



A monthly environmental education and discussion forum

Sunday, March 11, 2018

Roundtable Discussion: **4-5:15 PM**

Announcements & Networking: **5:15-5:45 PM**

Roundtable Discussion: **5:45-6:30 PM**

1105 Providence Road, Towson, MD 21286

<http://www.mpchurch.org/location-2/>

Dear Friends of the Green Forum,

March 11 will be our first experiment with a "Discussion Group" idea that I got from a group in D.C.

The leader of the D.C. group sends out an essay on a single subject with references and footnotes that describe and link to additional reading. The additional reading is not necessary for the 1.5 hour discussion. But it's a great resource all by itself. This happens again every month with a new subject.

Below is a version of this Discussion Group essay idea and for more than one topic. We can choose only one topic or more on March 11, depending on your interests. And unlike the D.C. group, we can continue to address any topic for more than one month. Also, you should not feel any obligation to speak at the event. You are free to come as an observer.

So, please join us for this experiment.

Please also join us on March 11 to discuss a new venue option. We have been given the opportunity to locate at least some of our 7-8 meetings a year at the Baltimore Hebrew Congregation. This venue is within Baltimore City and has access to public transportation. We have been advised that we cannot attract younger people unless they can take public transportation to our meetings.

We appreciate a reply, but please come whether or not you can let us know ahead of time.

Best wishes.

Sam Hopkins
Moderator
410 935 8540

Topic A: "First things first" with climate change?

What individual actions makes the most difference? Can this information make a difference?

1. Paul Hawken's book, Drawdown. It is by far the most ambitious effort to measure the effectiveness of 100 different ways to reduce and then reverse the increase in CO2 in the atmosphere. Guess what is no. 1.

This book ranks the top 100 solutions to climate change. The results are surprising.

Hawken is a legend in environmental circles. Since the early 1980s, he has been starting green businesses, writing books on ecological commerce (President Bill Clinton called Hawken's [*Natural Capitalism*](#) one of the five most important books in the world), consulting with businesses and governments, speaking to civic groups, and collecting honorary doctorates (six so far).

See: <https://www.vox.com/energy-and-environment/2017/5/10/15589038/top-100-solutions-climate-change-ranked>

This article is an interview with Paul Hawken about this book. Below are excerpts.

A chat with Paul Hawken* about his ambitious effort to “map, measure, and model” global warming solutions.

By [David Roberts@drvox](#) david@vox.com Updated Feb 12, 2018, 10:04am EST

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For all the hand-wringing on climate change over the years, discussion of solutions remains puzzlingly anemic and fractured. A few high-profile approaches, mainly around renewable energy and electric cars, dominate discussion and modeling. But there's been no real way for ordinary people to get an understanding of what they can do and what impact it can have. There remains no single, comprehensive, reliable compendium of carbon-reduction solutions across sectors.

At least until now.

It seems Paul Hawken got tired of waiting.

A few years ago, he set out to pull together the careful coverage of solutions that had so long been lacking. With the help of a little funding, he and a team of [several dozen research fellows](#) set out to “map, measure, and model” the [100 most substantive solutions](#) to climate change, using only peer-reviewed research.

The result, released in April 2016, is called [Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming](#).

It is fascinating, a powerful reminder of how narrow a set of solutions dominates the public's attention. Alternatives range from [farmland irrigation](#) to [heat pumps](#) to [ride-sharing](#).

Top 10 solutions to climate change

Total gigatons of CO₂-equivalent emissions that could be reduced by 2050

SOLUTION		PLAUSIBLE SCENARIO		DRAWDOWN SCENARIO		OPTIMUM SCENARIO
Refrigerant Management	1	89.74	2	96.49	3	96.49
Wind Turbines (Onshore)	2	84.60	1	146.50	1	139.31
Reduced Food Waste	3	70.53	4	83.03	4	92.89
Plant-Rich Diet	4	66.11	5	78.65	5	87.86
Tropical Forests	5	61.23	3	89.00	2	105.60
Educating Girls	6	59.60	7	59.60	8	59.60
Family Planning	7	59.60	8	59.60	9	59.60
Solar Farms	8	36.90	6	64.60	7	60.48
Silvopasture	9	31.19	9	47.50	6	63.81
Rooftop Solar	10	24.60	10	43.10	13	40.34

Source: Project Drawdown

The number one solution, in terms of potential impact? A combination of [educating girls](#) and [family planning](#), which together could reduce 120 gigatons of CO₂-equivalent by 2050 — more than [on-](#) and [offshore](#) wind power combined (99 GT).sis.

...

Drawdown is the point in time when greenhouse gas concentrations peak in the atmosphere and begin to go down on a year-to-year basis...

I hadn't thought about solutions much until I saw the wedges, in 2001.

...

And so I finally decided to do *Drawdown*: name the goal and then map, measure, and model, see if it's achievable. And away we went, for almost three years, with 70 [Drawdown research fellows](#) from 22 countries and six continents.

We went in fairly confident about what the top solutions would be. We were wrong — which is validating, in a way. We have a methodology that forbids against bias.

Paul Hawken

We thought at least the top of the list would — solar, wind, wind, solar. Because that's what you hear from Charles Ferguson, Al Gore, [Jeffrey] Sachs, or Christiana Figueres. They're all saying the same thing.

It's understandable — 62 percent of the [greenhouse gas] molecules up there came from fossil fuel combustion, so you just invert it, right? It makes sense. It just doesn't work out that way.

If you take solar, which is eight and 10 [on the list], and wind, which is two and 22, and you combine them, they are definitely near the top. But you can't model on- and off-shore wind the same, because the economics are vastly different. And you can't model rooftop and solar farms in the same model. So in some cases we broke things up that people think of as aggregated.

But even then, the number one solution is educating girls and family planning.

David Roberts

How do you put numbers on that?

Paul Hawken

We took the numbers from other agencies — from World Bank, WHO, IPCC. What they are is the delta between the median high population projections of the UN in 2050 and that reduction alone. There are so many ancillary benefits and impacts of 1.1 billion less people, though.

David Roberts

But it is the 1.1 billion fewer people that is doing the carbon work?

Paul Hawken

Yeah, absolutely.

David Roberts

Are there other benign ways of influencing population growth that you considered?

Paul Hawken

There's a lack of original science.

Every carbon number [in the book] is peer-reviewed data. We don't use anecdotal data, or "we think," or "we're seeing." Everything is peer reviewed. If there's no peer-reviewed data, we can't model it. And on the economic side, which is more difficult and gnarly, there's no such thing as peer reviewed data in most cases.

We do lit reviews, tech reviews — we've got a couple thousand notes and [three thousand references](#) for the content.

We had a guy who's presenting *Drawdown* to the [IPCC] Sixth Assessment, the Third Working Group. One of the scientists there took a poke at [regenerative agriculture](#) and said, "Well, that's just climate smart agriculture [CSA], we know about that already." I wrote back and said, "Show me the model."

It's a generality. It doesn't mean anything. [Multi-strata agroforestry](#), fantastic, show me a model. [Silvopasture](#) — show me the science. In the process of covering land use, we had to identify what had actually been studied. So we have 22 land-use solutions. We're splitters, in order to get accurate data.

David Roberts

If you had to guess, what's the biggest potential contributor that you had to leave out for lack of data?

Paul Hawken

War.

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David Roberts

How big a role does carbon capture and sequestration (CCS) play in your schema?

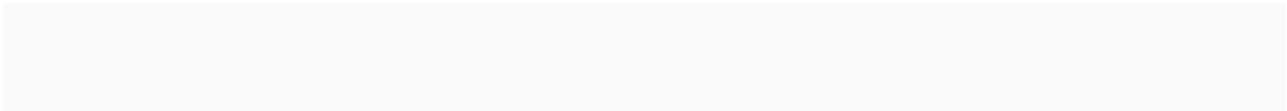
Paul Hawken

None. It's unaffordable. It doesn't work. It has to work first, and then has to be affordable. Using carbon capture in Saskatchewan [for depleted oil wells](#) isn't exactly a solution, especially when it's only 40 percent capture and the company's depending on the province to subsidize it. There are better results [coming out of Texas](#). We're watching it.

You can't achieve drawdown unless you sequester [carbon], but right now the only way we know how to do it in a reliable way is photosynthesis. I mean, there are science experiments going on, but it's not commercial and it's not practical.

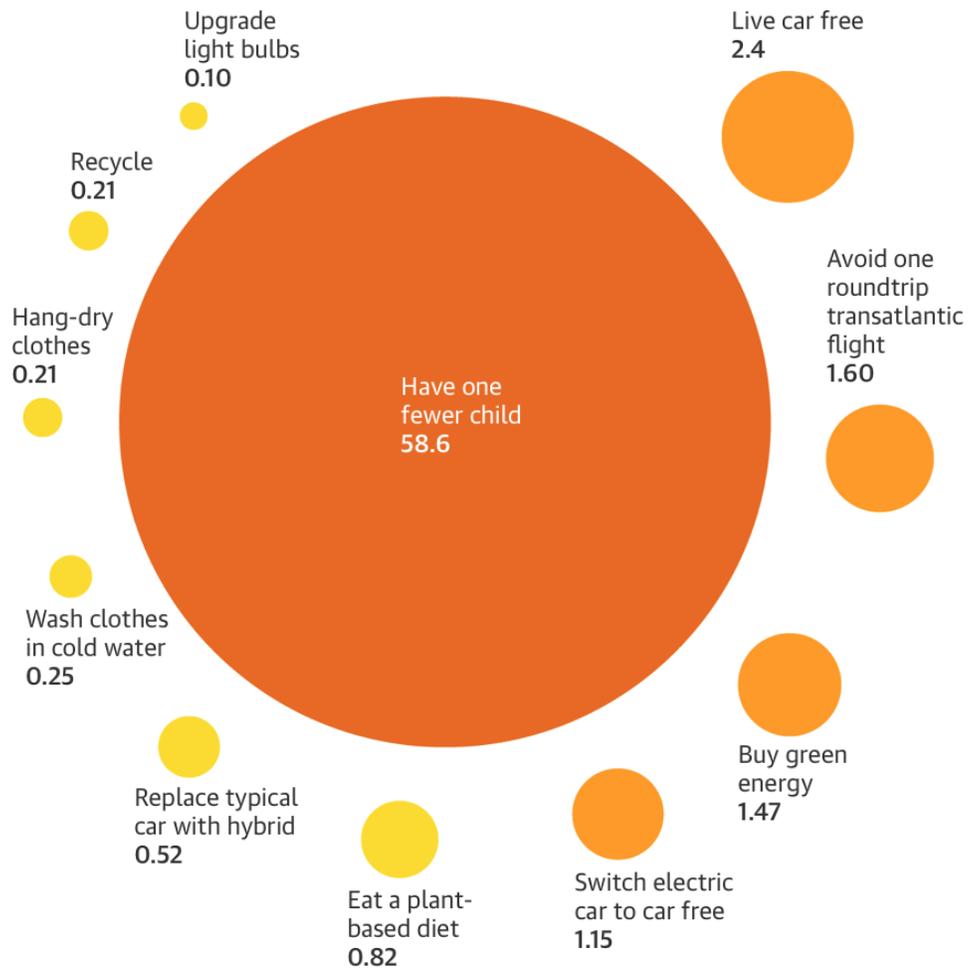
2. Richard Grossman, "The 4 most effective ways to reduce carbon footprint,"

from his blog at PopulationMatters.org, Nov. 2, 2017



Having one fewer child will save 58.6 tonnes of CO2-equivalent per year

Tonnes of CO2-equivalent per year for one person undertaking each action



Guardian graphic | Source: Wynes & Nicholas, Environmental Research Letters

The graphic shows how much CO2 can be saved through a range of different actions.

Dear Reader,

From time to time there will be an article that hits the nail on the head. The recent analysis by Wynes and Nicholas is one. You can find "The climate mitigation gap:

education and government recommendations miss the most effective individual actions" recently published in Environmental Research Letters at:

<https://doi.org/10.1088/1748-9326/aa7541>

Thanks for reading!

Richard

Compare Climate Change Strategies

Recently I asked some authorities on climate change: "what is the most effective way of decreasing greenhouse gas emissions?" They gave stock answers about decreasing consumption. "If you were my students, your grades would all be D's" was my response.

They are, unfortunately, not alone. A recent study listed the 4 most effective activities that people can do to decrease their emissions. Three of them are what you might expect, while the most effective one—by far—might be unexpected.

The measure used by the authors of this article is tonnes CO₂-equivalent (tCO₂e) emission reductions per year. The average person in the USA causes about 16 tonnes of CO₂ to be released annually. (a tonne is a metric ton; roughly equal to our ton of 2000 pounds) Here are the 4, listed from least to most effective.

Eat a plant-based diet. This has health benefits as well as aiding the environment. It is clear that eating meat, especially red meat, is bad for your health. The effects on the world around us are also negative—excessive use of water, sewage lagoons that pollute ground water and dead zones in the ocean from animal waste. An **individual's annual** saving by avoiding meat is almost a tonne.

Our transportation system depends on fossil fuels, which generate CO₂ when used. It makes sense that avoiding air travel and not driving a car would decrease carbon emissions. Giving up both air travel and your car would keep 4 tonnes of CO₂ out of the atmosphere.

Buying "green" electricity is quite effective, and is inexpensive—thanks to our electrical cooperative. Switching from power produced with coal to renewable sources prevents 1.5 tonnes of greenhouse gas emissions—and makes our air healthier.

The most effective thing that an individual can do to reduce his or her carbon footprint is to have one fewer child. The effect **is strong because of the "carbon legacy"** of a child born in a rich country. The carbon footprint of the individual child is significant, **but the legacy of all that person's progeny (who will go on for many generations) is huge.** A child not conceived **reduces a person's carbon footprint by 58 tonnes!** Yes, the one best action an individual can take to reduce his or her carbon footprint is to choose to have a small family—or no children at all.

Unfortunately, most people who study, write and teach about greenhouse gas **reduction don't consider the impact of childbearing.** The authors of the paper mentioned above also studied governmental recommendations to reduce emissions from the EU, the USA, Australia and Canada. Not surprising, they found that the recommendations all focused on less effective actions.

Likewise, the paper examined the content of science textbooks. They searched several textbooks used in Canada for suggestions to reduce greenhouse gas emissions. Very few of the recommendations were for the 4 most effective actions named above.

To quote from this paper: "It is especially important that adolescents are prepared for this shift [to reduce carbon emissions]. They still have the freedom to make large behavioural choices that will structure the rest of their lives, and must grow up accustomed to a lifestyle that approaches the 2.1 tonnes per person annual emissions budget necessary by 2050 to meet the 2 ° C climate target." They went on to write: "Furthermore, adolescents can act as a catalyst to change their household's behaviour."

They also compared less effective and highly effective interventions: "...a US family who chooses to have one fewer child would provide the same level of emissions reductions as 684 teenagers who choose to adopt comprehensive recycling for the rest of their lives." The paper concludes: "Some high-impact actions may be politically unpopular, but this does not justify a focus on moderate or low-impact actions at the expense of high-impact actions."

I hope that the importance of childbearing gets across at the Climate Change Symposium to be held Thursday afternoon, November 9th. This Symposium will be a new venture for Fort Lewis College Lifelong Learning programs. It will feature 5 outstanding experts speaking on a topic of major importance. The keynote speaker is internationally known scientist Kevin Ternberth. As with all FLC Life-Long Learning Programs, this event is free, but donations will be accepted at the door to help defray costs. It will be held in the Student Union Building ballroom from 1 to 5, followed by a meet-and-greet session with refreshments. Please RSVP by November 6th at: special-events-rsvp@fortlewis.edu or call: 970-247-7608. I hope to see you there!

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Topic B. Astounding Recent Warming in the Arctic - Why Does It Matter?

<https://www.ecowatch.com/arctic-climate-change-2539897203.html>

Scientists alarmed by 'crazy' temperature rises

Record warmth in the Arctic is unprecedented. The north pole gets no sunlight until March, but an influx of warm air has pushed temperatures in Siberia up by as much as 35C above historical averages this month. Greenland has already experienced 61 hours above freezing in 2018 - more than three times as many hours as in any previous year. The question now is whether this signals a weakening or collapse of the polar vortex, the circle of strong winds that keep the Arctic cold by deflecting other air masses. The

vortex depends on the temperature difference between the Arctic and mid-latitudes, but that gap is shrinking because the pole is warming faster than anywhere on Earth. While average temperatures have increased by about 1C, the warming at the pole – closer to 3C – is melting the ice mass.

<https://www.theguardian.com/environment/2018/feb/27/arctic-warming-scientists-alarmed-by-crazy-temperature-rises>

New study sharpens focus on Antarctic ice loss

Accelerating ice losses from the West Antarctic Ice Sheet and reveal surprisingly steady rates of flow from its much larger neighbor to the east.

<https://sealevel.nasa.gov/news/110/new-study-sharpens-focus-on-antarctic-ice-loss>

There is a super-hot sport over the North Pole. It has forced the normal frozen Arctic air to the south, creating this crisis. We should call this the Dragon from the north, not the Beast from the East. The media has not discussed the connection. This is the only so-far-ultimate consequence of warming the planet and the oceans.

The Unusually Warm Arctic Might Scare Your Pants Off

Cities in Europe, meanwhile, are getting hit with unusually cold temperatures and snowfall. That's days after the U.S. East Coast had record highs.

<https://www.commondreams.org/news/2018/02/26/these-climate-scientists-tweets-about-unusually-warm-arctic-might-scare-your-pants>

Siberian blast to SMASH Britain with 'coldest winter snap

Watch the video of icy weather moving into England

<https://www.express.co.uk/news/weather/922667/UK-weather-latest-forecast-Siberian-Met-Office-BBC-weather>

A Large Area of Open Water Forms North of Greenland During February

Warm winds blowing at up to gale force intensity from the south have assaulted the ice with high waves and above-freezing temperatures for about four days now. The ice edge north of Svalbard is being rapidly beaten back. Perhaps more disturbing, is the fact that the ice pack to the north of Greenland has also now withdrawn — opening up a huge polynya.

<https://robertscribblers.com/2018/02/26/a-large-area-of-open-water-forms-in-the-melting-sea-ice-north-of-greenland-during-february/>

Onset Of Climate Tipping Points

The global effect of Arctic melting will create almost as much global warming as already produced by the total rise in atmospheric CO2. Once a temperature threshold is breached, abrupt events follow due to amplifying feedbacks, even within a few years, examples being (1) freeze events which followed temperature peaks during past interglacial peaks due to influx of cold ice-melt water into the north Atlantic Ocean; (2) the Dansgaard–Oeschger warming events during the last glacial period; (3) the Younger dryas stadial freeze and the Laurentian stadial freeze. In some instances it only took a temperature rise of about 1-2 degrees Celsius to trigger extensive ice melt, with a flow of cold melt water into the oceans that triggered abrupt transitions that could occur over a few decades and even few years.

<https://countercurrents.org/2018/03/01/onset-climate-tipping-points/>

Interview with Jennifer Francis, climate scientist:

<http://therealnews.com/t2/story:20878:Global-Warming-and-Extreme-Cold%3A-How-One-Leads-to-the-Other>

Topic C: Humor Break

<https://www.theonion.com/sighing-resigned-climate-scientists-say-to-just-enjoy-1823265249>

Topic D: If everyone lived sustainably, what would their lives be like?

<http://oxfamblogs.org/fp2p/if-everyone-lived-sustainably-what-would-their-lives-be-like/>

Topic E: The Water Crisis in Cape Town: Unique or just the tip of the iceberg?

Overview:

“Yes, the amount of water on earth is constant. But only 2.5 percent of it is freshwater. Of that freshwater only a tiny fraction is readily available. Almost all of it is frozen or in the ground. Rivers, an extremely important source of water for humans, contain barely .0002 percent of Earth’s freshwater. **So as the population explodes, human use of water expands, and pollution reduces the already limited amount available, the remaining volume of freshwater accessible to supply this demand grows smaller.**”

Cape Town Story

<https://robertscribblers.com/2018/01/24/the-day-the-water-ran-out-climate-change-day-zero-swiftly-approaching-for-cape-town/>

The latest estimate is the on April 12, 2018, running water to residents will be cut off.*

And the trend of decreasing rainfall began 80 years ago!

* Quote:

Under this very difficult scenario, water pipes to everything but essential services like hospitals would be cut off. Residents would be forced to make daily treks **to one of 200 outlet pipes to fill up water bottles**. If this happens, then Cape Town will be the first major city in the world to be forced to fully cut off its municipal water supply.

The Conversation, [Fixing Cities' Water Crises](#): Two cities on opposing continents, Santiago and Cape Town have been brought to their knees by events at opposing ends of the climate spectrum - flood and drought.

Iran's Water Crisis:

See: <http://www.theguardian.com/world/2016/may/09/iran-desalination-water>

Pakistan's water crisis

<http://peakoil.com/consumption/pakistans-water-crisis-is-a-ticking-time-bomb>

The New Republic, [Rural American's Drinking Water Crisis](#).

The Baltimore Green Forum seeks to educate and stimulate dialogue about what humans can do to make modern civilization more sustainable, including adjusting to finite resource limits and preserving biodiversity and a healthy environment. We do this through 8 monthly meetings a year. The topics are far ranging. They vary from local to planetary and from philosophical to scientific to very practical.

The Meeting Format: There is a speaker and Q&A from 4-5:15 pm. Then there are brief announcements by representatives other organizations that also seek sustainability and environmental protection. We thereby promote collaboration among these organizations. Next, there is an optional roundtable discussion until 6:30 pm. Finally, there is often a small gathering at a nearby restaurant.

BGF is open to the public and is free of charge, but donations to Maryland Presbyterian Church are collected during the meeting to thank the church for their generous gift of the space to us.

Send questions to us at BaltimoreGreenForum@gmail.com. Or call Sam Hopkins at [410 935 8540](tel:4109358540).

The Baltimore Green Forum is Co-Sponsored by:

[Simplicity Matters Earth Institute](#) ~ [Chesapeake Climate Action Network](#)

[MD League of Conservation Voters Education Fund](#) ~ [Greater Baltimore Group of the Sierra Club](#)

[Heathcote Community](#) ~ [Retrofit Baltimore](#) ~ [Presbytery of Baltimore: Care of Creation Group](#)

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Please post a copy of this flyer in your workplace or neighborhood!

Go to <http://www.baltimoregreenforum.org>