for this course I would never have been introduced to it. And I do a lot of research looking for sources in this area. Finding ways to circulate research among those who are producing with those who are looking could be a research project in itself, I think.

← [Reply](#)



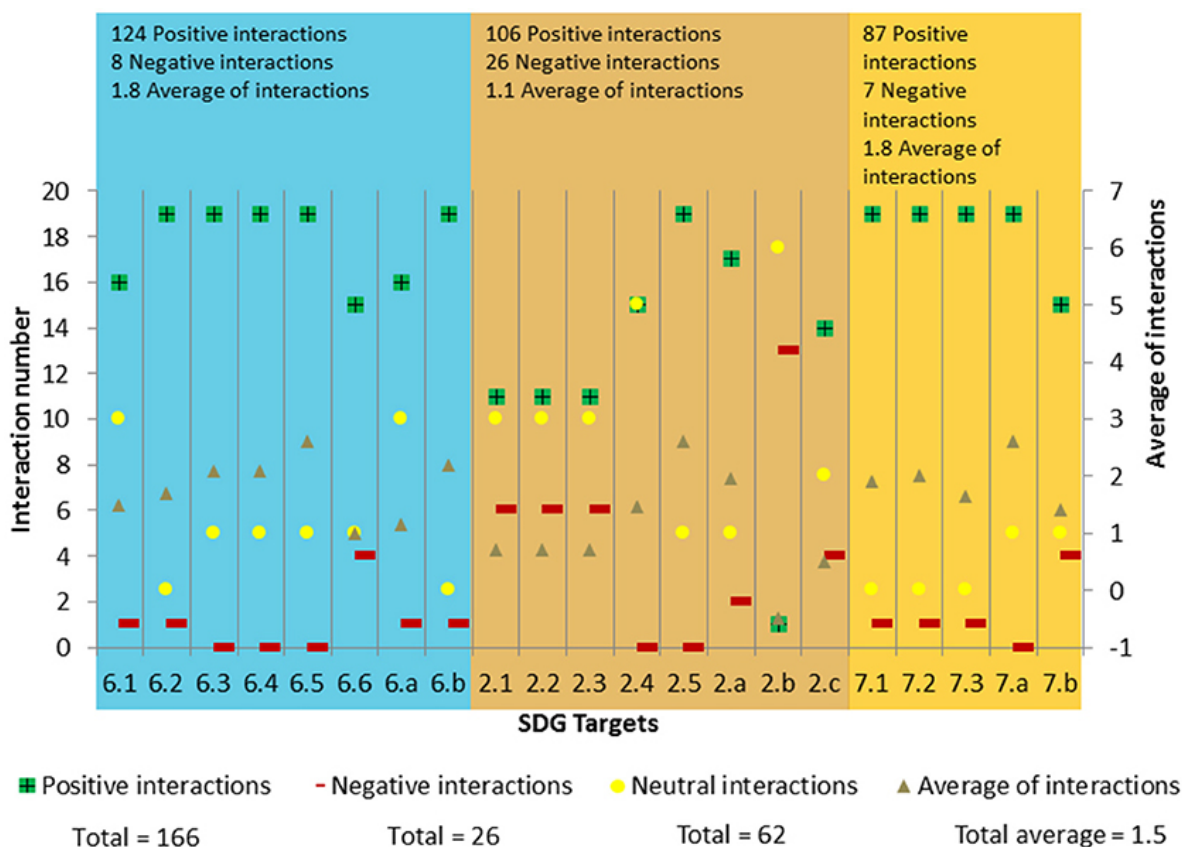
[Karl Horak \(https://learn.canvas.net/courses/2527/users/903858\)](https://learn.canvas.net/courses/2527/users/903858)

Jun 2, 2019

From Fader, Cranmer, Lawford and Engel-Cox's recent article discussing synergies and trade-offs among sustainable development goals in water, agriculture and energy...

(<https://www.frontiersin.org/articles/10.3389/fenvs.2018.00112/full>
(<https://www.frontiersin.org/articles/10.3389/fenvs.2018.00112/full>))

"[The authors] developed a methodology where each target of the UN Sustainable Development Goals (SDG) 2 (food), 6 (water), and 7 (energy) was analyzed for its input requirements, infrastructure needs, and the risks and benefits for the provision of ecosystem services. Then the targets were compared pairwise and a total score of interaction was calculated to determine different levels of synergies and trade-offs for every pair. In some cases targets were mutually supportive, in other cases there were no interactions among the targets, and for some areas the targets were in conflict with each other. ... Our approach confirms the general belief that SDG 6 (water) has the highest number of potential synergies (a total of 124)."



The take-away lesson is that for entities with limited resources, concentrating on water solutions will provide the most bang for the buck because they are synergistically intertwined with agriculture and energy issues.

[← Reply](#)



[James \(Gien\) Wong](https://learn.canvas.net/courses/2527/users/905142)
<https://learn.canvas.net/courses/2527/users/905142>

Jun 3, 2019

Very informative paper, Karl!

Thanks very much for making us aware of it! It reinforces the intuitive idea that in dealing with complex systems, we cannot be working in silos.

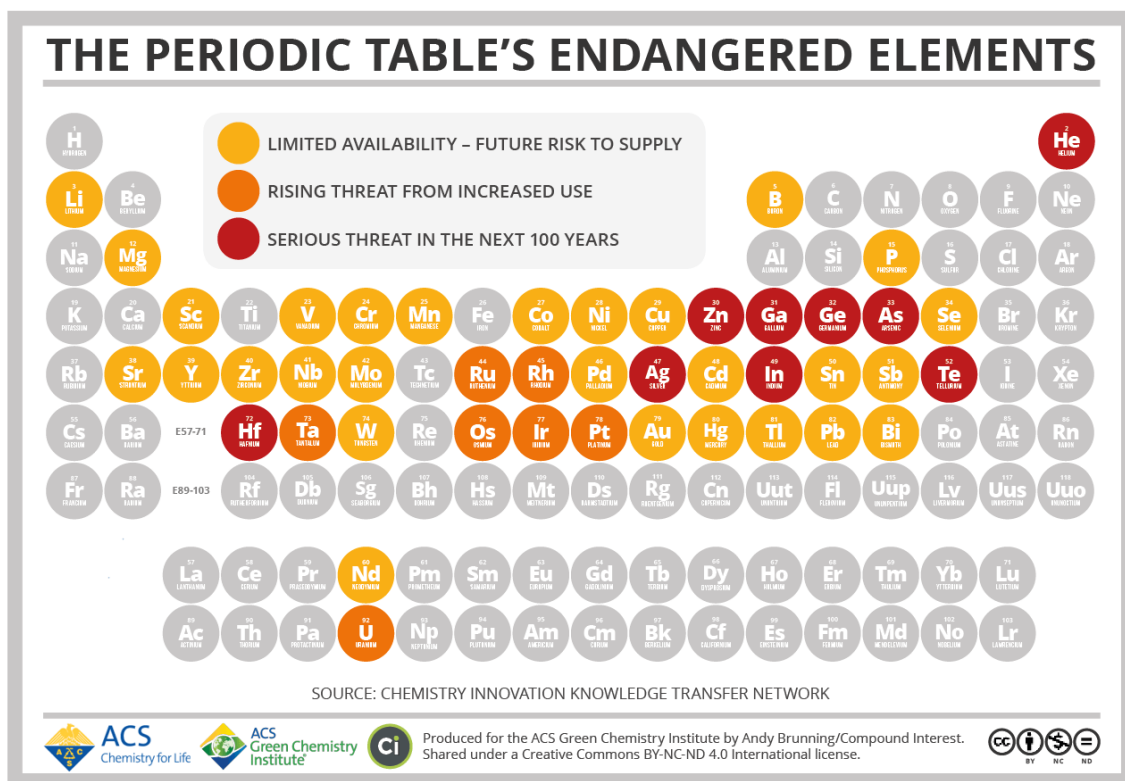
This is very much a nexus approach in the spirit of [MuSEASEM](http://magic-nexus.eu/) (<http://magic-nexus.eu/>). It's great that they are applying to the SDGs. Our solidarity network is exploring the application of this nexus approach to SDGs within a Planetary Boundary context and framing the externalities and unintended consequences within a progress trap framework. So we will definitely cite this work. The limitations section considers a number of complexifying factors. We feel a machine learning approach with AI can help tackle some of these complexities.

[← Reply](#)



Kelleigh Wright (<https://learn.canvas.net/courses/2527/users/897550>)

Jun 3, 2019



Visualizing the chemical elements as of 2017.

According to the American Chemical Society and the European Chemical Society, 44 of those 118 elements might disappear by century's end.

Renewable energies which rely on some form of mineral extraction for its success (solar panels, cell phones, computers) are not the long term solution for societies that refuse to embrace radical degrowth. They are at best, a short term 'solution' with devastating externalities (continue to feed extraction economies, continue to ravage ecosystems by permanently altering the earth's crust, by creating toxic tailings 'ponds' (more like wildly large lakes) that poison the water, soil and people over bioregions for hundreds of centuries to come.

Reducing the problem to just too much carbon in the atmosphere also reduces the solution to just 'renewable energy'. The problem wasn't solved, it was just transferred to a different industry.

Smartphones are made up of at least 30 different elements - many of them rare...and they are being disposed to landfills every 2-4 years (like much of modern technology gadgets). This isn't sustainable and it certainly isn't regenerative -> qualities that have been the hallmarks of renewable energy.

I would like to see radical degrowth given serious weight in the energy democracy discussion. What does degrowth look like from the top down and bottom up? What are the innovative solutions emerging from that viewpoint?

← [Reply](#)



[James \(Gien\) Wong](#)

<https://learn.canvas.net/courses/2527/users/905142>

Jun 3, 2019

Hi Kelleigh,

Like the paper cited by Karl above, this points out the danger of silo'd thinking. Yes climate change is a huge problem. We might even consider it the leader of the pack, but it's just a symptom of the complex, self-emergent system that economic growth aligned governments and businesses refuse to regulate. The nature of progress traps is that this generation of solutions becomes the next generation's problems.

← [Reply](#)



[Julie MacArthur](#) (<https://learn.canvas.net/courses/2527/users/438170>)

<https://learn.canvas.net/courses/2527/users/438170>

Jun 5, 2019

Hi Kelleigh,

Thanks very much for this contribution. I agree that the discussion this year definitely highlights the importance of including more material on degrowth, and a cautionary note on RE growth'ism'. It certainly wasn't what we were aiming at for the module, but rather adding another material pillar for a discussion of commons transitions. This thread has been excellent - you folks are amazing! The trick, of course, is always in the sequencing of material, in order to engage folks of a very wide range of backgrounds.

← [Reply](#)



[Stephanie Hartline](#)

<https://learn.canvas.net/courses/2527/users/906461>

Jun 10, 2019

Kelleigh,

I glanced over the picture you shared a week or so ago, and it brought me back to high school. I had a sudden discomfort and decided I was going to look at it at another (chemistry was never my strong suit). I have to admit though, I regret my decision because you brought up a valid point I have not considered.

(..there are so many layers of democracy to consider)

That being said, I would like to see a discussion on "de-growth".

← [Reply](#)



[Barbara Denbeigh Hollingworth](#)

<https://learn.canvas.net/courses/2527/users/901554>

Jun 14, 2019

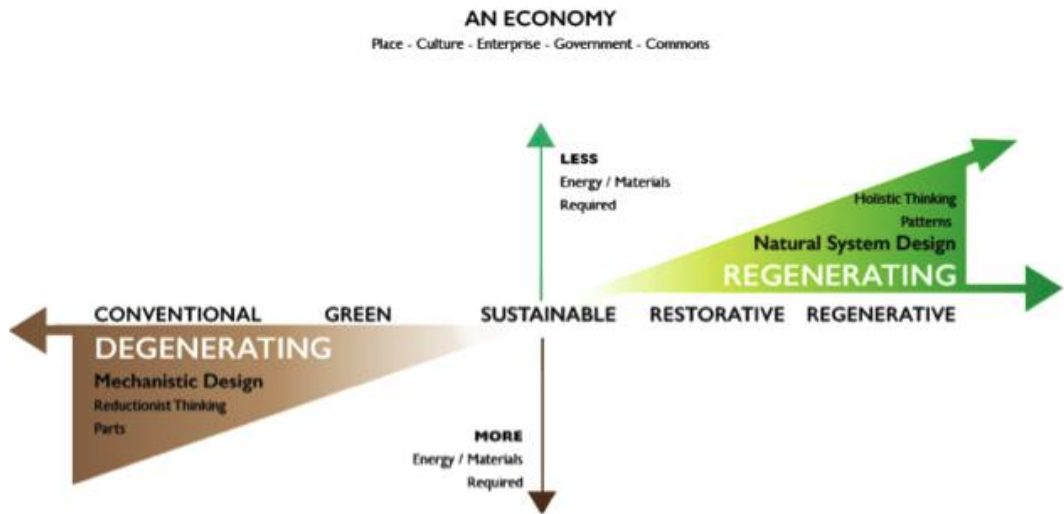
Hello Kelleigh, Thank you for that graphic reminder that so-called "sustainable " energy is actually not really sustainable, and for the reminder that degrowth is of prime importance if we are to go on existing, and in any future system. I must confess I was excited after going through all the materials in this module, realizing that getting off oil and gas and onto to alternate forms of power is doable and possible in the here and now. However, seeing the periodic table and the precious elements in it that are also being depleted by the production of those alternates brought me squarely back to earth. I believe many of us don't think of what is involved in the production of these devices. I should have - I do have a degree in biochemistry. What I have been conscious of is that, for the most part, we are still talking and thinking in terms of "abundance," and not of degrowth, which I agree is crucial. This was brought home to me in the video describing cooperative energy in Scotland, in a community where the citizens' needs were met with 2 windmills, but they decided to build 6, and sell the power from the extra 4 back to the grid in order to produce income to provide extras (more wealth) in the community. They used some of the income to build an indoor skatepark for the youth of the community, this using 3 times the components, including endangered elements. This is not to judge them for wanting more "stuff," but just to reflect that we are a long way from "degrowth," Just some thoughts - and thank you so much for your image and your thoughts.

← [Reply](#)



[Kelleigh Wright \(https://learn.canvas.net/courses/2527/users/897550\)](https://learn.canvas.net/courses/2527/users/897550)

Jun 15, 2019



Dr. Daniel Christian Wahl, Designing Regenerative Cultures

I live in a mining region that has been the economic backbone of the province of Ontario for the last 100 years. Like the oil industry, it has considerable power and influence over municipal, provincial, federal and international governments. Also like the oil industry, it has little tolerance for anything that may disrupt 'business as usual'. De-growth will never be a welcomed option and laws are in place at all levels of governance to make sure the status quo is maintained.

'Green' (including Green New Deal) is a step in the right direction, but still a long way from getting to the other side of sustainable and a huge leap from regenerative. Going beyond sustainable, in order to restore some semblance of balance to the planetary boundaries that have been crossed, envisions exactly what from a top down and bottom up perspective?

I don't have the answers - just questions. What is being asked of us? What are the cultural stories that have to change for the idea of de-growth to take root in societies with Western lifestyles? What is the dream of Mother Nature? Who are the necessary players? What partnerships are needed? What can we do that is worthy of our hope?

← [Reply](#)



[Lella Blumer \(https://learn.canvas.net/courses/2527/users/896798\)](https://learn.canvas.net/courses/2527/users/896798)

Jun 3, 2019

It's fortifying to read through this discussion; the situation we face can be overwhelming, as can trying to understand the options for turning the situation around. So this kind of discussion and resource sharing is really welcome; thank you.

Adding to the feeling of being overwhelmed is unclear communication (whether intentional or not) and poor/lack of any planning from agencies, organizations, and elected officials, some of whom are completely shirking their responsibilities. The picture below is of a solar farm project outside

Belmont, Ontario (Canada) which was fraught with controversy from the beginning because it is built on 450 acres of prime agricultural farmland by a large multinational corporation, and the timing seemed suspect because it was approved just before regulations dealing with the use of agricultural land came into effect. So, rather than community engagement in discussion and goal-setting about fossil-fuel use, reduction efforts, priorities, and planning, there is an externally-imposed one-sided solution installed which divides the community rather than uniting it. Even groups and individuals who would endorse a green energy project cannot wholeheartedly support it because of its development in a silo (I'm using that word both in the way you intended in your comments, James, which is excellent, as well as in reference to the project's location).



← [Reply](#)



[James \(Gien\) Wong](#)

<https://learn.canvas.net/courses/2527/users/905142>

Jun 4, 2019

Hi Lella,

This case demonstrates quite an obvious unintended consequence immediately. Covering over prime agricultural land. I think all these projects have to be contextualized in both a global and local framing, a global framing. Unless you have a clear idea of what amount of future energy is required by human civilization and then by each country, each province, each region, each city, we are just going to build in an adhoc way. Are we trying to replace ALL fossil fuel infrastructure? And if so, by when? Or do we want to aim for a much lower amount of total energy? If we did that, and we can prove we can all live with, for instance a radically smaller amount like a few kilowatts each, then that reduces the need for energy a great deal. Then knowing that amount, we can develop standards for land selection and allocate the ideal locations that meet all the requirements required for harmonizing with our ecology. If it's not clear if it's possible to replace all the fossil fuel infrastructure, it's almost like an emergency situation where we build anything anywhere, destroying even more of nature. Is it really green to replace nature with manufactured silicon?

The MuSIASEM nexus approach needs to be adopted to look at the impact on the entire social-ecological system. That way we can clearly see and quantify the tradeoffs and mitigate at least the most obvious unintended consequences and tradeoffs.

That externally imposed solution is a hallmark of capitalist and colonialist attitudes. One way to pre-empt this from happening is by adopting a neutral and mutual learning approach to any community development project. We are framing community development using [Johari's Window](#) (<https://www.youtube.com/watch?v=BWii4Tx3GJk>). This is a way of contextualize the visible and blind spots of both the outside stakeholder and the community. Each has strengths, but each also has blind spots. The solar farm company has the technical expertise, but they are ignorant of community dynamics. The community are community experts, but not technical ones. Each must respect the other and listen to the other. Each must humble itself by admitting it only has part of the potential solution.

← [Reply](#)



[Julie MacArthur](#) (<https://learn.canvas.net/courses/2527/users/438170>)

Jun 5, 2019

Hi Leila,

Great to hear you are enjoying the discussion - as am I!

As James says, context and mutual understanding really is key and many of our political institutions are not set up particularly well for either. Sometimes the issue is policy capacity (cutbacks, lack of staff, lack of knowledge), or institutional design so departments work at cross purposes, or even total regulatory capture so that public agencies aren't working in the public interest. This is one reason I find thinking about multi-scaled energy 'democracy' so useful, it really is about the relationship between the material and the political/institutional. How can we re-organize that to meet our goals and needs, and potentially also set 'better/fairer' goals?

← [Reply](#)



[Lella Blumer](#) (<https://learn.canvas.net/courses/2527/users/896798>)

Jun 6, 2019

Well, it's an interesting question. I'm not sure this is an answer, but I feel we would all benefit from more education about democratic processes and organizations. It should be something we're knowledgeable enough about to question, debate, and refine collaboratively. And, of course, participate in robustly.

← [Reply](#)



[Caroline Hurley \(https://learn.canvas.net/courses/2527/users/894561\)](https://learn.canvas.net/courses/2527/users/894561)

Jun 4, 2019



<http://www.rainharvest.co.za/2011/01/sa-scientists-seek-backers-for-trash-to-energy-innovation/> (<http://www.rainharvest.co.za/2011/01/sa-scientists-seek-backers-for-trash-to-energy-innovation/>)

Of all draw-down solutions, turning waste into electricity strikes me as the one that is actually two solutions. Especially on reading concerns above about new kinds of challenging hardware waste that accompany the lovely shiny renewable technologies. I worked in a Belgium operation called Par Terre for a couple of weeks with VSO in the mid 80s, and each morning mounted a truck that drove me, side by side with ex-prisoners, into housing estates to pick up copious bound piles of paper waste left out by householders. We delivered this booty back to the factory which turned the unwanted wrapping, magazines and so on into insulation board for sale! Good job us!

Less wisely for my own latest abode, I was persuaded to opt for an air to water heat-pump, worryingly absent from coverage in this module's material. I realise now it still has me precariously plugged into the central grid and both large machines will not be easy to dismantle and dispose of after their useful lives. Reality bites! What Community Energy Scotland, the District of Steinfurt and elsewhere are achieving sets the bar higher, with inclusivity and collaboration emerging as being at least as important as any other factors.

Edited by [Caroline Hurley \(https://learn.canvas.net/courses/2527/users/894561\)](https://learn.canvas.net/courses/2527/users/894561) on Jun 4 at 3:29pm

[← Reply](#)



[James \(Gien\) Wong \(https://learn.canvas.net/courses/2527/users/905142\)](https://learn.canvas.net/courses/2527/users/905142)

Jun 6, 2019

Hi Caroline,

At one point in my life, I was engaged with some engineers who had wanted to develop WTE solutions but thinking more deeply about it I decided it wasn't the way to go. Even the cleanest plants still produce toxins. This article [here \(https://zerowasteurope.eu/2018/02/9-reasons-why-we-better-move-away-from-waste-to-energy-and-embrace-zero-waste-instead/\)](https://zerowasteurope.eu/2018/02/9-reasons-why-we-better-move-away-from-waste-to-energy-and-embrace-zero-waste-instead/) discusses the problems with WTE. I ended up spending a lot of time in the Open Source Circular Economy movement. These plants are not cheap to build and once you build them, you are locked into a

recovery period for that waste. That means these plants will require large waste streams to recover their cost so it's in the interest of the stakeholders to keep producing large flows of garbage. That does not incentivize producing less garbage. It's better to develop a circular economy and make waste an antiquated word. It's all a matter of how soon we can circularize our waste stream. If we continue our consumerist take-make-waste linear behavior, we will continue running out of landfills. So we need to actually take rapid steps towards a fully circular economy.

[← Reply](#)



[Caroline Hurley \(https://learn.canvas.net/courses/2527/users/894561\)](https://learn.canvas.net/courses/2527/users/894561)

Jun 6, 2019

Thanks James. I shared with our local TACC discussion group an [announcement \(https://www.independent.ie/business/farming/schemes/government-announces-support-scheme-for-biomass-boilers-and-anaerobic-digestion-38177443.html\)](https://www.independent.ie/business/farming/schemes/government-announces-support-scheme-for-biomass-boilers-and-anaerobic-digestion-38177443.html) from the Irish government yesterday inviting applications for grants to build industrial-scale biomass and anaerobic digestion plants, the latter potentially turning waste into usable gas, although apparently that mainly consisting of [CO2 and methane \(https://en.wikipedia.org/wiki/Anaerobic_digestion\)](https://en.wikipedia.org/wiki/Anaerobic_digestion)! A lead mobile gas company here has recently been marketing liquid paraffin gas ([LPG \(https://www.calorgas.ie/about-us/biolpg\)](https://www.calorgas.ie/about-us/biolpg)) as 100% renewable.

Though toxicity was a question at the front of my mind, as stressed in the article at your link which focuses on waste incineration, waste is currently too gigantic an issue not to need addressing in numerous ways, as in transitional arrangements, I think. The kids are absolutely right, reduce re-use recycle, except domestic inhabitants do not have the means to successfully follow through to the point of zero waste, not to mention where the recycling rubbish is really going. Far from it yet - [https://theconversation.com/is-there-any-point-in-recycling-109550 \(https://theconversation.com/is-there-any-point-in-recycling-109550\)](https://theconversation.com/is-there-any-point-in-recycling-109550)

Yet I agree that solutions need to be safe and not generate new sometimes more serious problems. [Sweden \(https://sweden.se/nature/the-swedish-recycling-revolution/\)](https://sweden.se/nature/the-swedish-recycling-revolution/) is stepping up responses to rubbish with goals to cut down, with various waste to energy measures included, towards the circular economy you describe. I'm sure this model is the one widely subscribed to. [Domestic biogas productio \(https://theconversation.com/home-biogas-turning-food-waste-into-renewable-energy-89920\)](https://theconversation.com/home-biogas-turning-food-waste-into-renewable-energy-89920) n seems to be potentially free of the toxicities we worry about, and also admits to classification as renewable and being off-grid. I'm also convinced regulation is needed to prevent manufacturers for being so generous with their packaging.

I guess caution is required while having an open mind in each case, and for that people need access to the right information and be able to find some spare time to do their own research as companies vie with lies for our custom - a mindset that might be even more important for policy-makers.

Edited by [Caroline Hurley \(https://learn.canvas.net/courses/2527/users/894561\)](https://learn.canvas.net/courses/2527/users/894561) on Jun 7 at 4:18am

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[James \(Gien\) Wong \(https://learn.canvas.net/courses/2527/users/905142\)](https://learn.canvas.net/courses/2527/users/905142)

Jun 8, 2019

A backcasting approach could be applied as well such as:

[Back to the Future: A Backcasting based Approach to Planning for an Energy System Transition in the Danish Region of Zealand](http://journal-tes.dk/vol_13_no_2_page_23/no_3_Tue_Damsoe.pdf) (http://journal-tes.dk/vol_13_no_2_page_23/no_3_Tue_Damsoe.pdf)

[Backcasting in futures studies: a synthesized scholarly and planning approach to strategic smart sustainable city development](https://link.springer.com/article/10.1186/s40309-018-0142-z) (<https://link.springer.com/article/10.1186/s40309-018-0142-z>)

← Reply



Caroline Hurley (<https://learn.canvas.net/courses/2527/users/894561>)



Jun 9, 2019

As usual, you're a true mine of on point information, James. Thanks for this. Backcasting is new to me, and the idea that it can help prevent us from being "destined to be deluged by a constant reign of error from those dismal scientists [...] ever eager to fill our need for prediction" (William Sherdun in Pilkey 2007), is promising.

From Wikipedia - **Backcasting** is a planning method that starts with defining a desirable future and then works backwards to identify policies and programs that will connect that specified future to the present.^[1] (https://en.wikipedia.org/wiki/Backcasting#cite_note-1) The fundamentals of the method were outlined by John B. Robinson from the [University of Waterloo](https://en.wikipedia.org/wiki/University_of_Waterloo) (https://en.wikipedia.org/wiki/University_of_Waterloo) in 1990.^[2] (https://en.wikipedia.org/wiki/Backcasting#cite_note-Robinson_1990-2) The fundamental question of backcasting asks: "if we want to attain a certain goal, what actions must be taken to get there?"^[3] (https://en.wikipedia.org/wiki/Backcasting#cite_note-3)^[4] (https://en.wikipedia.org/wiki/Backcasting#cite_note-4)

While [forecasting](https://en.wikipedia.org/wiki/Forecasting) (<https://en.wikipedia.org/wiki/Forecasting>) involves predicting the future based on current trend analysis, backcasting approaches the challenge of discussing the future from the opposite direction; it is "a method in which the future desired conditions are envisioned and steps are then defined to attain those conditions, rather than taking steps that are merely a continuation of present methods extrapolated into the future".

In statistics and data analysis, backcasting can be considered to be the opposite of forecasting; thus:

- *forecasting* involves the prediction of the future (*unknown*) values of the [dependent variables](https://en.wikipedia.org/wiki/Dependent_and_independent_variables) (https://en.wikipedia.org/wiki/Dependent_and_independent_variables) based on *known* values of the [independent variable](https://en.wikipedia.org/wiki/Dependent_and_independent_variables) (https://en.wikipedia.org/wiki/Dependent_and_independent_variables).
- *backcasting* involves the prediction of the *unknown* values of the independent variables that *might* have existed, in order to explain the *known* values of the dependent variable. -

Definitely a slate-blanking concept then. Elsewhere in one of the discussions here, someone was disputing the accuracy of talking about markets, but that's the problem with language especially when it comes to abstract categories or concepts - words are empty but subject to dependent co-arising/co-origination, and we just have to rely on mutual understanding to communicate their imputed conventional meaning to get the gist of one another's thoughts!

Back-casting still has a bridge to gap though, the transition, and this article manages to set out the issues with approaches to waste while hinting at some advances: <https://www.conserve-energy-future.com/various-waste-disposal-problems-and-solutions.php> (<https://www.conserve-energy-future.com/various-waste-disposal-problems-and-solutions.php>)

An [openaccessgovernment report](https://www.openaccessgovernment.org/what-are-the-alternatives-to-landfill/53719/) (<https://www.openaccessgovernment.org/what-are-the-alternatives-to-landfill/53719/>) goes farther, claiming nothing is worse than landfill: "The [waste to energy \(WtE\) process](https://www.openaccessgovernment.org/swindon-solar-park-power-household-waste-recycling-centre/31516/) (<https://www.openaccessgovernment.org/swindon-solar-park-power-household-waste-recycling-centre/31516/>) is heavily criticised for 'competing' with recycling and therefore being a more damaging alternative. However, when making decisions regarding whether to choose landfill or WtE plants there is absolutely no comparison."

Reminds me somehow of the mercurial enigma of the 'hard' problem of consciousness!

Edited by [Caroline Hurley](https://learn.canvas.net/courses/2527/users/894561) (<https://learn.canvas.net/courses/2527/users/894561>) on Jun 9 at 3:43pm

[← Reply](#)



[James \(Gien\) Wong](#)
(<https://learn.canvas.net/courses/2527/users/905142>)

Jun 10, 2019

Hi Caroline,

As a species, we are kind of lost in a muddle. Whether we use forecasting or backcasting, if we do so without understanding the fundamental nature of problem-solving itself, of abstraction itself, we will continue to create challenging problems in our solutions.

To borrow from Jeff Bezos, we humans are "complexifiers"! Dan O'Leary wrote his book "Escaping the Progress Trap" awhile ago. [This](#) (<http://www.progresstrap.org/>) is his website. We are thinking of coauthoring a paper on a resource perspective of progress traps. I have a pet theory that progress is the biggest progress trap of all. If you've never seen the 2011 BBC production [Surviving Progress](https://www.youtube.com/watch?v=fGyU6MEstjU&t=43s) (<https://www.youtube.com/watch?v=fGyU6MEstjU&t=43s>), I strongly recommend it. It's based on Ronald

Wright's book A Short History of Progress. All this is also aligned with Charles Eisenstein's [The Ascent of Humanity](http://ascentofhumanity.com/) (<http://ascentofhumanity.com/>). We humans need to actually develop a systematic theory of progress traps, and actually apply that. Today, we are confronted with problems that were once touted as solutions to previous problems. The exponential growth of technology is accompanied by the exponential growth in progress traps. The complexity is reaching a threshold that our innovation will not be able to catch up and the entangled problems will become unsolvable. The fossil fuel based economy is the epitome of this.

In the end, there are no bogeyman except ourselves. Our current crisis is emerged from all those human qualities we hold most dear, our ability to model the world through abstraction, our ability to manipulate tools, and our ability to solve problems. For when we understand nature analytically, we will always have only a finite amount of knowledge. It doesn't matter how much money or time you give me to research an area of nature, it will always be finite. The research will come to an end, and the result will be a finite amount of knowledge about one aspect of reality. That will always be in contrast to the infinite amount of knowledge still not known about it. There are uncountably more relationships we have not investigated. So when research comes out of the lab into a technologist or engineer's hands, it will result on a product that is only built upon a finite amount of knowledge. The gap between finite human knowledge vs infinite knowledge of nature is unbridgeable. So if that technology becomes successful and scales, it is possible that one day, one of the relationships we did not investigate will come to a not-so-benign fruition and manifest, expressing itself as an unintended consequence, a progress trap. ..just like fossil fuel has, or the myriad carcinogenic products we have made.

Without a systematic study of progress traps, we are gambling with our future. A systematic study might reveal patterns hitherto unseen, and help us mitigate the worse progress traps. Some things are meant to be researched for decades or possibly even centuries before becoming commercialized. But capitalism forces many such dangerous technologies out of the lab and into the public sphere prematurely. We all end up paying the price.

Edited by [James \(Gien\) Wong](https://learn.canvas.net/courses/2527/users/905142) (<https://learn.canvas.net/courses/2527/users/905142>) on Jun 10 at 12:51pm

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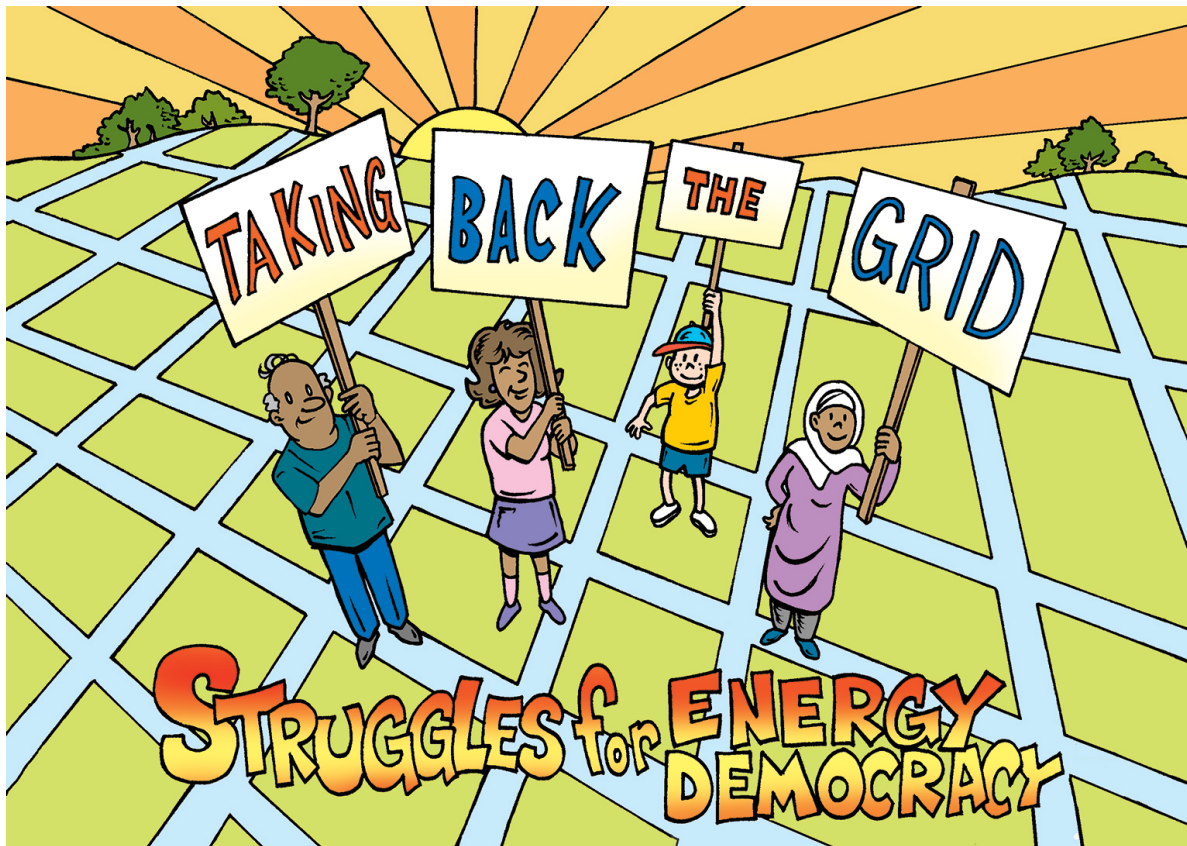
5 5



[Benjamin Turner](https://learn.canvas.net/courses/2527/users/897723) (<https://learn.canvas.net/courses/2527/users/897723>)

Jun 4, 2019





This was a great module!

I chose this visual because of the portion of the module regarding citizens taking back the grid. It made me reflect on how handcuffed we are to our current system. Our home has oil heating and electricity is provided by BC Hydro. I would love to install solar and wean ourselves off the inefficient BC Hydro but it's so difficult because of the start-up costs. I was also struck with the statement (can't remember which video or reading), but the line was to stop demanding things we don't want in our system, but to change the approach and say what we do want and need. I think this is a much easier pill for people to swallow and is framed in a much more positive way.

[← Reply](#)



[Julie MacArthur \(https://learn.canvas.net/courses/2527/users/438170\)](https://learn.canvas.net/courses/2527/users/438170)

Jun 5, 2019

Hi Benjamin,

That's wonderful to hear! Thanks very much for the feedback.

Indeed, one thing the community sector can do a really good job at is helping people with knowledge transfer about DIY projects, home retrofits, easily replicable models at a local level. This works best with public support, but some great UK research shows that people are much

more likely to adopt when information comes from trusted sources (neighbours, etc).

And yeah, given the sheer scale of the challenges outlined in the course, this module and the discussion, the constructive and reconstructive efforts are crucial to highlight.

↩ [Reply](#)



[James \(Gien\) Wong](#)

<https://learn.canvas.net/courses/2527/users/905142>

Jun 9, 2019

On that Note, Benjamin and Julie, there is a new commons production methodology that commons researchers such as Michel Bauwens and Dr. Jose Ramos have been writing about in the past few years called Cosmolocalism (CL). Vasalis Kostakis and others are involved in an EU [Cosmolocalism](https://www.cosmolocalism.eu/) project. Jose, Sharon Ede, Michel Bauwens and I are co-editing a new Cosmolocalism reader and collecting case studies and analyzing CL for its potential to provide a systematic framework to scale bottom-up impacts. The easiest way to think of CL is as a slight modification of that old cliché "Think Global, Act Local". Replace "think" with "design" and "act" with "produce" and you have CL. If you google P2P Foundation and Cosmolocalization or Cosmolocalism, you'll find a number of articles on it.

Edited by [James \(Gien\) Wong](https://learn.canvas.net/courses/2527/users/905142) on Jun 9 at 4:11pm

↩ [Reply](#)



[Marion Repetti](https://learn.canvas.net/courses/2527/users/892790)

<https://learn.canvas.net/courses/2527/users/892790>

Jun 5, 2019

Very interesting and complementary module, thanks!!

I recommend this book:



<https://www.upress.umn.edu/book-division/books/against-purity>

<https://www.upress.umn.edu/book-division/books/against-purity>

It is an interesting discussion about how we can aim to improve social and ecological life at individual, local, national and global levels, while in the same time, we have to deal with current political and economic structures that are destructing both. And so the author shares thoughts about how to negotiate these contradictions.

← [Reply](#)



[Julie MacArthur \(https://learn.canvas.net/courses/2527/users/438170\)](https://learn.canvas.net/courses/2527/users/438170)

Jun 5, 2019

Marion,

Another excellent resource! Thank you very much. I've now got a pretty solid summer reading list thanks to you folks in the thread. The late E.O.Wright wrote a book called 'Envisioning Real Utopias' in 2010. It it he outlines the concept of 'countervailing power', which is one of the mechanisms through which we can scale the gap between 'there' and the stickiness of current power structures. I've always found it helpful, if you haven't read it you might too. I've been loathe to add any more readings in the comment thread because the module already seems heavy, but couldn't resist :)

← [Reply](#)



[Kelleigh Wright \(https://learn.canvas.net/courses/2527/users/897550\)](https://learn.canvas.net/courses/2527/users/897550)

Jun 6, 2019

Marion

Thank you SO much for this link. On the same site there is a 55min interview/podcast from January 2017, with the author Alexis Shotwell, that is very VERY rich. It's a great snack for anyone who is time starved at the moment: <https://www.upress.umn.edu/press/press-clips/against-purity-on-against-the-grain?searchterm=against>
<https://www.upress.umn.edu/press/press-clips/against-purity-on-against-the-grain?searchterm=against>

← [Reply](#)



[James \(Gien\) Wong \(https://learn.canvas.net/courses/2527/users/905142\)](https://learn.canvas.net/courses/2527/users/905142)

Jun 11, 2019

Thanks Marion! Going to dig into this!

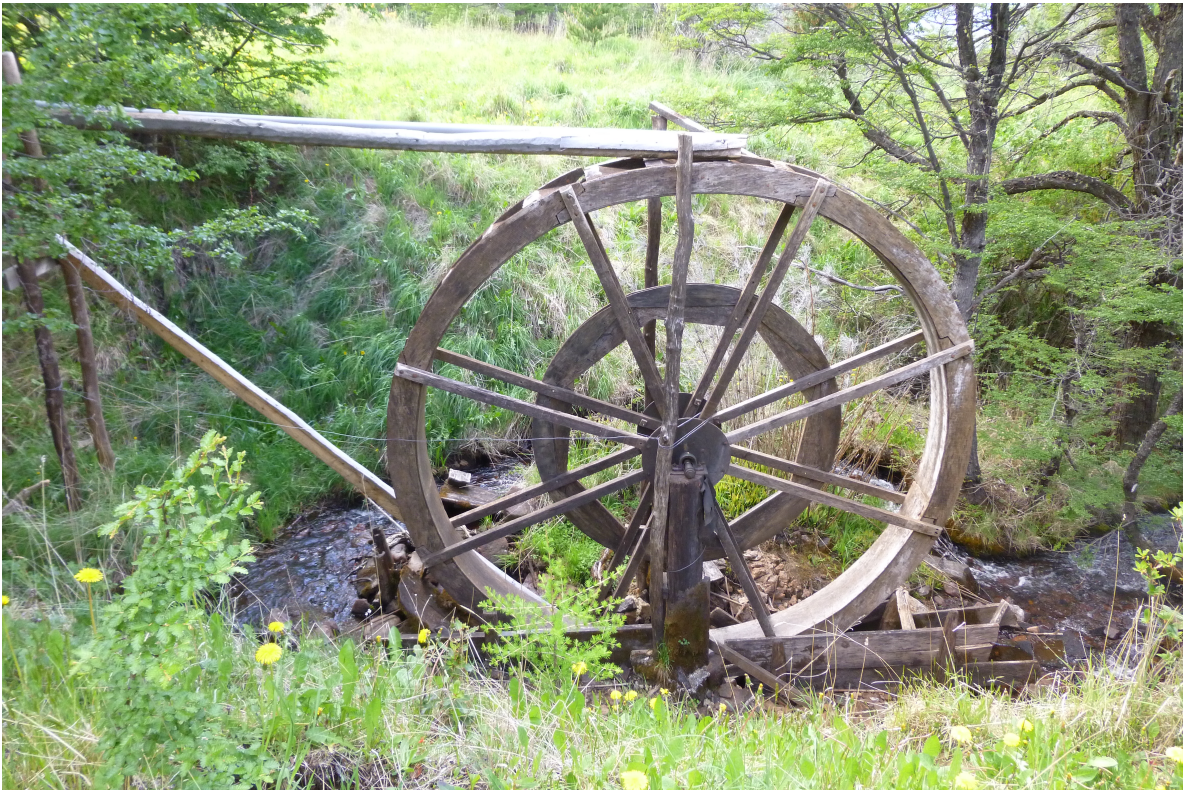
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<https://learn.canvas.net>

[/courses/2527/users/893132](https://learn.canvas.net/courses/2527/users/893132)

Jun 9, 2019



This picture is from a reserve protected area in Patagonia, Chile....water mill from earlier times.... the endurance and collective wisdom of communities to become selfsufficient, under most challenging circumstances and environments, is not new. In a way energy democracy is not new....

← [Reply](#)



[James \(Gien\) Wong](#)

<https://learn.canvas.net/courses>

[/2527/users/905142](https://learn.canvas.net/courses/2527/users/905142)

Jun 9, 2019

Hi Rolando,

A Degrowth economy will definitely bring all these amazing technologies from a century or more ago back into vogue, but adapted with the latest thinking. Two of my favorite websites in this respect are [lowtech magazine](https://www.lowtechmagazine.com/) (<https://www.lowtechmagazine.com/>) and [notech magazine](https://www.notechmagazine.com/) (<https://www.notechmagazine.com/>). We are actually combining these kinds of

innovations with Cosmolocalism (CL - see above response to Benjamin) to try to scale these low tech innovations around the globe.

← [Reply](#)



[Mike Gismondi \(https://learn.canvas.net/courses/2527/users/227458\)](https://learn.canvas.net/courses/2527/users/227458)

Jun 10, 2019

Thanks folks for the great discussion and flow of sources. One point I will add is that often it is the combination of innovations that makes for systemic change, so often we think just in terms of technologies, but we might also think in terms of how we finance those technologies using new financial innovations for local investment, or how other new software technologies, like blockchain distributed ledger technologies, provide a way for many small generators to aggregate their carbon offsets, verify them, and receive payments that otherwise would not be worth the time and effort. As these innovations become woven together in new ways by community actors, they countervale as Julie mentions and pressure systems and more importantly the actors in the various parts of the system, to align and realign, in ways that cause systemic change and policy learning, if not democratic change.

← [Reply](#)

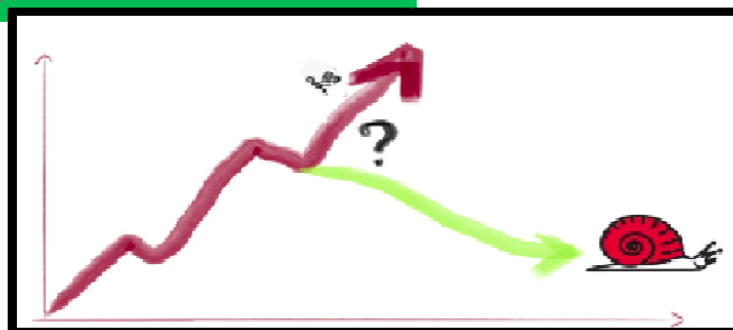


[Stephanie Hartline \(https://learn.canvas.net/courses/2527/users/906461\)](https://learn.canvas.net/courses/2527/users/906461)

Jun 10, 2019



VS.



..With respect.

Which path calls to you? Only chose one, because you can't have both.

← [Reply](#)



[Caroline Hurley \(https://learn.canvas.net/courses/2527/users/894561\)](https://learn.canvas.net/courses/2527/users/894561)



Jun 12, 2019

That's a brave image to choose; hits the nail on the head.

Tim Ferriss likes to confer with CEOs but his break-out book, [The 4-hour Work Week shows how quality does not have to be sacrificed by working less: rather, the opposite.](https://fourhourworkweek.com/)

Still the prestige treadmill is a hard habit to break, which is where we need to understand how our thought tricks us, for examples Daniel Kahneman's [Thinking Fast and Slow](https://medium.com/leadership-motivation-and-impact/what-i-learned-from-thinking-fast-and-slow-a4a47cf8b5d5), Nassim Taleb's [Fooled by Randomness](http://www.fooledbyrandomness.com/), and practical guides, like [Your Money or Your Life](https://yourmoneyoryourlife.com/book-summary/). We can get broader pictures of why capitalism isn't working from tomes like Piketty's [Capital in the 21st Century](https://www.economist.com/the-economist-explains/2014/05/04/thomas-piketkys-capital-summarised-in-four-paragraphs).

Edited by [Caroline Hurley \(https://learn.canvas.net/courses/2527/users/894561\)](https://learn.canvas.net/courses/2527/users/894561) on Jun 12 at 3:38pm

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[Lazaros Angelou \(https://learn.canvas.net/courses/2527/users/886724\)](https://learn.canvas.net/courses/2527/users/886724)



Jul 2, 2019

<https://www.northwestbronx.org/energy-democracy> <https://www.northwestbronx.org/energy-democracy>



Although it seems that it comes from a religious organization it is descriptive enough of what I'm thinking about the urgent need for energy democracy.

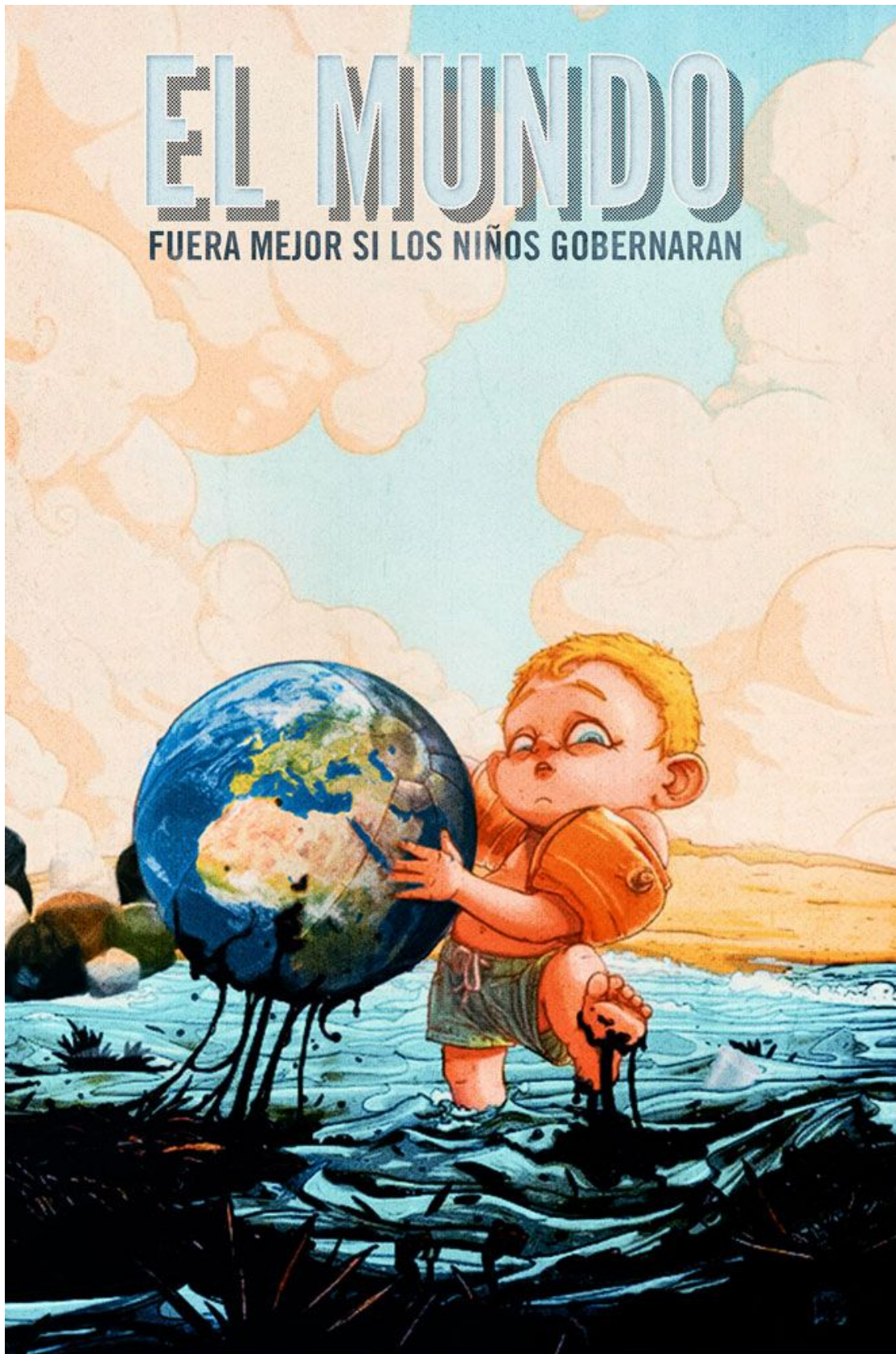
[Reply](#)



[Bernadette Cohen-James](#)
<https://learn.canvas.net/courses/2527/users/893046>

Jul 10, 2019





This image captures the essence of why transitioning to renewable energies is so important. We have created a sticky mess in our use of fossil fuels (among so many messes!) which has in turn created a world that requires the hands of the many i.e. citizens, in order to right the balances of power, both in our use of resources as well as how those resources are allocated i.e. an oil baron

or a local community.

↳ [Reply](#)



[Sandeep Chakravartty](#)

<https://learn.canvas.net/courses/2527/users/48821>

Jul 26, 2019



My partner has been working for a year now, in cooperation with the local electric co-op to create a Community Energy project: a 300 megawatt solar array, owned by the community in perpetuity. Sorry, no photo available. Only drawings that don't translate well to this format.

Our state, New Mexico, has great renewable potential. And our legislature just set new standards for conversion to renewable energy: 50% by 2030. This is not aggressive enough, but it is a beginning. There are currently more than 500 large solar array projects under consideration here -- but the total investment costs will be more than \$5 billion to build out all of these projects. The state will not do this, only private investments. Fortunately there is a lot of financial interest in renewable energy right now --- much of it former oil/gas monies.

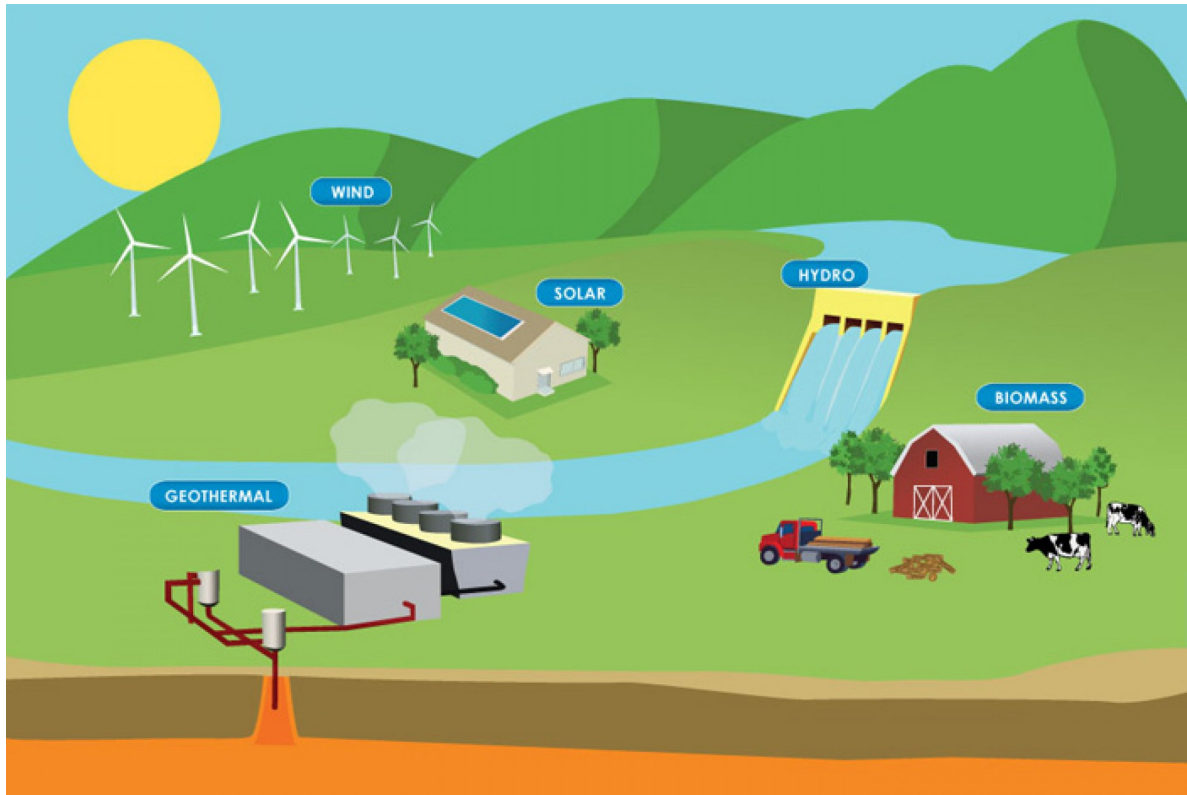
↳ [Reply](#)



[Brendan Reimer](#) (<https://learn.canvas.net/courses/2527/users/903250>)

Thursday





I chose this image for a few reasons.

One, it says it is for kids. I realize that climate change is an urgent and existential threat to human survival, but long-term system change toward sustainability and resilience will not happen unless the younger and future generations tackle this challenge with the urgency, determination, and innovation that current and past generations seem to have been unwilling / unable to muster to sufficient degrees to create the change we need. I, for one, will be having this conversation with my young kids with this image this weekend.

Two, it reminds us of the range of options available in the energy space. While many might be familiar with one option given their exposure to models in various parts of the world, few are familiar with the full range of options.

Third, and yes I am imagining this, but I would like to believe that these systems in the image are community and collectively owned, and integrated in a grid that maximizes efficiency and community benefit.

[← Reply](#)