

COALITION ON THE ENVIRONMENT AND JEWISH LIFE
AND THE GREEN ZIONIST ALLIANCE PRESENT

JEWISH ENERGY GUIDE



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COEJL Director Sybil Sanchez (left) advocates for smart environmental policy as part of an interfaith political action in Washington.



JEWISH ENERGY GUIDE

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**COALITION ON THE ENVIRONMENT AND JEWISH LIFE
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DECLARATION: THE JEWISH ENVIRONMENTAL AND ENERGY IMPERATIVE

A CALL TO ACTION

We have before us a challenge, a special moment for Jews, a challenge as compelling and urgent as any that humankind has ever faced before, a challenge of interest both universal and particular. We write of this planet, our home and of the pressing need to transform the world's energy economy while addressing global climate change.

As Jews: God, we are taught, declares to us, "Look at My works! See how beautiful they are, how excellent! For your sake I created them all. See to it that you do not spoil and destroy My world, for if you do, there will be no one after you to repair it." (Ecclesiastes Rabbah 7:13)

As people of faith: We are fully aware that the issues before us impact all Americans — indeed, all Earth's inhabitants. We weep at the heavy burden that climate change imposes on the world's poor, we mourn its impact on the diversity of God's creations, we tremble at the harm we impose upon our own descendants — and we are alarmed by our own vulnerability, here and now.

As Jews: We are concerned as well with the tensions caused by the world's dependence on fossil fuels, a finite resource that is polluting our atmosphere, and by the consequent threat to the environment both in the United States and in Israel. Moreover, as a community, the security of Israel and the United States is paramount in our decision making. For the sake of both energy security and the environment, the Jewish voice must be especially loud and clear: Because of our nation's massive dependence on oil for transportation, the United States is susceptible to pressure from oil-producing nations, many of whom are unfriendly to the Jewish commu-

nity's and our nation's interests, and our environment is made more vulnerable to the ravages of pollution.

As concerned human beings: We recognize that around the world, a quarter of all people still lack access to electricity. Many of these same people, plus millions more of the poorest around the world, have done the least to cause climate change and yet they are its principal victims. Their food security and physical safety are savagely undermined in the face of weather-related disasters and withering fields; the rapid escalation in food costs worldwide is especially burdensome to them.

So, out of concern for the well-being of all nations, and with a particular concern for the poorest among them as well as for future generations, our support for more sources of clean, renewable energy and for energy efficiency is also a matter of justice. It is also imperative that we take the steps necessary now to enhance our national energy security. This effort should be pursued with an urgency and commitment of resources akin to that of such great efforts as NASA's intensive program to land a man on the moon, the Marshall Plan of 1948, or the invention of the Internet via DARPA — efforts that draw on the strength and resources of both government and the private sector, working together or separately, as appropriate.

We believe that the Jewish community brings distinctive resources to the challenge we face. We are not newcomers to environmental concerns, nor to the need for the cultural, political and economic changes that are required in the face of these urgent moral and strategic dangers. Around the country, Jewish institutions and organizations have been active and effective participants in

admirable efforts to repair the environment. But those efforts have, until now, not had the global impact that we believe they must. It is time to mobilize the full range of our resources and make the application of those resources a central commitment of our communal agenda.

For that to happen, we need to internalize the idea of environmental responsibility, the constant awareness that we are a people of menders, of healers, and that our fractured planet — compound fractures, at that — cries out for healing. Our readiness to take up the challenge must become part of who we are and what we are about. For in the end, the environment is not something "out there" — we ourselves are part of it. We cannot "fix" the environment unless we are prepared — nay, eager — to repair ourselves. Enlightened stewardship is not only a religious and moral imperative; it is a strategy for security and survival.

This we ask and urge on behalf of your children and grandchildren, and ours. This we ask as your neighbors, whose destiny and yours are interdependent. This we ask because we know that without an enthusiastic mandate, government's willingness and capacity to intervene on behalf of the environment and energy security are severely constricted. And this we ask because though so very much depends on the actions of government and on the support of those actions by civil society, as much also depends on our own behavior: on the carbon footprint we generate; on our success in greening our homes, synagogues, community centers, schools, workplaces and the buildings we own; on our active efforts to become responsible consumers; and on the decision each of us takes to make the healing of our planet more than an episodic expression.

With respect to oil and its dominance in world transport, conservation and increased efficiency represent the most immediate and implementable means of reducing energy dependence. Conservation and efficiencies in energy use — in particular, through aggressive measures directed at increases in fuel economy — must therefore be achieved even at the expense of limited and reasonable increases in the short-term cost of living and personal comfort. In addition, measures to increase use and development of alternative technologies and alternative energy resources should be emphasized as well as conservation and increased efficiency.

It is with these considerations in mind that we should first and foremost set as a goal reduction of our greenhouse gas emissions by 14 percent by September of 2014.^[1]

This three-year goal will build on recent energy-efficiency efforts and be measured through electric bills. As use falls, evidence of our fealty to our values will rise. The sharp decrease in our energy usage will free up a sacred seventh of our resources for purposes such as education and Torah, and set the stage for further reductions in our impact.^[2] Looking to our energy costs at the outset of this campaign and taking into consideration any relevant energy-efficiency efforts that preceded the campaign, we will create an initial baseline from which to measure our full carbon footprint. We also will urge our respective communities to do the same.

With the baseline in hand, we will build on this effort in the decades ahead. For beyond the immediacy of our energy bills, our aim is to explore and decrease the true environmental impact of our Jewish

institutions and individuals. Change in our lifestyles and in the ways our institutions are managed will maximize our collective contribution to the common good. Our ultimate goal is guided by science and the target put forward by the U.S. government: Greenhouse gases are to be reduced by 83 percent of 2005 levels by the year 2050. We fully share this goal, and for this we will agitate and advocate. The hour demands of us to do no less.

As leaders and teachers of the Jewish community concerned about future generations everywhere, we therefore pledge our own personal commitment to:

- * Elevate the Jewish environmental and energy imperative by calling for climate justice and environmental responsibility; by urging others to join us in that effort; and by calling for measures to reduce our dependence on oil, including increased fuel efficiency.

- * Engage in Jewish stewardship by greening our homes and buildings, our houses of worship and places of communal gathering to model the action we seek.

- * Set as a goal reduction of our own emissions of greenhouse gases by 14 percent by September of 2014. Including recent efforts and using our energy costs as an initial measure, we will create a comprehensive baseline with which to measure our full carbon footprint and work within this community-wide effort.

In the coming year, we will urge our institutions and all other Jewish institutions to commit to the following goals:

- Elevate the Jewish environmental and energy imperative by:

- * Encouraging Jews across North America to adopt these goals in their personal and business lives, and in their residential and commercial buildings; reaching out especially to Jews in leadership positions in the public, communal and private sectors to ensure that Jewish-owned real estate, be it communal or individual, goes green;

- * Encouraging Jewish philanthropists to support Jewish environmental organizations and initiatives and to support clean-technology innovation;

- * Advocating legislation and policies that promote energy security, alternative technology, alternative and renewable energy, energy efficiency and sustainability;

- * Advocating the reduction of greenhouse-gas emissions and our dependence on fossil fuels while seeking to build a sustainable and resilient response to climate change, especially in developing nations that are most vulnerable;

- * Advocating for setting national standards that will improve fuel economy at a national level.

- Engage in Jewish stewardship by creating a sustainability plan for our agencies and institutions that includes the following goals for implementation:

- * Set as a goal reduction of our own emissions of greenhouse gases by 14 percent by September of 2014; including recent efforts and using our energy costs as an initial measure, create a comprehensive baseline with which to measure our full carbon footprint and work within this community-wide effort;

- * Conduct a comprehensive energy audit;

[1] Leaders and communities that have alternative reduction goals, such as those by the American College and University Presidents' Climate Commitment or those set by other standards, still are considered part of the overall 14% by 2014 goal of reducing our communal contribution to greenhouse gases and energy consumption.

[2] Shmita and the "sacred seventh": The "sacred seventh" refers not only to Shabbat, of course, but to the longer cycles of shmita or shabbaton, in other words, sabbatical years. Leviticus 25 holds out the economic and social ideal of a world in which land, animals, workers and owners alike enjoy their

rest. In the present cycle of sustainability, autumn 2014 inaugurates the next shmita year. Our current Creation-care effort, then, is "a seventh by the seventh": to attain a one-seventh (or 14 percent) reduction in our emissions by the seventh year in the cycles of God's Creation.

* Identify a sustainability officer, team, or otherwise appropriate green contact person, with an integrated, system-wide approach in mind;

* Connect and share resources with our Jewish, interfaith and civic partners in such efforts, both locally and nationally;

* Identify and commit to specific energy/greenhouse-gas emissions reduction targets, and to specific reporting structures to evaluate and publicize progress.

For if we do not do these things, who will do them? Though we are neither prophets nor the sons and daughters of prophets, are we not Earth's custodians, guardians of a creation entrusted to us by God for all future generations, assigned to choose life? Call us watchmen, call us sentinels, call us your brothers and your sisters who turn to you *b'chol lashon shel bakashah*, in every tongue of request: Join with us, that we may together restore what has been ruined, make straight the crooked way, preserve, protect and cherish the bounty that is ours to tend and ours to bequeath, repaired, to those yet to come.

[3] Signed, as of April 2012:

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[3] Organizations for affiliation purposes.



CONTENTS

BREISHIT (In the beginning)

- 7 Director's Introduction
By Sybil Sanchez
- 8 The Importance of Jewish Climate-Change Advocacy
By Al Gore
- 9 Repair the World's Climate
By Bill McKibben
- 10 The Power of Advocacy
By Steve Gutow
- 11 Thou Shalt Conserve Energy
By Fred Scherlinder Dobb
- 12 The Science of Climate Change
By Daniel Ziskin
- 16 Shmita: Balance with Earth
By Jakir Manela

POLICY

- 17 Jewish Energy Advocacy
By Sybil Sanchez
- 19 Social Justice and Climate Change
By Jill Jacobs
- 20 The Energy Cost of Food
By Manuela Zoninsein
- 22 Are We Our Brothers' (and Sisters') Keepers?
By Matthew Anderson
- 24 Is it Jewish to be Green?
By Naomi Tsur
- 25 Renewable-Energy Policy in Israel: Past and Present
By Naomi Lipstein and Alon Tal
- 35 A Green Future for Israel
By David Krantz

LIGHTS UNTO THE NATION

- 40 Washington's Green Shuls
By Joelle Novey
- 42 The Jewish Greening Fellowship
By Mirele Goldsmith
- 44 The LEED-Certified Office
By Kenneth Bandler

- 45 Baltimore's Green Federation
By Nina Beth Cardin
- 46 The Environmentally Friendly Conference
By David Ezer
- 47 Engaging Teens in St. Louis
By Gail Wechsler
- 48 The National Synagogue Goes Green — Hallelujah
By Jen Singer

GREENING

- 49 Fulfilling the Imperative: Getting to a 14-Percent Reduction in Energy Use by 2014
By Mirele Goldsmith
- 50 Green Your Home
By David Krantz
- 51 Making Your Synagogue a Green Holy Place
By Lawrence Troster
- 53 The Green School: Using Buildings as Teachers
By Cynthia Thomashow
- 55 Green Your Office
By Lawrence Troster
- 57 Green Your Conference
By David Krantz
- 58 Forming a Green Team
By Rachel Jacoby Rosenfield

D'VREI TORAH

- 59 Rosh Hashanah: Wake Up and Take Action
By Julie Schonfeld
- 60 Yom Kippur: Mick Jagger, Energy, a Horse and the Jewish Question
By Shmuel Simenowitz
- 62 Sukkot: Dwelling in the Midst of Nature's Energy
By Howard Cohen
- 64 Chanukah: 8 Days of Action
By Arthur Waskow
- 65 Passover: The Four Signs of Climate-Change Action
By Barry Schwartz
- 66 Shavuot: Cheesecake, Temptation and Conservation
By Natan Levy

- 68 Rosh Chodesh: Less is More
By Jamie Korngold

POWER SOURCES

- 69 Oil Slick: The Ugly Truth about Petroleum
By Benjamin Kahane
- 71 A Sea Change: Wave, Tidal and Hydroelectric Power
By Christopher Vaughan
- 73 Coal: The Dirtiest Fuel
By Benjamin Kahane
- 74 Solar: Let the Sun Shine
By Benjamin Kahane
- 75 The Lowdown on Natural Gas and Hydraulic Fracturing
By Mirele Goldsmith
- 77 Energy's Answer is Blowing in the Wind
By Benjamin Kahane
- 78 Nuclear: Carbon-Free but Radioactive
By Benjamin Kahane

TOSEFTA (Supplements)

- 79 Ten Torah Tweets for Creation Care
By Fred Scherlinder Dobb
- 80 Shabbat Noah: Global Climate-Healing Shabbat
By Einat Kramer
- 82 The Rainbow Connection: Rainbow Day and Creation
By David Seidenberg
- 83 Holiday Programming on One Foot
By Evonne Marzouk
- 84 So Many Ways to Save Energy
By Dov Peretz Elkins
- 89 Suggested Reading
By the Green Zionist Alliance
- 96 Contributors

YOVEL (Jubilee — the 50th)

- 100 The Next Jubilee: A Vision for 2050
By David Krantz

DIRECTOR'S INTRODUCTION

BY SYBIL SANCHEZ

Standing at the intersection of *adam v'adamah* — between human beings and the Earth — presents several challenges: How do we address the nexus between energy, security and the environment? How do we meet our energy needs as human beings and the environmental needs of our home, the Earth?

Our reliance on fossil fuels comes with a host of moral dilemmas. Hydraulic fracturing — shooting industrial fluids deep into the earth to release natural gas — could endanger our freshwater drinking supply. The 2011 meltdown of nuclear reactors in Japan has contaminated the region's air, water, and crops and reminded the world of the danger that nuclear energy poses. Oil extraction from tar sands in Canada generates about three times as much greenhouse-gas emissions as the production of conventional oil, yet the practice is increasing. People in Somalia starve during severe drought, yet pundits continue to debate whether climate change and extreme weather events and rising summer

heat are connected. Arab states hostile to Israel control much of the world's oil supply, dictating market prices and politics. And yet day after day we flip our light switches, boot up our computers, and drive our cars. What should we do?

While we cannot remove ourselves from the necessity of using energy, we have a moral obligation to work toward protecting our environment. There must be a sustainable alternative to how we live now.

The need to address our dependence on fossil fuels and increase our energy security has become central to our time. Although international commitments and legislation in Washington are critical in reducing greenhouse-gas emissions and increasing energy independence, our challenge is not to passively wait for policymakers to finally make their

next moves. We need to bring our communal, institutional and personal strengths to bear now. That is why Jewish Energy Covenant Campaign leaders are committing to speak out

as a public Jewish voice on energy and the environment.

The Jewish Energy Covenant Campaign seeks to integrate the goals of energy independence and the reduction of

greenhouse-gas emissions into the mainstream of Jewish life. This publication provides the resources that you can use to take action immediately and make a meaningful impact.

Rabbi Tarfon taught us that we are not obliged to complete the task, but neither can we desist from it. The task is indeed great, and we hope you will join us as we work to change the way we live — and change the environment for the better. ☀️

EDITOR'S NOTE

Seven is a holy number in Judaism. And, mathematically, each seventh represents about 14 percent of the total.

In Leviticus 23:15-16 and again in Deuteronomy 16:9-10, we are commanded to count seven weeks of seven days from Passover until the 50th day, Shavuot, the traditional anniversary of receiving the Torah. But that's not the only time we're commanded to count by sevens. In Leviticus 25:8-12, we're told to count seven cycles of seven years — seven *shmita*, sabbatical, years until

the 50th year, *yovel*, jubilee.

Think of *yovel* as a giant reset button, when mistakes are undone: Debts are forgiven, slaves are set free and wealth equality is restored. *Yovel* presents a blank slate and a second chance to get things right.

This *Jewish Energy Guide* consists of seven sections of seven articles, followed by a 50th, a jubilee, a vision for what life can be like by the time of our next *yovel*, if we will it. May we use this guide to help us prepare our second chance. Let's reset our climate

and restore the balance of greenhouse gases baking our planet, changing our climate and wrecking havoc on the human race.

May we be conscientious stewards of the Earth, and may we pass a healthier Earth on to our children and grandchildren. May we return to the days of old, when forests covered the land and fish filled the sea. May we breathe clean air and enjoy bright blue skies. And may the pages of this guide help lead the way.

— David Krantz



THE IMPORTANCE OF JEWISH CLIMATE-CHANGE ADVOCACY

BY AL GORE

I'm writing to tell you how excited I am by the Coalition on the Environment and Jewish Life's plans for the Jewish Energy Covenant Campaign, how ready I am to help, and how much I encourage all of you who have been a part of COEJL's mission to do all you can for the success of the most important project you've undertaken.

It couldn't come at a more critical moment. As someone who works to follow developments all over the world, I believe that decisions on global warming and energy that will be made in coming months by Congress, the White House and the world's governments will shape conditions of life on planet Earth for centuries to come. The stakes are truly that consequential.

Our Congress is moving to do what it can. It won't be enough. You must continue to press them to act boldly. However, the boldness, diversity and creativity of citizen action is the key to overcoming the special interests, inertia and cynicism. Because you are moved to act from spiritual and moral conviction, your efforts are crucial for the future of our children and grandchildren.

That's why I'm so very excited by COEJL's Covenant Campaign and some of its particular projects. I am so happy to see that this initiative will draw upon the new leadership of younger men and women who see in the legacy of Judaism's teachings on stewardship a source of renewal of their Jewish faith as well as, through their environmen-

talism, a service to civilization universally. The campaign is very creative in encouraging diverse communities to enact their own distinctive initiatives.

Policy won't do the job alone. We've got to discover all over again how to work together in our nation. The Jewish community has an absolutely unique capacity for communal action that can resonate throughout American society. If you can bring together all four major branches of Jewish life — national organizations and community-relations councils, established organizations and fresh initiatives, elders and children, and all kinds of synagogues and Jews across the spectrum — that's what will have a real impact.

The Jewish community always has told me that the core of its advocacy comes from the heart of what it means to be Jewish. I've never appreciated this more than in this moment, on this issue, when the world needs the witness of moral passion, depth, and authenticity of your work. This is what I understand to be the significance of a campaign undertaken "in covenant," which then radiates outwards for the common good of God's climate that embraces us all. ☀️

THE JEWISH COMMUNITY HAS AN ABSOLUTELY UNIQUE CAPACITY FOR COMMUNAL ACTION THAT CAN RESONATE THROUGHOUT AMERICAN SOCIETY.



REPAIR THE WORLD'S CLIMATE

BY BILL MCKIBBEN

In the last 20 years, I've watched the religious environmental movement grow from nothing — less than nothing, really. Twenty years ago, liberal religious communities thought of the environment as something to get to once poverty and war had been defeated, and many conservative faith groups viewed it as suspiciously pagan.

But that's changed — decisively. A couple of years ago, when a few of us organized the first big global day of action around climate change for 350.org, we found huge support in religious communities everywhere — from the patriarch of the Orthodox church, to the head of South Africa's Muslims, the Dalai Lama, to the evangelical college where Billy Graham went to school — but it was the Jewish community that provided some of the most powerful backing, and I think I know why.

It's because climate change is more than the worst practical problem human civilization has yet encountered — it's also a deep, deep ethical dilemma. Even as we're accustomed to saying that climate change is "caused by humans," that's not entirely true. It's really only caused by *some* humans — those who burn significant amounts of coal, gas and oil. About 40 percent of the greenhouse gases currently in the atmosphere, for instance, originated in the United States.

But those emissions are having devastating effects everywhere.

In fact, those effects are worst in places that are least responsible for the trouble precisely because they're so poor. In 2010, a quarter of Pakistan was underwater from epic flooding — exactly the sort of flooding climatologists have predicted, and that we've seen playing out in many places — but the average Pakistani peasant farmer has done almost nothing to cause the problem. Ditto the average African peasant farmer watching drought wither his crops, or the average Andean farmer watching the glaciers that have been the source of his water supply melt away.

That exquisitely tough ethical problem means that we need the thousands of years of ethical thinking that is one of Judaism's great legacies. The profound idea of *tikkun olam* has two meanings here. One is the literal repair of the world: The planet is broken, with more carbon in the atmosphere than our systems can handle. In 2008, then-NASA climatologist James Hansen and his team reported that any value of carbon dioxide in the atmosphere greater than 350 parts per million is "not compatible with the planet on which civilization de-

veloped and to which life on earth is adapted." Since we're at about 400 parts per million right now, we're by definition in need of quick repair.

The other lesson of *tikkun olam* is that we need to repair those breaches between people that come when some suffer because of the excess of others.

To me, that's why our work at 350.org has been so exciting: Across the globe, people on every part of the spectrum — from victim of climate change to cause of it — have come together to make a common witness. I remember that first global day of action, when the people who lived

THE JEWISH COMMUNITY PROVIDED SOME OF THE MOST POWERFUL BACKING FOR THE FIRST BIG DAY OF CLIMATE-CHANGE ACTION. AND I THINK I KNOW WHY.

around the rapidly shrinking Dead Sea wanted to draw attention to their common plight. Borders made it hard, so the Jordanians said they would make a giant human "3" on their shore, Palestinians a giant "5," and Israelis an enormous "0." Viewed from above, it may have been the most beautiful image in a day of 5,100 demonstrations — beautiful because it reminded us so powerfully that there is a way forward. ☀️



THE POWER OF ADVOCACY

BY STEVE GUTOW

Inside and outside the pages of this guide, you will read and continue to read about bad things happening — to our Earth, to our fellow people, to our collective spirit — and, though we may wish it away, bad things likely will continue to happen for a very long time to come. This, of course, is discouraging, leading many among us to give up and forget about addressing these problems. But that would be a mistake. After all, it is our Jewish responsibility to help repair the world. That is, indeed, why we, as Jews, are here — to try to make life better. And not just better for our friends and families, or for the 300 million Americans, but for the seven billion residents of Earth.

If we have no choice but to try to repair the world, the questions then become, can we succeed, and if so, how do we do it? From experience, I can tell you that yes, we can make a difference. It's not always easy, and it's not always fast, but if we work together — if we unite our voices, so that the sound we make is not that of a single person shouting a thousand times but that of thousands of voices shouting all at once, we will be heard. And if we do it right, the whole Earth can shake.

One of the hardest and most worthwhile fights that I helped lead was against genocide in Sudan. Yes, of course, the killings in Darfur lasted longer than they should have, and the threat of renewed conflict persists — but the genocide ended sooner because of our intervention. As a

chair of the Save Darfur Coalition — a group with 200-member organizations from across the American political spectrum, from the Affiliation of Christian Engineers to Yeshiva University — I was part of the team that helped lead the way in pressuring the United States and the United Nations to take action in Darfur. Our work was part of the effort that led to multiple peace agreements and the formation of the world's newest country, South Sudan. Without thousands of voices united — if we had all been quiet — then change may not have happened at all.

Today, we need to unite our voices again, to stand up for the most voiceless of all — the Earth. As far as we know it has not cried out since it cried out to God on behalf of Abel in Genesis. The home that God has given us to care for and to care for us is getting warmer at an alarming rate. As we say in my native Texas, soon it may be so hot that the hens are laying hard-boiled eggs.

On a micro scale, we need to change our light bulbs and reduce our own personal carbon footprints. But we also have power on the macro scale —together we

have the power to persuade governments to initiate larger programs and to make even bigger changes. That power is called advocacy. And by supporting the Coalition on the Environment and Jewish Life, you are joining your voice to thousands of others. All of us are telling Washington: We need to take action on climate change.

The pillagers of the planet — those who would destroy our planet for profit without considering the consequences — spend millions on Washington lobbyists to ensure that nothing substantial is done on climate change. COEJL is part of the counterweight — bringing Jews together to share our voices for clean-energy policy.

As our country's founding fathers and mothers knew, we are stronger united than divided. By uniting with COEJL, we present a strong and loud voice on environmental issues. We want to answer Hillel's question: "If not now, when?"

"Now," we say with a loud, united, and organized voice. ☀️

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THOU SHALT CONSERVE ENERGY

BY FRED SCHERLINDER DOBB

"Thou shalt conserve energy" is not a biblical commandment, but it's close. After all, the Torah's 529th commandment (530th by some counts), *baal tashchit*, has long been commonly understood to mean "thou shalt not waste," a principle that as far back as the Talmud specifically includes not wasting energy. Other laws and ideas point in this direction as well. While of course energy conservation is not the consistently overriding consideration in such a gloriously wide-ranging tradition where other values are also at play, but conserving energy is squarely within our tradition — a central concern.

To understand how scholars at the time of the Talmud, more than 1,500 years ago, could mandate energy efficiency as a matter of Jewish law, we must grasp the legal category of *baal tashchit* — literally "concerning destruction," and figuratively "do not waste." It originates with Deuteronomy 20:19, which tells us not to cut down an enemy's trees during a siege. Tradition reasoned that if it's forbidden even in wartime, when the military advantage gained might affect soldiers' lives, then we surely should not cut down trees wantonly in ordinary situations. Since the law was specific to fruit trees, the economic interpretation became "fell them only when the benefit is markedly greater than the value of all the fruit they might ever yield," a calculus that tilts toward conservation now that we know how trees impart value far beyond their fruit, such as by providing habitat, sequestering carbon, preventing erosion, offering shade, generating oxygen and bestowing beauty.

As Dr. Eilon Schwartz writes in his masterful article on the subject in the book "Trees, Earth and Torah: A Tu B'Shvat Anthology," the rabbis of the Talmud "did not understand *baal tashchit* as a precept solely concerned with fruit trees, but rather as

a far-reaching principle which defines our responsibilities and obligations to the Created world."

In good Talmudic fashion, some scholars were more concerned with human comfort or profit, while others saw inherent value in conservation and minimizing consumption. Though the first group approached use of Creation in a human-centered or anthropocentric way, Schwartz writes that "communitarian positions on the environment nevertheless remain within an anthropocentric view." In other words, whether you think that nature is here for human benefit or that Creation exists for its own sake, Judaism bids us to conserve in any case.

And Rav Zutra, a 4th-century Babylonian scholar, specifically bade us to conserve fossil fuel. In a discussion of lamps, (Babylonian Talmud: Shabbat 67b), Zutra says simply that "whoever covers an oil lamp, or uncovers a naphtha lamp, violates *baal tashchit*."

The 11th-century commentator Rashi explains that such a violator "speeds up the burning process" by failing to cover or uncover the flame in the way that minimizes how much fuel is burned. By implication, according to Jewish law, consumers are responsible to understand their fuel-burning appliances and their fuels, and to employ the best-available methods for conserving that fuel as much as possible. Beyond lamps, most modern machines are powered by far-away carbon-intensive coal combustion or by gasoline set internally ablaze.

Though few authorities on Jewish law have fully extended Zutra's logic to today's fossil-fuel use, it's easy to see how Energy Star-certified appliances might be mandated, gas guzzlers and sport-utility vehicles forbidden, and strict regimens for heating, cooling and lighting adopted. Such conservationist steps not only adhere to the law of *baal tashchit*, but also comply

with larger expectations that we be enlightened stewards of Creation — from the call to "serve and guard" the land in Genesis 2:15, to the concept of *yishuv Eretz Yisrael*, making "The Land" as habitable and sustainable as possible. We are also reminded of the Torah commandment to "put a parapet (low railing) around the roof" (Deuteronomy 22:8), the basis of what ecologists call the Precautionary Principle, reminding us that public safety and health must come before private profits. Such a precautionary approach certainly should guide our response to today's climate crisis, in which wasteful energy use drives ever more massive adverse impacts on the poor, on the planet, and on our progeny. To aid and abet the rapid warming of Earth goes against a host of Jewish values — from "love your neighbor" (Leviticus 19:18) to "choose life that you and your descendants may live" (Deuteronomy 30:19), to "seek peace and pursue it" (Psalm 34).

In order to defend these values, and to limit the impact of climate change, we must return to the conservationist logic of Rav Zutra. According to the medieval *Sefer Hachinich* (530), adherence to *baal tashchit* is an ethical litmus test: "Righteous people of good deeds are aghast at any wanton waste, and do all in their power to stop it," while "the wicked are not thus; they delight in destroying the world even as they destroy themselves."

In his book, "Horeb: A Philosophy of Jewish Laws and Observances," 19th-century German scholar Rabbi Samson Raphael Hirsch deemed the command to conserve "the first and most general call of God."

Conservation is a core Jewish practice. Energy conservation is a *mitzvah*. And by reducing the carbon footprint of our communities, by burning less fuel, we let the eternal light of Torah shine ever more brightly. ☀

THE SCIENCE OF CLIMATE CHANGE

BY DANIEL ZISKIN

Everybody knows what weather means. What's the temperature? Is it raining? Snowing? Just poke your head outside and you've got weather. Weather is the instantaneous atmospheric conditions we experience. Climate, however, is something different. Climate is the average of the weather over time and space. But taking the average of a constantly changing and location-specific phenomenon is complex. Are we talking about a monthly average? Seasonal? Yearly? Of a county? A state? The northern hemisphere, or globally? Climate depends on the temporal and spatial domain you've selected so there isn't just one climate.

To further complicate the issue, suppose we are talking about the global mean of annual surface temperature. If it is stated that this value is increasing by one degree, it doesn't mean that it is increasing everywhere by that amount. Some places will be getting much warmer than other places. Some places, due to shifts in wind and precipitation patterns, might even cool a little bit. In terms of the observed climate change which will be described below, it is also quite likely that we will see colder winters even as the average temperature increases.

Basic Concepts

Climate change refers to a drift in the average temperature over time. What would cause the average temperature to change with time? A stable climate exists when heating and cooling rates are in balance. They are almost never in balance at any one time or place. It's usually getting hotter or colder at any one place. But globally, over a long enough time span, if heating and cooling are balanced then the average temperature remains constant. Over the last 1,000 years, we have seen a somewhat stable global average temperature, but there has been a rapid increase in

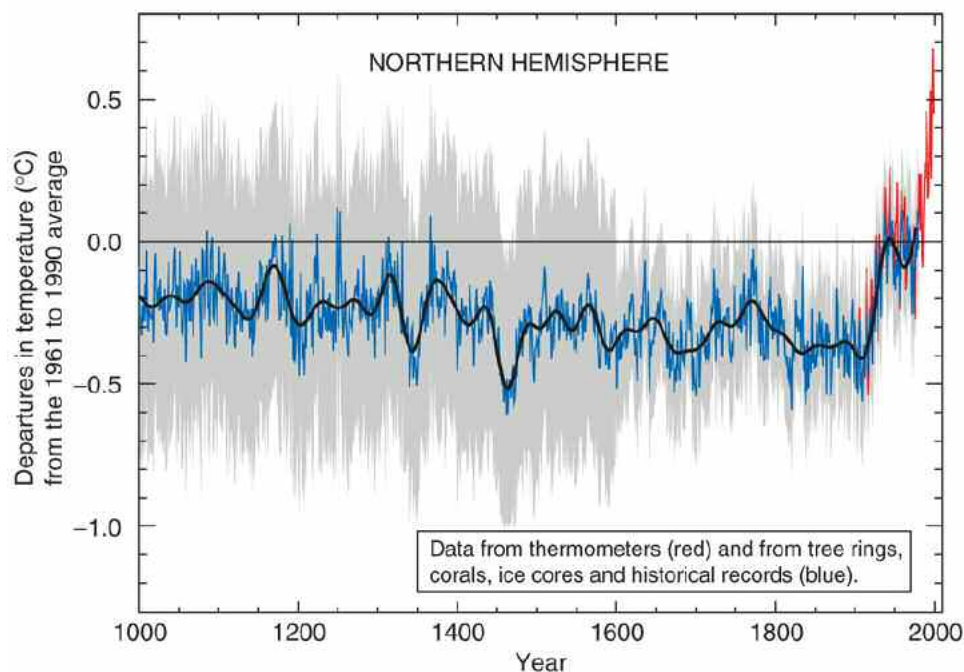


Figure 1: The Mann, Bradley and Hughes famous "Hockey Stick" graph, as reinterpreted in 2001 by the Intergovernmental Panel on Climate Change, demonstrates the recent departure of the northern hemisphere surface temperatures from the long-term mean. Changes in temperature are an indication that heating and cooling are out of balance. The thick black line represents a smoothed average. The grey areas represent the limits of the standards of error.

temperature over the last century (see Figure 1). This observed temperature increase in climate indicates that the heating of the planet is no longer in balance with the cooling.

Climate change is more than just temperature. It also includes issues such as precipitation patterns (such as droughts or monsoons), wind, vegetation, wildlife habitat and risk of wildfires. One particular ancillary consequence of climate change is in the frequency and severity of storms. Storms are a result of instability of atmospheric conditions. For example, if a mass of cold dense air aloft is supported by warm buoyant air near the surface it can become gravitationally unstable. The heavier cold air falls and the warm surface air rises. This is called convection and usually causes massive downpours and thunderstorms. In a warming climate, where

the surface air is heated beyond current rates, we can expect more of these types of storms and they are predicted to be more intense.

Heating

The fundamental heat source of the Earth is the sun. The sun's rays arrive at the top of the Earth's atmosphere. About a third of the sunlight hits the tops of clouds and is immediately reflected back out to space. The rest passes through the atmosphere and hits the surface. When the sunlight hits the surface, some of the light is reflected back out and the rest is absorbed. The absorbed portion is the energy that heats the Earth.

The amount of sunlight that is absorbed compared to what is reflected depends on the surface reflectivity. For example, cement is reflective so

little energy is absorbed, whereas asphalt is dark and absorbs more sunlight. Test this yourself on a hot summer day. You might be able to walk barefoot on the sidewalk when the blacktop of the street is painfully hot. This happens on a global scale, too. Dark surfaces like the ocean absorb a lot of heat. Bright surfaces like snow reflect a lot.

Although there are some variations in the sun's energy output, primarily due to the 11-year solar cycle, it is generally a constant source of heat. Solar variations cannot explain the observed climate change as is sometimes claimed. Changes in cloudiness and changes in land use have a larger effect on the heating rate of the Earth than the solar cycle. Likewise, there are temporary disruptions due to events like volcanoes or smoke from enormous fires that tend to reduce the heating rate by creating large artificial clouds that reflect light. The heating of the Earth at the top of the atmosphere is, for the scope of this article, constant. However, the amount of light that is reflected relative to the amount absorbed is changing. This energy balance is illustrated in Figure 2.

Cooling

As the sun heats the planet's surface, the Earth cools itself by sending off energy into space. The cooling has to stay in balance with the heating or the temperature will change. The surface gives off heat and the hotter the surface temperature, the more heat is given off. Of the heat that passes through the atmosphere, some of it escapes to space and some is absorbed by the atmosphere. When the energy is absorbed by the atmosphere it is re-emitted both up and down. The downward component contributes to the heating of the surface while the upward component is cooling (See Figure 3).

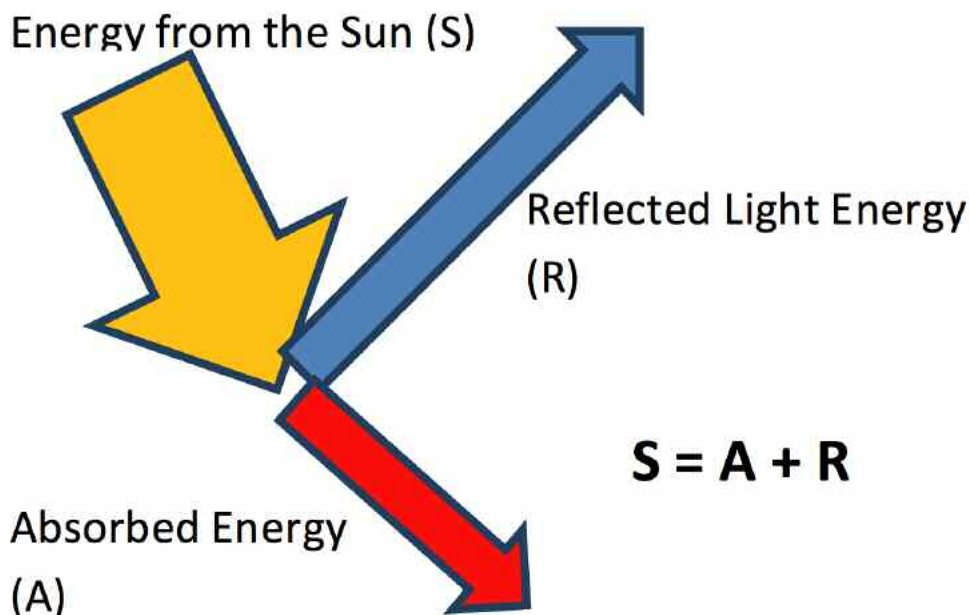


Figure 2: The energy from the sun is either reflected back into space from clouds or the surface or absorbed as heat. At any time, the absorbed energy plus reflected energy equals the incident solar energy. The amount of heating can be changed by changes in clouds or by modifying the reflectivity of the surface.

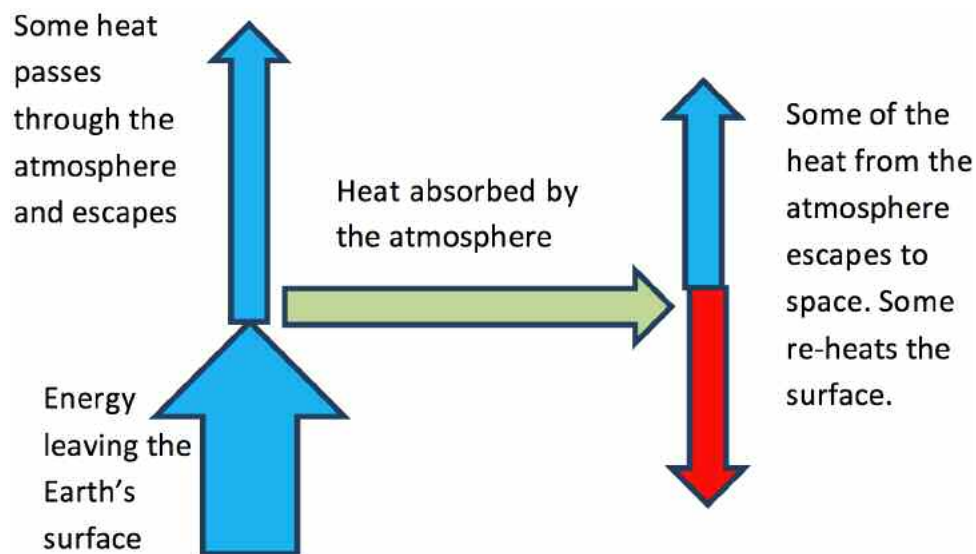


Figure 3: Some of the heat from the Earth's surface is absorbed by the atmosphere and re-emitted downward. This contributes to the heating of the surface. The temperature rises because of this additional heating. The absorption of energy and re-heating of the Earth by the atmosphere is referred to as the greenhouse effect.



How much heat is absorbed by the atmosphere? That depends on the amount of greenhouse gases. Greenhouse gases are constituents of the atmosphere that absorb and trap heat. The most common is water vapor (about 2 percent of the atmosphere). Water vapor is the cause of most of the greenhouse effect. However, there are some wavelengths of infrared light that can pass through the water vapor and escape to space, cooling the surface. These “windows” in the infrared spectrum are transparent, just like the atmosphere is transparent to visible sunlight.

So if water vapor is the major greenhouse gas, what’s the big deal about carbon dioxide or methane or other greenhouse gases? Carbon dioxide exists at a much lower concentration of the atmosphere — about 0.4 percent — than water vapor, but it is a powerful greenhouse gas because it absorbs light in the window regions of the spectrum that water vapor doesn’t. So a little bit of carbon dioxide absorbs and re-emits a lot of heat.

The concentration of carbon dioxide has increased from about 280 parts per million at the beginning of the Industrial Revolution in the mid-18th century to a 2013 value of about 400 parts per million. Climate scientists are convinced that the increased concentration of carbon dioxide in the atmosphere is the major cause of the recent increase in temperature that is shown in Figure 1.

Carbon dioxide is a naturally occurring gas in the atmosphere. As stated above, it existed at a concentration of about 280 parts per million prior to humanity’s decision to utilize the energy embedded in fossil fuels — coal, methane and petroleum. There are massive exchanges of this gas between the ocean and atmosphere and between the plants of the world. However, when we burn fossil fuels we add a small but significant unbalanced contribution to the atmosphere.

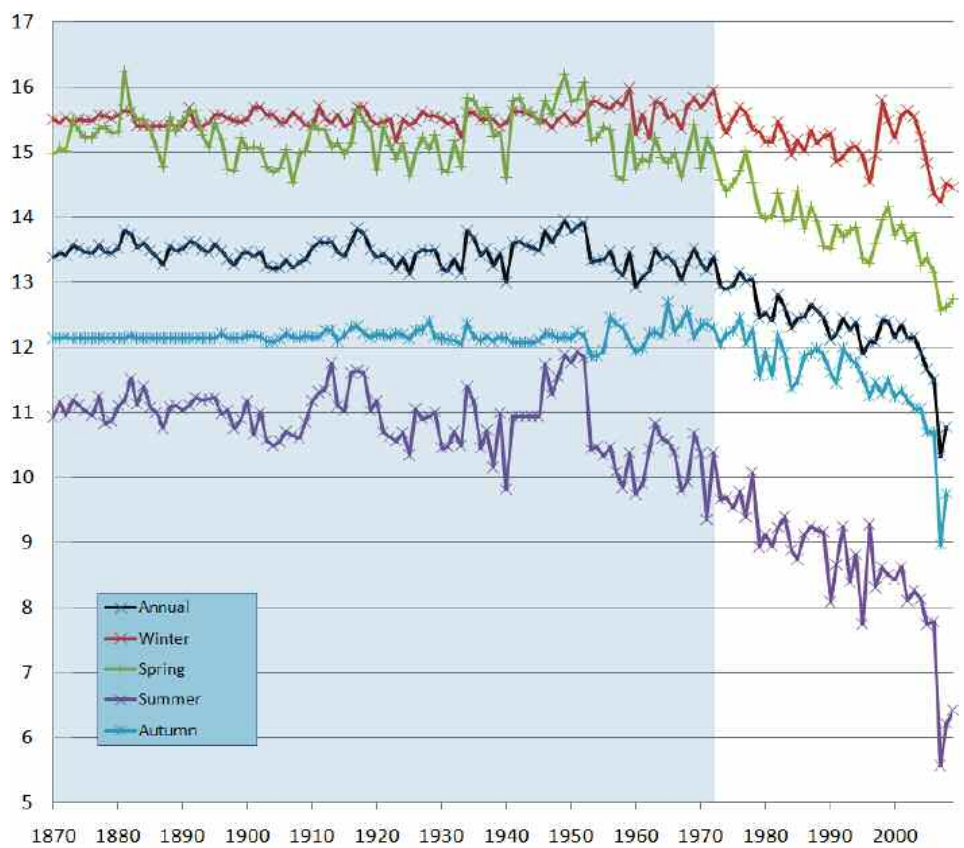


Figure 4: There is a dramatic decrease in the extent of summertime sea ice. Blue shading indicates the pre-satellite era, for which data is less reliable.

Let’s use a bank account as an analogy. If every month you deposit about \$5,000, and your monthly expenses are \$4,990, every month you generate a net positive amount of \$10. Even though that’s small relative to the flow of money, over time the average balance will increase. That’s what’s happening to the concentration of carbon dioxide in the atmosphere. The concentration seems to be increasing by about 2 parts per million, or less than 1 percent, per year.

Much ado is made these days about the number 350 parts per million of carbon dioxide (i.e. 350.org). This number is significant because it is believed to be the largest concentration we can sustain and still avoid catastrophic consequences of climate change (such as melting of the polar ice caps). The fact that we have significantly exceeded this number suggests that modestly reducing our

emission rates will not avert severe climate change.

Predictions

It might seem as if climate science is all just basic physics, and it would be if the Earth was just a floating rock in space like the moon. But instead, the Earth is a complex and dynamic place. Positive feedback loops are ways in which small disturbances are amplified into large signals. We are all unfortunately familiar with the screech of microphone feedback. That occurs when a sound is amplified and the microphone picks up that sound and amplifies it again, and then it picks up the amplified sound and amplifies it again, and so on ad nauseam. The Earth’s climate also has similar positive feedback loops. Here are two examples:

- The sea ice that covers the Arctic Ocean is melting in the summertime. As more dark water is exposed,

as compared to reflective sea ice, then more sunlight is absorbed. This leads to more heating and consequently more melting of the sea ice.

- Massive reserves of methane — a potent greenhouse gas — are frozen in the Siberian tundra. As the climate warms, some of this frozen ground thaws, releasing the methane, which increases the greenhouse effect, further warming the planet, which in turn thaws more tundra.

The magnitude of responses such as these to the initial climate change we've observed so far is difficult to quantify, and that is why climate scientists are uncertain about the speed and ferocity of future climate change.

There also are other factors about the Earth's climate system that confound simple predictions:

- How much heat is being stored in the deep ocean rather than increasing the surface temperature?
- Will the massive ice sheets on Greenland and Antarctica continue to melt slowly or will they slip quickly into the ocean?
- Will global cloudiness change in response to a changing climate?
- Will the patterns of precipitation change and, if so, how?
- Will the changes in polar-ice melting change ocean-circulation patterns?
- How will society respond to climate change? Will we significantly reduce our present and future emissions?

Questions such as these are the fuel for vigorous scientific research and make it challenging to provide a simple prediction about climate change.

Despite the high degree of uncertainty about exactly what the future climate state may be, some trends are discernable. In addition to warmer average surface temperatures, other worrisome observations include:

- A rapidly shrinking summertime arctic ice cap (see Figure 4).
- Sea-level rise (see Figure 5).
- An increase in the severity of Atlantic hurricanes (see Figure 6).

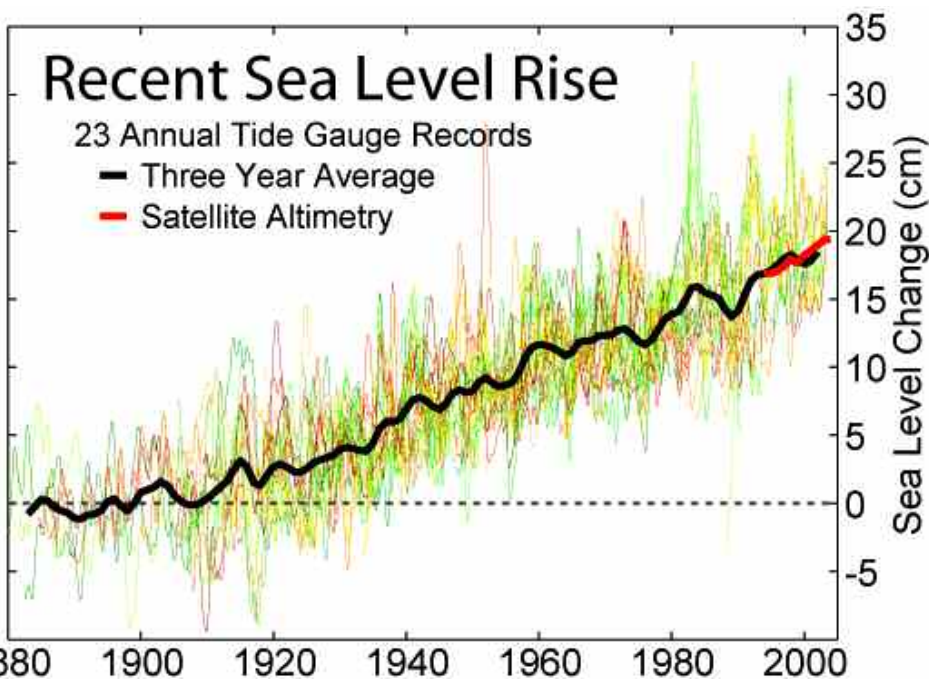


Figure 5: The sea level has been rising at an accelerating rate over the last few decades. This is significant because it intensifies coastal erosion, exacerbates storm surges and contaminates freshwater aquifers.

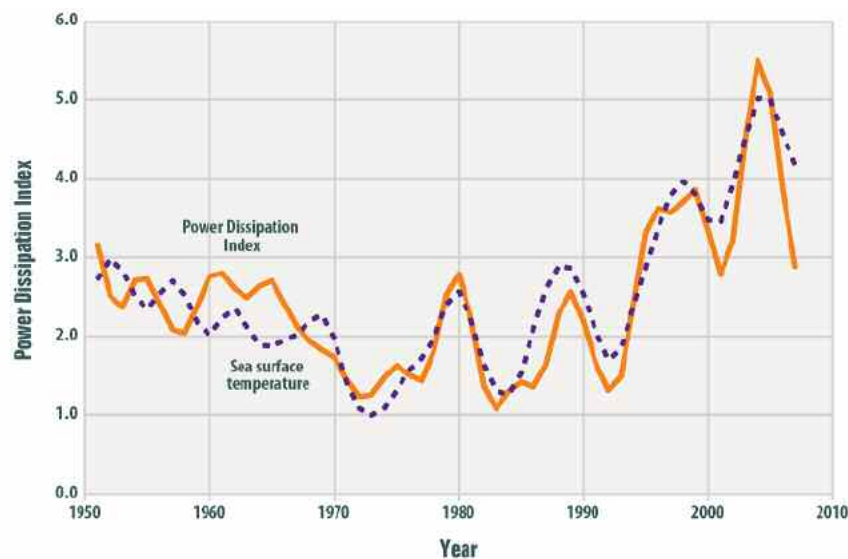


Figure 6: The Power Dissipation Index is a measure of a hurricane's power. This plot shows the Power Dissipation Index of North Atlantic hurricanes along with North Atlantic sea-surface temperature trends. The lines are smoothed using weighted five-year averages.

Conclusion

There is little scientific debate about the basic physics of climate change. How the Earth's climate system will respond to warming makes predictions of the future climate conditions uncertain. Heating is nearly

constant, but cooling is diminished due to the increased concentration of greenhouse gases. This imbalance between heating and cooling is the cause of the observed increase in temperature relative to historic (pre-Industrial Revolution) values. ☀️

SHMITA: BALANCE WITH EARTH

BY JAKIR MANELA

“And six years you will sow your land, and gather in the land’s produce; but the seventh year you will release it from work and abandon it, that the poor of your people may eat; and what they leave, the beast of the field shall eat. In like manner you will deal with your vineyard, and with your olive orchard.” — Exodus 23:10-11

Shmita, the sabbatical year, captivates our Jewish imagination unlike any other Torah tradition. What must it have been like for an entire nation to let the land rest? Perhaps we cannot even begin to understand the significance of shmita since most Americans today are so alienated from land, agriculture and the earth as our source of sustenance. Yet our current environmental crises compel us to try. If we can push ourselves to imagine the magnitude of what shmita meant to our ancient Israelite ancestors, we may find the historical, spiritual and political inspiration we need to address climate change.

Shmita rests at the peak of land-based Judaism, an immersive nationwide attempt to regain balance with the earth and with God. In contrast to shmita’s inspirational model, today’s environmental movement is pretty dreary. Too often our best ecological writing sounds like the heading on a tombstone: “Herein lies a civilization destined for ruin.”

The scientific data indicate rising global temperatures and subsequent losses in biodiversity and environmental quality throughout the world. But as Jews, as people of faith, it’s out of the question to simply lapse into the depression that could easily result from this sobering data. The Jewish environmental movement, and faith-based activism in general, offers a transcendent vision of justice, peace and sustainability. This view cannot and does not acknowledge the inevitability of

impending environmental doom because we know that miracles happen, and because revolutionary practices like shmita are in our cultural DNA, just waiting to be released from our souls and applied in the world.

What should shmita look like today? Don’t think about what happens in Israel; think instead about how you would practice this tradition. What would it mean to you to let the land rest every seventh year? What would it mean to your family, to your synagogue, to your JCC, to your Jewish Federation? What would it mean for all American Jewry — one of the largest and richest Jewish communities in the history of the world — to recognize the power of shmita and embark on a collaborative experiment with millions of Jews observing shmita through a plethora of creative, dynamic and locally-based methods? Who knows what could happen?

- Locally grown food and sustainable agriculture would take on significant ethical and spiritual weight within the Jewish community. Jews would feel compelled to buy from local farmers who they would trust to make sure that the land rests and is restored through crop rotation.

- Renewable-energy projects would multiply exponentially as Jews commit to letting the land rest by choosing to use energy that does not require fossil fuels pulled from the earth. We would surely minimize our mining and drilling into the land if we were to be serious about letting the land rest. Perhaps shmita would be an opportunity to declare one-year moratoriums on fossil-fuel extraction. Perhaps our response would be to develop renewable-energy projects in every Jewish community.

- “Shmita lawns” would sprout up

throughout the country, where homeowners and Jewish institutions simply let the land rest without mowing. The ensuing political challenges with neighborhood associations would be ideal teachable moments to promote more sustainable lawn-care practices such as using native plants and avoiding chemical pesticides.

- Awareness of consumption would grow within the Jewish community as we awaken and explore the shmita ideal that all land is ownerless, with everyone having equal access to everything. In order to ensure equal access, the Torah dictates that during the shmita year we only can harvest what we need for one meal. What if we all brought that awareness into our lives around energy, food and consumption? Would we buy as many new things? Would we waste as many resources?

Shmita is in our collective unconscious, and our contemporary moment calls upon us to renew its wisdom for the good of all humankind. May God bless us that it may be so — that together we can be brave, creative and collaborative enough to embody the national experiment of shmita. May we gain the same humility, awareness and inspiration that this awesome, radical tradition gave our ancestors. Of all things in the Torah, this is one tradition we cannot pass by.

“Exile comes upon the world on account of the failure to observe the shmita.” — Pirkei Avot 5:11

As our rabbinic sages knew, shmita reflects a universal principle of balance and sustainability, and as such it is critical to all people. This is not just about the Jews; it’s about the whole world. If we can commit to observing shmita in its broadest sense, we will learn to live in balance with God’s Earth. ☀️

JEWISH ENERGY ADVOCACY

BY SYBIL SANCHEZ

From hydraulic fracturing to tar sands, a rift has been forming between those seeking energy independence and those seeking to protect the environment. But at the Coalition on the Environment and Jewish Life, the mandate to protect the environment while simultaneously fostering energy independence has been the bedrock of our work. As global energy demand continues to rise and new technologies are developed for extracting fossil fuels, the task of supporting both energy independence and the environment becomes increasingly challenging and complex.

COEJL finds the balance by focusing on energy security — sustainable energy production that is sound both politically and environmentally. Mirroring the tension in the rest of the nation, the Jewish community is challenged in terms of how to approach energy security largely because of a desire to reduce our use of fossil fuels while increasing energy independence.

Hydraulic fracturing, also known as hydrofracking or simply fracking, is a relatively new way of drilling for natural gas by blasting water, sand and chemicals at high pressures into shale rock. Depending on one's perspective, it is either a threat to our clean-water supply or a way to supplant coal with relatively cleaner-burning natural gas.

Supporting the extraction and transport of Canada's vast supply of tar sands — oil saturated in the earth like water in a sponge — also poses the promise of lessening reliance on oil from regimes hostile to both the United States and Israel. Yet supporting the tar sands by building a

transcontinental pipeline to carry it from Alberta across America would increase our reliance on oil. Tar-sands oil is a dirtier fuel than even standard crude oil and would require more energy to extract and transport than other fossil fuels. All of this would further increase greenhouse-gas emissions that contribute to climate change.

As with other complex issues, there is no one clear-cut answer for the community as a whole. In considering its own policy, COEJL considers its past precedents, its 27 partner organizations and its parent organization, the Jewish Council for Public Affairs. Many of our policies are still in development, although at the JCPA's 2012 plenum in Detroit, a resolution was passed calling for federal regulation of hydrofracking.

The 2008 Consensus

Five years ago, COEJL and JCPA brought together 10 other organizations — B'nai B'rith International, Central Conference of American Rabbis, Hadassah: Women's Zionist Organization of America, Jewish Reconstructionist Federation, Jewish War Veterans, National Council of Jewish Women, The Rabbinical Assembly, The Union for Reform Judaism, Women's League for Conservative Judaism, and Women of Reform Judaism — to discuss energy policy. They adopted Jewish community priorities that remain relevant as we continue navigating these issues today, including:

- Promoting energy-security policies that are environmentally sound;
- Increasing renewable-energy supply;

- Reducing carbon-dioxide emissions by 80 percent by the year 2050;
- And increasing U.S. leadership on climate-change issues.

Here is an update on some of those issues.

Energy Security

In May 2012, crude oil cost \$105.59 a barrel and key concerns regarding the threat to energy security continued to include growing instability in the Middle East. Examples of this are the Strait of Hormuz and conflict over Egypt's supply of natural gas to Israel. Controlled by Iran, the Strait of Hormuz is one of the world's most strategic passageways for oil transport. As tensions between Iran and the international community continue to rise, Iran repeatedly threatens to close the strait to international passage, thereby affecting oil prices. At the same time, Egypt stopped supplying Israel with natural gas, Israel's third-largest energy source.

Efforts to promote environmentally sound energy security continue to hinge around increased support for clean, renewable energy as well as energy efficiency to reduce unnecessary use of energy.

Renewable Energy

According to statistics drawn from the U.S. Energy Information Administration, domestic renewable energy consumption contributed to 8 percent of domestic energy supply in 2009, 10 percent in 2009, 11 percent in 2010 and 12.25 percent in the first half of 2011. While the growth trajectory is clear, most renewable energy is used for electricity generation and much more of it is needed. Barri-



ers to production include the capital investment required to provide renewable energy on a much larger scale to make it market competitive. Increased support for tax incentives and policies that support renewable energy are important responses to such barriers.

In 2008, COEJL, JCPA and the 10 other organizations that convened on these issues endorsed the need to increase fuel economy, encourage use of alternative-energy sources, adopt a renewable-electricity standard that would require 15 percent of domestic electricity production to come from renewable sources, and continue exploration and investment in biofuels. The move toward a federal renewable-energy standard became part of a larger effort for comprehensive national climate change and energy policy, which unfortunately stalled in Congress in 2010. Nonetheless, more than 30 states within the United States now have similar standards in place.

Meanwhile, the focus of national policy has turned toward various calls for a "Clean Energy Standard" — setting a legal minimum for domestic clean-energy generation. The name itself also refers both to Congressional bills and counter-proposals sponsored by Sens. Jeff Bingaman, Sam Brownback and Lindsey Graham in 2010 and early 2012, as well as to a commitment made by President Barack Obama to ensure that 80 percent of the country's electricity comes from low-carbon sources by 2035. The bills have defined both the clean-energy percentage as well as the term "clean energy" itself differently, drawing upon a basket that includes solar, wind, biomass, hydroelectric, nuclear, natural gas and so-called "clean coal" — burning conventional coal but using new technologies to reduce the amount of pollution released into the atmosphere.

Discussions about these standards have been overshadowed by 2012 presidential campaign politics. While some of the principles involved have bipartisan support, it is unclear whether such legislation can pass in a campaign year, as recent efforts at reducing national greenhouse-gas emissions have been unable to survive partisan politics.

Further, it remains unclear how much support such legislation will lend to developing renewable energy. Renewable energy includes technologies that are sustainable and naturally renew — such as wind and solar — but not fossil fuels that can only be dug up and burned once. The Clean Energy Standard Act that was introduced in early 2012 promotes a bundle that includes renewable energy plus nuclear energy, natural gas and "waste-to-energy" — burning things such as municipal solid waste, landfill methane, animal waste and yard waste.

Eighty Percent by 2050

In 2008, the 10 organizations brought together by COEJL and JCPA also endorsed legislation to prevent global temperature from rising two degrees Celsius by limiting concentrations of heat-trapping gases in accordance with scientific principles. They said that failure to act in the near term will create undue expense in the future by increasing the eventual cost of reductions and that such legislation should aim to reduce carbon concentrations by 80 percent by 2050, with significant interim reductions, such as a reduction of carbon emissions by 25 percent to 40 percent by the year 2020. In November 2009, before the U.N. Climate Change Conference in Copenhagen, the White House announced similar national goals, with the president calling for an 83-percent reduction of 2005 greenhouse-gas emissions levels by the year 2050 and an in-

terim reduction measure of about 17 percent below 2005 levels by 2020.

While national efforts to implement these goals through comprehensive energy and climate-change policy have failed, statewide and regional efforts toward greenhouse-gas regulations are on the rise. Awareness and action also are increasing in the Jewish community. In 2012, through the Jewish Energy Covenant Campaign, 53 national Jewish leaders committed to taking a first step by reducing their energy use by 14 percent by 2014 as part of the national goal of an 83-percent reduction of 2005 greenhouse-gas emissions levels by 2050.

Moving Forward

Little is expected to happen legislatively in 2012, as Congress is divided and elections are imminent. It's clear that although national legislation is a critical factor in reducing greenhouse-gas emissions and increasing energy security, advocates of change cannot wait and see what happens when policymakers finally make their next move. Rather, it is incumbent upon us to bring our strengths — communal, institutional and personal — to bear now. That is why COEJL's Jewish Energy Covenant Campaign leaders are speaking out as a public Jewish voice on energy and the environment. COEJL intends to work with its constituents in deepening and broadening a shared commitment to the environment and energy security. May this Jewish Energy Guide serve as a tool to move us forward. ☀️

Follow-up online

Background information on Jewish environmental issues:
tinyurl.com/coejlbackgrounders

Jewish community position on hydrofracking:
tinyurl.com/coejl2012fracking

SOCIAL JUSTICE AND CLIMATE CHANGE

BY JILL JACOBS

The rabbis of the Talmud ask the following question: When the people of a town decide to build or repair a guard wall, how much should each resident pay? Perhaps the wealthiest residents should pay the most, as they can best afford to shoulder the burden. On the other hand, maybe the people who live closest to the wall should pay more as they will benefit most, since thieves or murderers who enter the town are likely to target the first houses they encounter.

“But wait,” the residents of these wall-hugging homes may say, “we’d never have bought these homes if we could’ve afforded to live where it’s safe, in the middle of town.”

“That’s true for some of you,” the wealthy residents may respond. “But some of you chose to live near the edge of the city just because you like it there.” Or: “We don’t even need the wall — we feel safe enough already.”

While the Talmudic discussion (Bava Batra 7b) remains indecisive, most commentators conclude that the wealthiest residents should contribute the most, regardless of where they live. And only in the case in which two people have an identical household income should proximity to the walls be factored into the calculation of responsibility. (For example, see Rabbenu Tam, *Maggid Mishnah* on Rambam, *Mishnah Torah Hilchot Sh’khenim* 6:4, and Joseph Caro, *Beit Yosef Choshen Mishpat* 163:3.)

This Talmudic discussion comes to mind when I think about who bears the burden of our environmental choices. When we think about climate change, we often think in terms of dramatic shifts in the natural world: melting glaciers, heat waves, tornadoes and earthquakes. One might think that changes in nature affect us all equally. But in fact, poor and non-white populations —

both in the United States and around the world — disproportionately pay the price for our overuse of natural resources. For example:

- People without access to air conditioning or cars are far more likely to die during heat waves, which are hotter and more frequent because of climate change;
- Decreases in crop production because of climate change may result in low-wage agricultural workers losing their jobs;
- By 2030, 17 million Bangladeshis may become homeless due to cyclones and flooding, all worsened because of climate change;
- By 2080, more than 290 million more Africans may contract malaria due to the increased mosquito breeding grounds in Africa anticipated as a result of climate change.

While the wealthiest individuals, corporations, and nations use far more than their share of our natural resources, the poorest individuals and nations will pay the price in lives, health-care costs and a decline in their standards of living.

On a local level, low-income communities in the United States already suffer physically and financially from smaller-scale environmental decisions. For example, substandard housing stock and the nearby placement of waste-transfer stations, bus depots, factories and power plants all contribute to high levels of asthma among low-income children. Asthma, in turn, leads to missed days of school, missed work for parents, high medical bills — and, in some cases, death. And hazardous-waste plants, chemical-producing factories and mountaintop-removal mining practices all lead to high levels of cancer and other diseases in low-income communities.

Do we allow those who live “close to the wall,” as Talmudic parlance would

have it, pay the cost for our overconsumption? Or will we take the rabbinic challenge, and insist that those with more resources take greater responsibility for protecting the health and safety of everyone in our communities? And how much are we willing to pay to guarantee that everyone can live in health and economic security?

Many Jewish communities already have engaged in greening projects. We have changed the light bulbs in our homes and synagogues. We have installed the solar *ner tamid* — eternal light — in our sanctuaries. We have stopped printing newsletters.

All of these greening projects are important. But they are not enough. If we are to save lives, we also must get out of our buildings and fight for environmental legislation that protects the lives and the livelihoods of the most vulnerable. This means ensuring that low-income neighborhoods aren’t burdened with more than their fair share of waste transfer stations, incinerators, power plants and other sources of pollution — even if this means accepting that some of these structures may pop up in wealthier neighborhoods. This means working for stricter environmental controls on corporations, which use far more resources than either private households or Jewish institutions. And this means talking to our elected representatives about why we, as Jews, believe that business interests should not take priority over the health, safety and prosperity of ordinary people.

You may have changed your light bulbs, but now it’s time to change the laws. The wealthiest among us — corporations and individuals — need to step up and take responsibility for the effect their decisions have on the poorest among us. Like the city dwellers of the Talmud, we need to protect the lives of *everyone* living in our communities. ☀️

THE ENERGY COST OF FOOD

BY MANUELA ZONINSEIN

Attending Jewish sleep-away camp for nearly a decade's worth of summers taught me some invaluable life lessons, such as how to sweep sand out of a craggy floored cabin, how to rap the *Birkat HaMazon*, and the value of *tikkun olam* — the Jewish commitment to repairing the world. I learned that we are all responsible for one another, even in a cabin with 14 girls hiding behind each other when "spin the bottle" took a turn for the worse.

That interdependence remains relevant today, as we humans in the larger global community continue to use resources at unsustainable rates. Admittedly, the world at large might be a bit more unwieldy than a summer camp — 700 Midwestern Jewish teens confined to 80 acres in northern Wisconsin can't quite approach the complexity of nearly seven billion people of all shapes, colors, beliefs and lifestyles wandering the globe — yet if each of us can seek to integrate into our daily routines the idea of coexisting with 6,999,999,999 others, we can move in the right direction.

Today, part of repairing the world means ensuring that we can reduce our individual consumption to sustainable levels, especially as the world gets more crowded. If people in developing countries such as China continue to respond to increased prosperity by eating more resource-intensive foods, such as meat, then a worldwide population increase of just two billion people by 2050 may double the demand for food production. But when it comes to farming, more of the same isn't going to work, because agricultural production as we know it is flawed.

"The industrial agriculture system consumes fossil fuel, water, and topsoil at unsustainable rates. It contributes to numerous forms of environmental degradation, including air and water pollution, soil de-

pletion, diminishing biodiversity, and fish die-offs," Leo Horrigan, Robert Lawrence and Polly Walker wrote in a report for the Center for a Livable Future at the Johns Hopkins Bloomberg School of Public Health. "Meat production contributes disproportionately to these problems, in part because feeding grain to livestock to produce meat — instead of feeding it directly to humans — involves a large energy loss, making animal agriculture more resource intensive than other forms of food production."

Here's a simple explanation of the food-energy connection described by Horrigan, Lawrence and Walker: Through a series of chemical reactions, plants convert the sun's energy into stored energy. Humans and other animals eat those plants, releasing their stored energy to power our bodies. Essentially, just as cars get energy from oil, we're machines that process food for energy. The problem is that in our industrial agricultural system, our food also gets energy from oil.

Industrial fertilizers and pesticides are made from oil, combining to consume almost 40 percent of the energy allocated to agricultural production — the single most energy intensive aspect of our agricultural system. Packaging, processing and storing food consumes about 23 percent of the energy used in our food production system, according to Danielle Murray, San Francisco's renewable-energy program manager and former researcher at the Earth Policy Institute. An additional 32 percent of energy is taken up at home, with refrigeration and cooking. On average, 7.3 units of energy are needed to produce one unit of food energy, according to conservative estimates from the University of Michigan.

The energy consumed in food production could be reduced greatly if we switched to a non-industrial system. For example, farmers could re-

place petroleum-based fertilizers with manure, a natural, time-tested option. But our monoculture industrial system keeps distinct aspects of agricultural processes consolidated, so even manure must travel long distances to arrive at the fields where it's needed. However, switching to a small-scale agricultural system would allow for manure to be used on the same farms where it's produced, eliminating the need for fertilizers to be transported across the country in trucks. Small-scale closed-loop farming systems may not offer economies of scale, but they do offer more efficient use of resources, including energy.

The Beef with Meat

The single-biggest thing we could do to lessen energy consumption could be quite an easy thing to achieve. Put simply, we have to stop eating so much meat. The production of beef, for instance, requires 35 calories of energy for every calorie of beef produced. Meat production contributes disproportionately to energy consumption, in part because feeding grain to livestock to produce meat, instead of feeding it directly to humans, involves a large energy loss as livestock convert the grain they eat into meat.

According to the United Nations, livestock is the single-largest contributor to climate change, responsible for 18 percent of the world's greenhouse-gas emissions. That doesn't include carbon wastes attendant to meat production, such as the effect of cutting down the forests for pasture, the effect of producing fertilizer to grow animal feed, and the fuel used to ship animals and animal products around the world. Indeed, animal agriculture is one of the largest factors driving global deforestation, and increasing deforestation diminishes opportunities for trees to sequester harmful carbon.

Additionally, overgrazing helps lead to desertification and loss of arable land. Livestock also produces about half of the world's methane-gas emissions and about 70 percent of the world's nitrous-oxide emissions. A potent greenhouse gas, methane is about 21 times more powerful a heat retainer than carbon dioxide. While atmospheric carbon-dioxide concentrations have risen by about 31 percent since pre-industrial times, methane concentrations have more than doubled, largely because of substantial increases in meat production and consumption.

The proliferation of industrial animal agriculture also leads to pollution from high concentrations of animal waste and the extensive use of antibiotics, which may compromise their effectiveness in medical use. Animal fat is implicated in many of the chronic degenerative diseases that afflict industrial and newly industrializing societies, particularly cardiovascular disease and some cancers. The pesticides used heavily in industrial agriculture are associated with elevated cancer risks and are coming under greater scrutiny for their links to endocrine disruption and reproductive dysfunction.

Distribution, Not Scarcity

Both affluent and poor countries could benefit from policies that more equitably distribute high-protein foods. The World Food Policy Research Institute estimated that hunger and food insecurity are problems not of resource scarcity but of insufficient political will or moral imperative to change the way food is allocated. The developing world alone is producing enough food to provide every person with more than the estimated average 2,500 calories per day, but if unsustainable agriculture remains the norm, and the rate of meat intake continues to rise, scarcity of resources could soon become a major factor in food insecurity.

For example, the amount of water used in agriculture is astounding, accounting for nearly 70 percent of

water consumption worldwide. And irrigation is the leading cause of salinization of land, since non-rain freshwater typically contains small amounts of salts, which build up in the soil over time. The effect is most pronounced in arid and semi-arid regions. Additionally, irrigation permits fertilizer and pesticide residues to run off into both above-ground waterways and groundwater. As the population grows, and as a greater proportion of that population aims to enjoy meat the way Westerners already do, more and more water will be needed to grow grain to feed livestock.

Lessons for Our Daily Bread

So what can we do? To start, buy foods grown locally. Since locally grown foods don't have to travel as far to reach you, much less energy is used in their transportation. Farmers' markets, food co-ops and community-supported agriculture groups are all good sources of locally grown food. To really connect to the land, consider planting your own garden, perhaps starting with easy-to-grow herbs, such as basil, oregano and rosemary — all of which can be grown indoors.

Since so much petroleum goes into industrial fertilizers and pesticides, consider buying organic fruits and vegetables. Seek out farms that use closed-loop farming systems that account for all energy inputs and outputs, attempting to imitate natural ecosystem processes.

Avoid processed foods as often as possible, because processing requires more energy. Processed foods also tend not to be nearly as nutritionally efficient as whole and unprocessed products, and use far more packaging, which in turn requires energy to both manufacture and to handle the resulting waste.

Reuse packaging whenever possible. Simply put, it is more energy efficient to wash a glass jar and reuse it than it is to manufacture a new one. In increasing order by the amount of energy need to produce each material,

choose glass, then steel, aluminum, paper, and finally plastics. Plastics are the most energy intensive to produce because they, like fertilizers and pesticides, are made out of oil.

Don't stand there with the refrigerator door open; choose what you want before you open the door. Order smaller portions, put on your plate only what you can finish, and save and reuse leftovers. And the importance of cutting back on meat cannot be overstated. As much as consumers may love it, meat is the least fuel-efficient food we have. Large quantities of energy are required to cultivate, harvest and ship animal feed; to house, transport and slaughter animals; process and package meat; and refrigerate it until it's cooked. Just consider the impact: If your four-person family skips meat and cheese one day a week, it's like taking your car off the road for five weeks. More broadly speaking, if everyone in the country ate no meat or cheese just one day a week, it would be like not driving 91 billion miles — or taking 7.6 million cars off the road, according to the Washington-based Environmental Working Group. Follow in Oprah's footsteps and embrace Meatless Mondays — a once-weekly day without meat.

In terms of climate impact, the four worst meats to eat, according to the Environmental Working Group, are lamb, beef, pork and farmed salmon.

Consider Jonathan Safran-Foer's argument in his book, "Eating Animals": It's true that we have certain traditions, but these traditions have changed before, and can change again. Reflect on whether it's worth hurting the environment, your health and other living creatures.

We're no longer preteens at summer camp starting to learn important values for our lifetimes; it's now imperative for us to think about the kind of world we want to leave for the next generation. Is it one in which they can breathe, drink and eat securely? If so, then we need to buy and eat conscientiously. Start today. ☀️

ARE WE OUR BROTHERS' (AND SISTERS') KEEPERS?

BY MATTHEW ANDERSON

An issue of emerging global concern is the increasing impact of climate change on the poorest developing countries. Rising sea levels could displace populations in low-lying nations such as in Nauru, the Maldives or Bangladesh. The disappearance of glaciers could deprive people of their water supply in Southeast Asia and some countries in South America. Ocean acidification and ecosystem degradation could reduce available food stocks and natural systems that support food production and tourism in developing countries. Drought and extreme weather events may reduce crop yields, potentially leading to widespread famine; this, added to the virulent spread of tropical diseases, could diminish or negate the recent tentative progress that the world community has made in fighting poverty. Poverty plus climate-change impacts add up to increased economic, social and political instability. This is why international adaptation to climate change is so crucial.

International adaptation is not only an economic, social, environmental and political challenge — it is also a moral challenge. As the Jewish Environmental and Energy Imperative states: "We recognize that around the world, a quarter of all people still lack access to electricity. Many of these same people, plus millions more of the poorest around the world, have done the least to cause climate change and yet they are its principal victims. Their food security

and physical safety are savagely undermined in the face of weather-related disasters and withering fields; the rapid escalation in food costs worldwide is especially burdensome to them."

Historically the developed nations have contributed the highest emis-

INTERNATIONAL ADAPTATION IS NOT ONLY AN ECONOMIC, SOCIAL, ENVIRONMENTAL AND POLITICAL CHALLENGE — IT IS ALSO A MORAL CHALLENGE.

sions of greenhouse gases. But China already has surpassed the United States as the world's largest greenhouse-gas emitter and, if current economic trends continue, emerging economies like India, Brazil, Mexico and Indonesia also could exceed the emissions outputs of developed nations. Yet, developing nations fear that a treaty aimed at global greenhouse-gas reductions will drastically curb their economic growth and thus their abilities to reduce and eliminate poverty. Addressing global climate

change requires the full cooperation and compliance of developed and developing countries. Consequently, it is a moral imperative to provide assistance to help developing nations pursue environmentally sound and sustainable economic growth and adapt to climate-change impacts.

Sustainable development balances the need to protect the world's climate while providing for strong economic growth for developing nations. Sustainable development is most commonly defined as, in the words of the World Bank, "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Sustainable development is an important instrument of climate-change adaptation, since developing nations need to reach certain basic levels of education, economic development, state power, gender equity and institutional effectiveness to respond to climate change. Sustainable-development projects range greatly in nature and scope including securing an adequate and nutritious supply of food, integrating climate concerns into development projects, developing renewable-energy sources, addressing reforestation needs, and creating more resilient social and politically responsive societies.

While intentions are good, the challenge before the international community is how to fund interna-



tional adaptation. At the 2009 U.N. climate negotiations in Copenhagen, world leaders announced the creation of the Green Climate Fund. The commitment was to help developing nations by providing \$30 billion annually in short-term funding by 2020 and \$100 billion annually after 2020. While it is not yet really clear how it will be funded or operated, the Green Climate Fund has game-changing potential for international adaptation efforts.

As a world leader, the United States needs to address adaptation and its funding. Congress considered international adaptation when it took up climate legislation from 2007 to 2010. The National Religious Partnership for the Environment — whose members include the Coalition on the Environment and Jewish Life, the U.S. Conference of Catholic Bishops, the National Council of Churches of Christ, and the Evangelical Environmental Network — made addressing international adaptation its collective key policy objective during the legislative debate. The members approached this issue through the ethical perspective of climate equity and fairness.

The National Religious Partnership for the Environment drew the link between poverty and climate change, adopting the stance that any effort to address climate change must protect the world's poorest people and nations. The umbrella organization took the lead role in making international adaptation an important element of the climate legislation considered by Congress.

While Congress has so far failed to pass comprehensive climate legislation, the National Religious Partnership for the Environment remains committed to support

adaptation help for the developing countries. Current efforts to find support must turn to Congress' annual appropriations process, which makes it more difficult to secure funding at a time when much of foreign aid is under scrutiny or outright attack.

Faith-based relief and development agencies work in more than 100 developing countries.

In May 2011, the National Religious Partnership for the Environment sponsored a conference, "Best Practices in Adapting to Climate Change Impacts," bringing together expertise from the field where these agencies are working in order to highlight concrete examples of how development can meet the challenges of climate change, particularly by empowering local leaders. For example, Rosemary Mayiga, a rural Ugandan farmer, created a local farming cooperative. Through her interactions with other farmers, she realized that rainfall in her region was becoming more irregular. With help from local development groups, Mayiga's farming cooperative lined irrigation ditches with impermeable cloth to capture and store water. Farmers could keep water until it was needed, allowing them to adapt to in-

creasingly erratic weather patterns. This is the sort of approach to international climate adaptation that empowers local communities, utilizes best practices in sustainable development, builds resilience, and creates wealth and opportunity.

International climate adaptation goes hand in hand with international mitigation efforts. One without the other is an incomplete strategy to address global climate change. A commitment to address adaptation recognizes the clear and present dangers of climate

change and seeks innovative solutions that empower the potential victims of a warming climate. International adaptation efforts rise out of a shared moral and religious obligation to protect the poor, for they will suffer the most while contributing the least to this problem. International climate adaptation is also a rational response to the collective global nature of this prob-

lem, arguing in sum that all of humanity must stand together to face this challenge. As we come together we must strive to be the best versions of ourselves that our religious traditions call and indeed urge us to be. ☀️

INTERNATIONAL ADAPTATION EFFORTS RISE OUT OF A SHARED MORAL AND RELIGIOUS OBLIGATION TO PROTECT THE POOR, FOR THEY WILL SUFFER THE MOST WHILE CONTRIBUTING THE LEAST TO THIS PROBLEM.



IS IT JEWISH TO BE GREEN?

BY NAOMI TSUR

To many this may seem to be a stupid, or rather a redundant question: Should Jews support democracy, freedom of speech and freedom of worship? I am sure that no one will dispute the fact that climate change, alongside the dwindling of the world's resources, constitutes one of the burning issues of our time. So let me rephrase the question: Should we be committed environmentalists because we are Jews, and does our faith and its practices prescribe our undertaking to address these issues, as part of our obligation to repair the world?

Tikkun olam is one of the most deeply entrenched ethical concepts of Judaism, to be achieved through the pursuit of social justice, by restoring the balance of our world, and by giving to those who are in need. If we simply apply this concept to our physical world, and not only to the moral and social spheres, we will find ourselves in the front lines of environmentalists in the world.

The basis for defining our obligation as Jews to take responsibility for our physical and social environment is to be found in many sources. When we revisit the basic precepts of Judaism, and examine them through an environmental lens, it is clear where our duty lies. The threat that climate change poses to life on Earth as we know it is in effect a threat to God's work of creation, a clear call that we have failed in our duty as stewards of God's work.

"The Earth is the Lord's and the fullness thereof, the world and those who live in it." (Psalms 24:1). In the Garden of Eden, where no work was officially required of Adam and Eve, they were enjoined to "tend and guard" the garden (Genesis 2:15). This is the first specific reference to the effort we must invest in preserv-

ing and sustaining our environment. In expansion of this theme, we find the famous exhortation in later exegesis of this verse. God said to Adam in the Garden of Eden: "Observe how beautiful is the work of my creation. Take care not to destroy it, for no one will repair it after you." (Ecclesiastes Rabbah 7:13)

This last exhortation echoes down the corridors of time, some 2,000 years. Written at a time when there was no danger or threat to any of the world's ecosystems, it takes on an eerie connotation in our time, when irreversible melting of the ice caps, loss of forest cover, loss of species and increasing desertification are part of our world, alongside horrendous weather episodes that cause a scale of loss of life and livelihood that are hard to grasp. Scientists are now convinced that human behavior has been a serious factor in climate change, and that the emissions caused by fossil fuels are one of the main causes of climate change because of the impact on and irreversible damage to the atmosphere.

Our sages recommended that we "walk humbly" (Micah 6:8) on the Earth, and this is in keeping with the understanding that one of the keys to preventing further deterioration of the global environment is the adoption of more modest habits of consumption.

Since we are the stewards of God's great work of creation, and in view of the fact that our behavior is damaging the ecosystems that support life on Earth, it is undoubtedly our duty as Jews to cut down our consumption, using only what we really need, and to make every effort to use cleaner sources of energy that can provide for our needs without inflicting irreparable damage on the life-support systems of the world.

The case of the state of Israel, a Jewish and democratic state, is surely a special one in many regards, but perhaps also with regard to our responsibility for the environment. Many *mitzvot* — commandments — that apply to the land customarily are observed only in Israel. An excellent example is *shmita*, the sabbatical year, when the land lies fallow, preventing overuse of agricultural land and allowing natural recovery. A major challenge for modern Jewry is to restore true observance of *shmita*, since the modern state of Israel has not found a way of honoring the requirement to let the land rest, but has rather found ways around the law.

The *mitzvot* pertaining to agriculture are other examples of laws that traditionally only apply in Israel. And holidays such as Tu B'Shvat, the new year for trees, take on special meaning in a country that lost nearly all of its original forest cover in Byzantine times, and where reforestation in the last century has had a positive climate impact.

During the years that I worked as director of urban centers for the Society for the Protection of Nature in Israel, before being elected to the Jerusalem City Council and appointed deputy mayor, I came to understand that not only is it inappropriate to treat environmentalism as a secular subject, for all the reasons I have given here, but that focusing on goals of sustainable development for Israel can give a new and more relevant agenda to Zionism, while fostering an innovative environmental dialogue between Israel and the global Jewish community. The three pillars of sustainable development — economic, social and environmental strength — surely provide an excellent menu for future prosperity for Israel, and for Jews around the world. ☀️

RENEWABLE-ENERGY POLICY IN ISRAEL: PAST AND PRESENT

BY NAOMI LIPSTEIN AND ALON TAL

The ability to harness energy has been essential to life since the start of humanity. This ability, of course, has come in many different forms and has gone through massive transformations over the centuries. In the 18th and 19th centuries, coal fired the steam engine — arguably the most vital technology of the Industrial Revolution. It was the discovery of oil that allowed the revolution to flourish even further in the late 19th and early 20th centuries, in essence altering civilization. Today, there is little we do without using some form of energy. Energy is necessary for the production of food and water. Energy moves us from place to place — be it by car, train, airplane or other modes of transport. In the form of electricity it heats and cools our homes, it provides our light, it turns our machines on and it allows for instant communication between people on opposite ends of the globe with a push of a computer button. In short, it powers life as many people in the world know it. There is increasing evidence, however, that the era of cheap, easily available energy is coming to an end; it may be time for another transformation that will harness new forms of energy to power our lives.

Most of the energy the world consumes comes from non-renewable fossil fuels. Although we can never know the precise quantity of fossil-fuel reserves that remain, and although estimates of available reserves of each type vary greatly, it is clear that it has become more difficult to locate and to access previ-

ously undiscovered reserves of oil, and it is generally believed that we are nearing or already have reached “peak oil” — when the global production of crude oil peaks. As resources are depleted, extraction costs will become higher, and production will gradually decline to zero. With demand for energy projected to increase significantly, it is vital that new sources of fuel be found.

The need for alternatives to fossil fuels is not merely an issue of supply and demand. The environmental problems inherent in the extraction, transport, production and disposal of fossil fuels make the push to find a safer method of generating energy an imperative. These problems include air pollution and emission of carbon dioxide and other greenhouse gases that cause climate change, water pollution, acidification, damage to land surface, and damage to ground-level ozone. Other concerns associated with the life cycle of energy use include, but are not limited to: oil spills and intentional oil dumping operations that pollute water; dams necessary for hydroelectric power that wreak havoc on natural ecosystems and spread disease; release of sulfur dioxide and nitrogen dioxide during

coal burning that contributes to acid rain; degradation of the natural environment that occurs during oil and natural-gas prospecting and drilling; extensive damage to and contamination of land from coal mining; and loss of human life when coal miners are killed in underground explosions and die from lung diseases. Other

compelling reasons for the search for alternative-fuel sources include the quest for energy independence and the rising price of oil. A secure and affordable supply of energy is critical for any nation, and heavy dependence upon costly foreign fuel sources could poten-

tially threaten that supply.

Renewable energy — energy that can be replenished and sustained indefinitely — could be one solution to coping with these aforementioned issues. The main sources of renewable energy are the sun, wind, biomass, water and geothermal heat produced inside the Earth. These sources are generally considered clean, as they do not produce air pollution or greenhouse gases when electricity is generated from them. Renewable energy can often be produced locally, using local resources. It is also often decentralized, thus

IT MAY BE TIME FOR ANOTHER TRANSFORMATION THAT WILL HARNESS NEW FORMS OF ENERGY TO POWER OUR LIVES.



less vulnerable to a major attack that can cause a major power outage. Renewable energies, however, account for less than 1 percent of Israel's energy supply. Following is a review of Israel's energy policy, and some of the issues surrounding implementation of renewable energy in Israel.

Israeli Electricity Consumption

Israel is a small country with a population of 7.7 million and a total area of about 22,000 square kilometers, excluding the West Bank and Gaza Strip. The population is growing at about 1.9 percent annually. In 2009 Israel's gross domestic product was \$205.8 billion in purchasing-power parity exchange rates — the sum value of all goods and services produced in the country valued at prices prevailing in the United States — a result of a growth rate of about 5 percent per year from 2004 to 2007, and then 4 percent in 2008. The global financial crisis that began in 2008 affected Israel as well, with the gross domestic product growing only 0.5 percent in 2009.

Between 1999 and 2009 the aggregate demand for electricity in Israel grew at an average annual rate of 3.6 percent, nearing the average annual rate of growth of the country's gross domestic product during the same period.

More than 99 percent of electric power in Israel is provided by the Israel Electric Corporation, a government-owned, regulated near-monopoly that classifies its customers as residential, commercial, agricultural, industrial, water pumping and the Palestinian Authority. The company is an integrated utility that generates, transmits and distributes nearly all the electricity in the State of Israel. It also builds, maintains and oper-

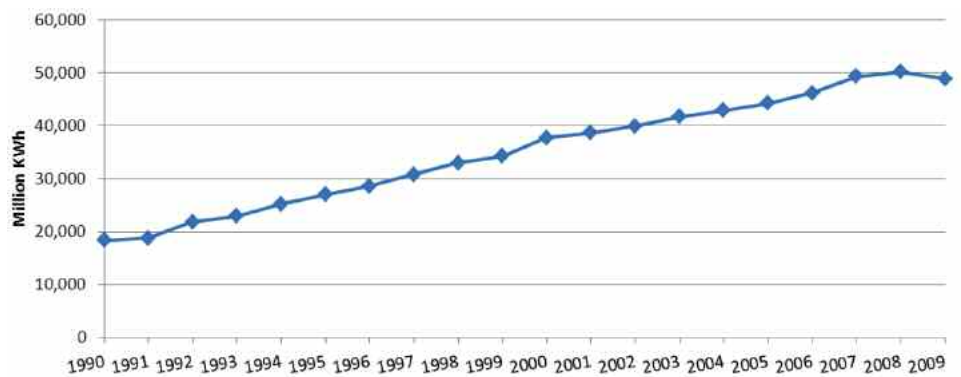


Figure 1: Israeli electricity consumption in gigawatt hours from 1990 to 2009.

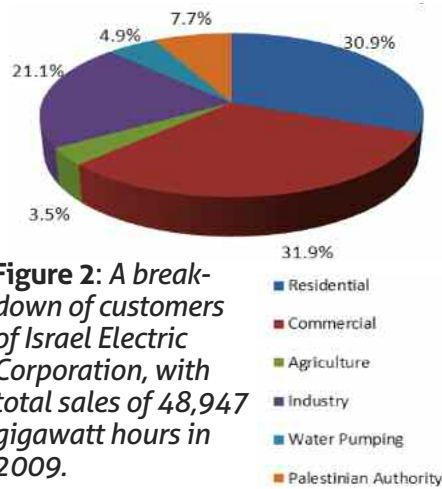


Figure 2: A breakdown of customers of Israel Electric Corporation, with total sales of 48,947 gigawatt hours in 2009.

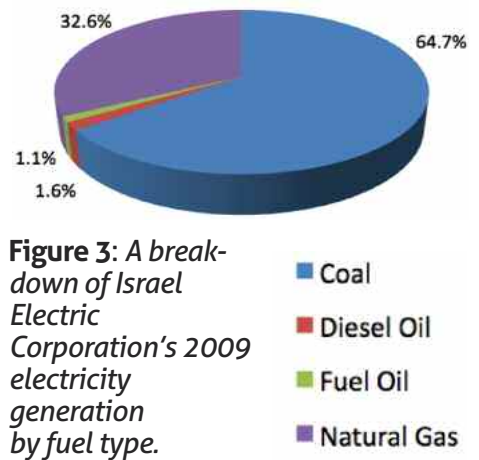


Figure 3: A breakdown of Israel Electric Corporation's 2009 electricity generation by fuel type.

ates its power generation stations, sub-stations and the transmission and distribution networks. It is one of the largest industrial companies in Israel, with total revenues of \$5 billion, a net income of \$328 million and total assets of \$21.1 billion in 2009.

In addition to the electricity generated at its power stations, Israel Electric Corporation purchases very small amounts of electricity from private electricity producers, amounting to about 260 million kilowatt hours of electricity, or about 0.5 percent of the total supplied by the company. Some private electricity producers sell all their electric output to the Israel Electric Corporation, while others generate electricity for their own

use and only sell their surplus production to the utility.

At the end of 2009, the Israel Electric Corporation served about 2.5 million customers, with a total electricity demand of about 49,000 gigawatt hours, compared to the 2.07 million customers who used about 34,000 gigawatt hours of electricity in 1999. This massive hike in demand for electricity is a result of both the population growth and the strong economic growth of the country.

Installed generating capacity by the end of 2009 was 11,664 megawatts. Power demand topped 11,200 megawatts in August 2010, coming close to the utility's capacity and forcing it to ask Israelis dur-



ing peak hours to avoid using appliances, such as air conditioners, that consume high levels of electricity. To meet increased demand, the Ministry of National Infrastructures — today the Energy and Water Resources Ministry — approved a 9.2 billion-shekel emergency plan to accelerate the development of generation capacity.

Israeli Power Sources

Coal is the main source of Israeli electric power, with most of the country's base-load electricity — the minimum amount of power the utility must make available to its customers — generated at the Israel Electric Corporation's Rutenberg power plant in Ashkelon and Orot Rabin plant near Hadera. The secondary fuel at both plants is oil. In 2009, coal generated 64.7 percent of Israel's power, a reduction from 70.9 percent in 2006. Israel has none of its own coal, and imports its coal from the global market, including South Africa, Colombia, Indonesia and Australia.

For the most part, Israel is not dependent on oil for non-vehicle power. In 2009, only 1.6 percent of the country's electricity was generated by diesel oil and a scant 1.1 percent generated by fuel oil; that number, however, could rise due to disruptions in natural-gas supply. Israel does depend on oil for transportation and for raw materials for industry. Israel consumed about 231,000 barrels of oil per day in 2009, making it the 52nd-largest oil consumer among world countries. In the 1960s and 1970s Israel bought its crude from Iran, but that ended with the Iranian Revolution in 1979. Israel also tapped wells in the Sinai Peninsula after capturing it during the 1967 Six Day War, but Sinai ceased to become an Israeli source for oil after Israel signed its peace agreement with Egypt in

1979 and returned the peninsula to its southern neighbors. More recently, much of Israel's oil has come from former Soviet states. It also buys some oil from Chad, Angola, Mexico and Norway.

Israel began using natural gas as part of its fuel mix in 2004, and has been increasing its usage since, driven by the need to diversify the country's fuel mix, increase its generation capacity, and to maintain a low cost structure and a limited pollution level. Natural gas accounted for the production of 32.6 percent of Israeli power in 2009. In contrast to its coal and petroleum supplies, Israel has significant proven domestic reserves of natural gas, as well as unproven reserves.

Currently, the Israeli government officially purchases its natural gas from two sources. The first and largest source is a consortium called Yam Tethys, comprised of Israeli-based Delek Drilling and Avner Oil Exploration (both subsidiaries of Delek Energy Systems) and Texas-based Noble Energy. The fuel comes from two gas fields off the Israeli coast of Ashkelon, Noa and Mari-B, with proven reserves of about 32 billion cubic meters. Those reserves, however, are nearly depleted. More than half the production of these gas fields is committed to the Israel Electric Corporation; the remainder is sold to private Israeli clients.

Israel's second official source of natural gas is East Mediterranean Gas Co., a private company registered in Egypt. From 2008 to 2011, the company had been supplying about 40 percent of Israel's natural gas, however, since the Egyptian

Revolution there have been multiple supply interruptions due to both saboteurs and political tensions. There have been no disruptions in power in Israel as a result of the shipment freeze, but the Israel Electric Corporation has spent millions of dollars over its budget and was forced to burn more polluting and expensive fuels such as oil and diesel to make up for the loss of natural gas.

There are, however, more Israeli sources of natural gas scheduled to become available in the coming years. In 2009, the Tamar natural-gas field was discovered off the Mediterranean coast. It is estimated to be five times as large as the previously found fields. A smaller reserve

was since found nearby at the Dalit concession, and in February 2010, the discovery of Leviathan, another deep-sea natural-gas site, was announced. About 130 kilometers off the coast of Haifa, Leviathan is estimated to cover about 325 square kilometers, twice the size of Tamar.

As previously noted, renewable energies are barely utilized in Israel, despite the fact that there are more than 100 renewable-energy companies in Israel and that the country is considered a leader in the development of renewable energy technology. It's also in spite of an Israeli government resolution calling for renewable sources to supply five percent of Israel's electricity needs by 2014 and 10 percent by 2020.

An Industry is Born

One of the first acts of Prime Minister David Ben Gurion after the establishment of the State of Israel

COAL IS THE MAIN SOURCE OF ISRAELI ELECTRIC POWER.



was to set up the Research Council of Israel within his office to promote research and development that he said would harness science “to help a new country having virtually no natural resources.”

Solar energy was already the subject of research at both the Hebrew University of Jerusalem and the Technion — Israel Institute of Technology. Ben Gurion recruited Dr. Harry Tabor from England to join the Research Council, where Tabor developed new materials for trapping heat to power solar water heaters. In 1953, engineer Levi Yissar founded the NerYah Company, the country’s first commercial producer of solar water-heating systems. By 1967, some 50,000 such systems were sold in Israel, representing about 5 percent of Israeli homes.

Israel’s victory in the 1967 Six-Day War briefly made it a self-sufficient oil power through its seizure of Egypt’s oil fields in Sinai, but the conquest devastated the solar industry that had slowly begun to take shape. Fortunately, interest was sparked again following the return of the Sinai oil fields to Egypt after the Camp David Accords were signed. Throughout the 1970s and 1980s, the government supported various types of solar-energy research at several academic institutions, most notably the Technion, the Weizmann Institute of Science, Tel Aviv University and Ben-Gurion University of the Negev, where the National Solar Laboratory was established. However several private-public partnerships created failed, either because they were deemed not financially viable or because the government stopped funding them.

Government-funded academic research during this time neverthe-

less resulted in several Israeli advancements in the field of solar energy, including solar ponds — saltwater pools that collect and store solar thermal energy — and parabolic-trough technology, which uses mirrors to concentrate sunlight on heat-transfer fluid, which subsequently is used to heat steam to turn an electricity-generating turbine.

In the mid-1980s, the Israel Electric Corporation researched photovoltaic and hybrid systems, specifically focusing on large photovoltaic central stations, small

THE 1967 SIX-DAY WAR MADE ISRAEL A SELF-SUFFICIENT OIL POWER THROUGH ITS SEIZURE OF OIL FIELDS IN SINAI, BUT THE SOLAR INDUSTRY WAS DEVASTATED.

grid-connected photovoltaic systems, and battery-lined renewable-energy systems applications. In 1987 the then-minister of energy and infrastructure — the ministry has since changed its name at least three times — inaugurated the Ben-Gurion National Solar Energy Center, formerly known as the Ben-Gurion Solar Electricity Technologies Test Center. Four years later, the center’s operation was entrusted to Ben-Gurion University’s Jacob Blaustein Institute for Desert Re-

search.

In 1980, seven years after the OPEC embargo of Israel and one year after the Iranian Revolution resulted in the decade’s second oil crisis, the country passed its first solar-energy legislation, aimed at making the state less dependent on foreign oil. The first of its kind in the world, the Israeli law required new residential buildings up to 27 meters high to install solar water heaters. Today, Israel is the world leader in solar water-heating use. With some 95 percent of Israeli households using solar water heaters, the country produces most of its domestic hot water from them, reducing the country’s primary energy consumption by an estimated 3 percent. This, however, was the last legislative policy to date that resulted in widespread domestic use of renewable energy.

Local Development, Foreign Implementation

Although solar technologies developed by Israeli companies were not being used in Israel, they were exported for international use. For example, in 1984 Luz Industries Israel developed and built nine solar-energy generating stations in California’s Mojave Desert. But low-priced oil and shifting U.S. government priorities felled Luz, and the company declared bankruptcy in 1991. The company has been reincarnated as BrightSource Industries. Another Israeli company, Ormat, has become a world leader in the design and installation of electricity-generating equipment for low-temperature heat, mainly geothermal and industrial waste heat. Ormat has installed clean-energy power plants in more than 20 countries, including the United States, but not in Israel.

In 1995, ConSolar, an Israeli indus-



trial and academic consortium, was established under the auspices of the Ministry of Trade and Industry — today known as the Ministry of Industry, Trade and Labour. The objective was to develop applicable concentrated-solar technologies for future commercial applications. But the government-supported development program was discontinued in 2001.

Promises Unfulfilled

In March 1996, the Electricity Sector Law came into effect with the objective of reorganizing the sector and ending Israel Electric Corporation's monopoly over power generation, supply and distribution. The law allowed independent power producers to enter the electricity market and produce up to 20 percent of the overall installed capacity. The expectation was that increased competition would allow small and clean producers to sell electricity to the distribution system, and would accelerate Israel's move to clean energy.

The legislation paved the way for a series of government resolutions and regulations to be written between 1997 and 2004, largely aimed at issuing and regulating generation licenses to independent power producers. Despite this, nearly 100 percent of electricity generation remains in the hands of Israel Electric Corporation. Of those few companies that did apply for independent power-producers licenses, natural gas and diesel were the preferred fuels; very few applications came from potential renewable-energy producers. Those that might have done so said difficulties in securing land rights and building permits to develop power plants remained major barriers, despite the new law. The law also established the Public Utilities Authority Electricity to set rates for each service

and to regulate the quality and level of service of each license holder.

Commitments to the Global Environment

In May 1996, Israel became a party to the U.N. Framework Convention on Climate Change and established the Inter-Ministerial Committee on Climate Change, which included representatives of government ministries, industries and non-governmental organizations. The committee was charged with formulating a national greenhouse-gas reduction policy and with preparing a report on the country's greenhouse-gas emissions, policies, measures and future forecasts. Israel was not officially obligated by the convention to reduce its greenhouse-gas emissions because it was not classified as a developed country, but all parties to the convention committed to formulating and implementing climate-change mitigation and adaptation programs.

Two years later, Israel signed the Kyoto Protocol and ratified it in February 2004. Despite Israel's classification as a developing country, the Israeli government said it would "undertake activities to reduce greenhouse-gas emissions." As a Kyoto signatory, Israel was able to benefit from the Clean Development Mechanism established by the protocol, allowing developed countries to financially support and receive credit for projects that reduce emissions in developing countries. The Clean Development Mechanism enables developed countries to fulfill their commit-

ments in a flexible and cooperative manner, while providing an opportunity for developing countries, not bound to reduce their emissions under the protocol, to participate in the process of global greenhouse-gas mitigation.

In 2000 Israel proposed a carbon-mitigation plan in its first National Report on Climate Change. The report acknowledged that while the price of the plan "will be high economically, it is anticipated that compliance with international obligations set out in the Kyoto Convention will not only reduce green-

house-gas emissions, but will be advantageous environmentally, economically, and internationally, in the form of reduced traffic, energy-efficient buildings,

health benefits, and increased competitiveness of Israeli firms and exporters on the international market."

The government appointed another inter-ministerial commission in August 1998, following a government decision to encourage the development and application of alternative-energy technologies. According to the decision, this would result in pollution abatement and reduced Israeli dependence on foreign oil. In cooperation with the Haifa-based Samuel Neaman Institute for National Policy Research, the commission prepared a plan to mitigate greenhouse-gas emissions in Israel, using 1996 as its baseline. The concluding report submitted to the Ministry of National Infrastructures — today the Energy and Water Resources Ministry — and the Environmental Protection Ministry noted

ISRAEL SIGNED THE KYOTO PROTOCOL AND RATIFIED IT IN 2004.



the country's "wide reservoir of knowledge and expertise both in technologies for the utilization of alternative sources of energy and in energy conservation." Recommendations included:

- Government support of research-and-development programs based on unique innovation technologies developed in Israel;
- Government quantification of environmental externalities caused by byproducts of electricity production, and inclusion of externalities in the energy tariff;
- Implementation of a wide-ranging energy-conservation program that would include economic, legislative and administrative measures;
- Encouragement of fair competition between energy producers;
- And immediate promotion of alternative-energy sources, including design and production of such energy systems.

The report concluded that internalization of external costs in the real cost of electricity — including the cost of greenhouse-gas emissions — would encourage and justify the higher financial cost of clean-energy production from renewable-energy sources. This, according to the report, would result in additional economic benefits, such as reliability in supply, steady expenditures, improving the balance of payments, developing Israeli technologies and averting the threat of future fuel-price increases.

In 2000, Israel noted in its report to the U.N. climate-change conference that the burning of fuels for the production of energy was the country's main source of carbon-dioxide emissions, and that emissions from this source have continued to grow

since 1996. In February 2001, on the basis of the Inter-Ministerial Committee on Climate Change, Government Decision No. 2913 committed Israel to voluntarily reducing its greenhouse-gas emissions, pursuant to its obligations as a Kyoto signatory.

Despite all the aforementioned commissions, studies, decisions and reports relating to renewable energies in Israel, the country was still nearly 100-percent reliant on fossil fuels for its energy supply through 2002. That November, the government reached Decision No.

DESPITE ITS GOALS, ISRAEL REMAINED NEARLY 100-PERCENT RELIANT ON FOSSIL FUELS FOR ITS ENERGY SUPPLY.

2664 to encourage the construction and operation by private electricity producers of power plants that operate on renewables. The decision included targets for the volume of electricity production using renewable energies. For example, the 2007 target for renewable-energy production was two percent. While policymakers set the goals, they neither designed a national strategy, nor allocated enough money, to achieve it. Eventually, 2007 came and went without even half a percent of renewable energy accounting for electricity production.

The National Infrastructures Ministry — today the Energy and Water Resources Ministry — did, however, authorize the construction of a 100-megawatt solar-thermal unit, which was scheduled to begin operating in 2007. The plan included an option to increase capacity to 500 megawatts upon successful performance of the first unit. The plan was soon modified to include two solar-thermal power plants, with a total output of up to 250 megawatts, plus at least one photovoltaic power plant with an installed capacity of 15 megawatts. Ashalim, in the western Negev desert, was chosen as the site of the future plant. But the process has been wrought with delays, due to government failure to issue regulatory permits, to write the electricity-production license, and to formulate financial-aid criteria for the bid winner.

One year after the plant was originally scheduled to begin operating, the government announced the public tender for bids. Both domestic and international energy companies were allowed to bid on the project, with the understanding that it would be a build-operate-transfer project, meaning the winning bidder would build the facility, operate it for the period of the license, and then transfer ownership to the state. Infrastructures Minister Uzi Landau, who admitted at the February 2011 renewable-energy conference in Eilat that he was "somewhat embarrassed" about the slow pace of the tender process, also vowed that things were progressing. Yet, to date, the site remains empty, with no indication of when power might begin to flow from it.

In May 2003, the Israeli cabinet decided that government policy would be based on principles of



sustainable development to promote, among other things, “a dynamic economy” and “wise use of natural resources.” The “Strategic Plan for Sustainable Development in Israel” came in the wake of the World Summit on Sustainable Development held in Johannesburg the previous year. The plan called upon each ministry to create an action plan through the year 2020 that would identify activities that should be implemented, as well as those “incompatible with the principles of sustainable development.” Specific steps in the plan that related directly or indirectly to renewable energy included calling upon the Ministry of Infrastructures to:

- Improve efficiency and exploit various energy sources to reduce energy demand and to promote energy conservation;
- Ensure that at least 2 percent of electricity will be produced from renewable-energy sources, starting in 2007, and to take steps toward green building;
- Regulate the entry of electricity from renewable sources into the national transmission grid according to conditions that encourage decentralization of electricity production and reduce transmission distances;
- Encourage research and development on the subject of renewable energy in order to achieve the goals set by the government;
- Take into account external environmental and social costs when evaluating infrastructure projects.

It also called upon the Ministry of Industry, Trade and Labour to promote:

- Research and development of Israeli technologies that are suited to

the application of sustainable development;

- Israeli technology that applies sustainable-development principles and is appropriate for implementation in Israel and other countries;
- Research and development of technologies appropriate for implementation of sustainable development in Israel and for marketing to other countries.

And it called on the Ministry of Finance to:

- Investigate the possibility of eliminating subsidies and incentives for activities that do not conform to the principles of sustainable development, including activities involving the unmonitored use of energy;
- Investigate methods for determining fees for the use of natural resources for which there is no market price, including calculating the costs of environmental damage, and developing mechanisms for the collection of such fees.

An inter-ministerial taskforce was established to oversee the drafting of strategies by the ministries, and since then nearly all ministries have submitted their plans. Most also have met many of their obligations under the plan. The Energy and Water Resources Ministry is a glaring exception, having failed to integrate solar energy into new construction, ensure that two percent of Israeli electricity was produced by renewable energy by 2007, and stimulate the renewable-energy research and development necessary to meet future renew-

able-energy targets.

Feed-In Tariffs

The government’s decision in the early 2000s to make solar-thermal development a higher priority than other solar technologies such as photovoltaic is unique; all other countries that had developed significant solar markets by then had focused on the development of photovoltaic technology, which, unlike solar thermal, is not water intensive. Eventually, however, policies also began to support other types of renewable technologies. This support began in the form of feed-in

tariffs — rates that Israel Electric Corporation is required to pay to those who sell electricity produced via renewable energy to the transmission network. These rates reflect the reduction in costs that result from the pre-

vention of emissions of carbon dioxide, nitrogen oxide, sulfur oxide and particulate matters, due to the replacement of polluting fossil fuels with renewable energy.

The feed-in tariff was developed by the Public Utilities Authority Electricity as part of a 2004 Energy Master Plan that was commissioned from private consultants. The plan also urged Israel to adopt a major solar initiative that would include the installation of 2,000 to 2,500 megawatts of solar thermal plants in the Negev by the year 2025, starting in 2005. And it recommended the promotion of generating heat, air conditioning, and electricity with distributed solar technologies in the industrial, pub-

ISRAEL FAILED TO ENSURE THAT TWO PERCENT OF ITS ELECTRICITY WAS PRODUCED FROM CLEAN ENERGY BY 2007.



lic, services and domestic sectors. The plan was not entirely adopted by the government, because, among other things, it was not considered reactive enough to adapt to changes in the electricity market, such as the integration of renewable energies.

Public Utilities Authority Electricity's first feed-in tariffs were published for large commercial solar facilities in 2006. They were, however, ultimately deemed to be too low to spur photovoltaic development, and were expanded in July 2008. The new tariff also included residential solar-energy producers, as well as different sized commercial facilities. Soon, tariffs were published for small producers of wind energy as well. The rates are guaranteed for 20 years, but they also are capped. This means that Israel Electric Corporation is only required to buy a fixed amount of electricity produced by each type of renewable energy at the premium price. Critics argue that the measures, as they currently stand, actually stymie photovoltaic growth, because the caps prevent power companies from making a profit and because Israel Electric Corporation has created procedural roadblocks for photovoltaic producers to obtain the required authorizations to connect to the grid.

Another complaint is that the government has been inconsistent in its feed-in tariff policies. The tariff has been revised several times since its inception, making it difficult for a company to plan a profitable strategy. And in February 2011, the Finance Ministry froze all new licenses for large solar fields pending a Public Utilities Authority Electricity review of tariffs paid for solar energy. The ministry wanted to reduce the tariff to 0.40 shekels per kilowatt hour from the rate of more than one shekel per kilowatt hour. It

said that the high price of generating renewable energy is not worth the benefit, and recommended waiting for the technology price to fall before committing to paying high tariffs.

A New Goal, a New Strategy

A central component of Israel's energy policy is the promotion of energy efficiency in the electricity sector. In 2007, the National Infrastructures Ministry — today the Energy and Water Resources Ministry — prepared a new master plan, which set a goal for a 20-percent reduction of energy consumption by

CRITICS ARGUE THAT THE MEASURES ACTUALLY STYMIE PHOTOVOLTAIC GROWTH.

the year 2020. Again, however, critics charged that the program did not provide enough operational steps to reach this target.

In 2008, the government initiated a five-year research and development plan aimed at the promotion of the renewable-energy sector. Components of the plan included:

- Fifty-million shekels dedicated to encouraging industrial research by funding academic studies and research in the field;
- Thirty-five million shekels dedicated to encouraging applied research and development;
- Fifty-seven million shekels dedicated to establishing a new re-

search-and-development renewable-energy technology center in the Negev, as well as a verification center to test new technologies;

- Cooperation with the European Union, United States, and International Energy Agency and a search for other potential international collaborations;
- Professional training programs in the renewable-energy field;
- Tax benefits for companies that invest in renewable energy;
- Examining improved allocation of land for renewable-energy projects and power stations;
- And preparation of a national outline plan for the energy market's infrastructure. Amongst other things, the plan would define conditions for location, construction, and operation of renewable-energy projects.

In January 2009, the Finance Ministry's socioeconomic cabinet set a new target for renewable-energy production in Israel. Government Decision No. 4450 declared that 5 percent of Israeli electricity should come from renewable sources by 2014 and 10 percent by 2020. The plan calls for the construction of three solar power stations in southern Israel between 2010 and 2020 at capacities of 50 to 75 megawatts each, transforming the Negev Desert and Arava Valley into national-preference regions for renewable energy.

In a follow-through of the plan, the Renewable Energy Technological Center has been established in the Arava with the aim of promoting Israeli research and development in the renewable-energy field, to encourage private investment in the field, and to help move the Israeli renewable energy market to the



global arena. The Ministry of Industry, Trade and Labour put out a bid for establishment and operation of the center, which was won in September 2010 by the Arava Group, a consortium of industry leaders, investment companies, academics, research groups, private-management groups and regional municipalities. The Ministry of Industry, Trade and Labour and the Arava Group have committed to investing about 60 million shekels each through 2015. The Energy and Water Resources Ministry, the Finance Ministry and the Ministry for Development of the Negev and Galilee also are collaborating on the project.

In December 2009, one day before the start of the U.N. Conference on Climate Change in Copenhagen, State Comptroller Micha Lindenstrauss presented a report on Israel's environmental efforts. Findings showed that although the Environmental Protection Ministry spent the better part of the decade formulating a greenhouse-gas emissions reduction plan, it had yet to be put into effect. The report also noted that the Inter-Ministerial Committee on Climate Change that was formed in 1996 was dissolved in 2004 without ever filing its findings. And Lindenstrauss charged that the Infrastructures Ministry's 2007 energy master plan was never implemented, though the ministry responded that the plan was still being drafted.

In January 2010, the Infrastructures Ministry's National Planning and Building Council approved the Solar Energy Planning Strategy based on a report that presented conditions for photovoltaic solar-energy installations, from solar panels on

rooftops to extensive solar fields. Its main recommendations were to support rooftop photovoltaic panels as much as possible and to put in place an expedited process for approving medium and large solar fields. One of the more controversial issues in the report was that of land use. The National Infrastructures Ministry — today the Energy and Water Resources Ministry — and Environmental Protection Ministries pushed for a policy that would allow 500 dunams (about 125 acres) out of any agricultural plot to be rezoned for industry so that a solar farm could be built on that land. Environmental Protection Minister Gilad Erdan also suggested that solar installations be considered engineering projects rather than power stations, because the environmental-approval process is quicker for engineering projects. The council, however, approved a more conservative position advocated by the Agriculture Ministry for 300 dunams (about 75 acres) or up to 10 percent of a plot can be rezoned for solar-energy use. (A mid-size field of five megawatts of photovoltaic-generated electricity covers about 120 dunams [about 30 acres] of land.)

In February 2010, the National Infrastructures Ministry — today the Energy and Water Resources Ministry — published new renewable-energy policies. The stated goals were to develop and better integrate renewable energies into electricity generation in order to promote security

and energy independence and to strengthen the country's sensitivity to the environment. The document was written to ensure implementation of Government Decision No. 4450, calling for 10 percent of electricity to be produced by renewable energies by 2020. Leading principles of the policies are listed as follows:

- Create certainty in the renewable energy market through clarification of the goals of electricity generation by 2020;
- Encourage facilities that will generate electricity via renewable energy, especially in the periphery;
- Promote the renewable-energy industry in Israel, as well as research and development in the renewable-energy field;
- Increase Israel's energy security;
- Encourage environmentally friendly electricity production;
- And increase renewable-energy generation by reducing the cost of production for consumers.

ISRAEL PLANS TO LESSEN ENERGY CONSUMPTION BY 20 PERCENT AND TO SOURCE 10 PERCENT OF ITS ENERGY FROM RENEWABLES.

The document listed potential sites for renewable-energy production facilities, as well as how much of each different type of technology will make up the 10-percent goal and corresponding generation of 2,760 megawatts of renewable-energy production. This takes into account Israel's plan to decrease energy consumption by 20 percent in the same period of time. Both Israel's 10-percent renewable-en-



ergy goal and its 20-percent energy-reduction goal were named by Environmental Protection Minister Gilad Erdan as the primary vehicles through which Israel will achieve a commitment made by President Shimon Peres to reduce Israel's carbon dioxide emissions by 20 percent by 2020 compared to a business-as-usual scenario.

An amendment to Israel's Investment Law is lending support to renewable-energy entrepreneurs. The law allows companies to benefit from a corporate tax rate and entitles companies located in priority areas to investment grants of up to 24 percent. The new provision gives local alternative-energy technology providers more flexibility to gain benefits under the law. It also puts into place an accelerated depreciation rate of 25 percent per year for investments in renewable energy research and development and in the manufacture of renewable-energy equipment, or direct investments for the adoption of renewable-energy technology by factories.

In addition, funding for renewable energy research and development was boosted to about 15 million shekels in 2010 as a result of a 2008 government decision. This was followed in late 2010 with a plan to spend \$600 million over the next decade in order to reach the 10-percent renewable energy goal by 2020. Much of the money is being invested in encouraging green construction and development of new technologies. Prime Minister Benjamin Netanyahu presented the plan as one of "the highest importance because the addiction to oil has led to the Western world being dependent on the oil-producing countries and

harms the standing and security of the State of Israel."

Problems Remain

In late 2010, the government adopted the National Action Plan to decrease greenhouse-gas emissions by 20 percent. The plan included strategies related to energy efficiency, transportation and green building. While renewable-energy strategies also were supposed to be included, they were left out in the end for undisclosed "political reasons," according to an official at the Environmental Protection Ministry.

“ADDICTION TO OIL HAS LED TO THE WESTERN WORLD BEING DEPENDENT ON OIL-PRODUCING COUNTRIES AND HARMS THE STANDING AND SECURITY OF THE STATE OF ISRAEL.”

During that same time period, Infrastructures Minister Uzi Landau signed the first power-purchase agreement for renewable energy in Israeli history. The 250-million-shekel deal with Ketura Sun, a joint venture of the Arava Power Company and Kibbutz Keturah, came four years after the company began to work for it; company owners say bureaucracy, a disorganized system, lack of coordina-

tion, and ignorance about renewable energy are to blame for the length of the process, a complaint commonly heard from renewable-energy entrepreneurs. They add that unless the government raises or removes the caps on medium-sized photovoltaic fields, Israel will not reach its renewable energy goal. The agreement commits the government to buying every kilowatt produced by Ketura Sun. The solar field began operation in July 2011, producing five megawatts of electricity. Arava Power Company earns about 1.5 shekels for every hour of energy produced.

A New Plan in the Making?

The Energy and Water Resources Ministry is once again reviewing its targets, as well as the rest of its energy strategy. The Ministry issued a tender for bids in the summer of 2010 for consultants to create an energy master plan for the Israeli electricity, natural gas, and oil sectors for the next 40 years. The primary purpose of the plan is to guarantee a steady supply of electricity, even during peak periods. It also must address the basic policies of the ministry, such as whether the 10-percent renewable-energy goal by 2020 remains feasible.

The ministry also wants to review the issue of whether fourth-generation small nuclear reactors should replace coal power plants. The primary objectives are to diversify Israel's fuel basket, and to develop all domestic sources of energy, such as natural gas, oil shale, and oil in order to reduce the country's dependence on foreign sources. And it must take into account environmental costs of energy production when creating models. ☀️



A GREEN FUTURE FOR ISRAEL

BY DAVID KRANTZ

What's the biggest killer in Israel? It isn't car accidents. More Israelis die from air pollution in the Tel Aviv metropolitan area alone than in the entire country from vehicular accidents — and more than from wars and terrorism combined — according to the World Health Organization. While wars and terrorism are certainly important issues to address — and the focus of much of the government's attention — pollution is actually far more deadly. And the largest reason for that air pollution is Israel's dependence on fossil fuels.

Turn on a light switch in Israel today and odds are that the bulb is powered by coal, the dirtiest of fossil fuels. That's because the vast majority of energy in Israel is produced by burning imported coal, and the remainder by burning natural gas, much of it still imported. All renewable energy — including solar, wind and hydroelectric — makes up less than one half of one percent of the energy in Israel's grid.

In the coming years, as natural gas found in the Mediterranean Sea off Israel's coast is pumped to the shore, more and more of Israel's energy production will come from burning local natural gas instead of imported coal and imported natural gas. However, burning fossil fuels both worsens air pollution and increases greenhouse-gas production regardless of whether the fuels are imported or not.

Excerpt from: "Greenprint Israel: A Blueprint for a Green Israel," an upcoming report from the Green Zionist Alliance.

The Power of the Sun

The *dud shemesh* — literally, sun machine — is basically a solar panel hooked up to a water tank. Instead of using electricity to heat their water, many Israelis depend on their rooftop *dud shemesh*. The *dud shemesh* makes Israel the world's leader in solar-energy usage. But the percentage of solar energy that actually powers Israel remains so low because nearly all of Israel's solar energy doesn't go into the grid — it goes to heat water.

At the moment, Israel only has two large-scale photovoltaic solar-energy facilities — one operated by the Arava Power Company and producing five megawatts of electricity at Kibbutz Ketura, just north of Eilat, and the other operated by SunPower and producing 10 megawatts in the northern Negev. The Israeli government plans to greatly expand the amount of solar-energy generation with the opening of new solar-energy plants in the coming years to help the country meet its self-imposed goal of 10 percent of its grid energy coming from renewables by the year 2020.

Currently, Israel is encouraging renewable-energy investment through feed-in tariffs — subsidized long-term price guarantees for renewable-energy suppliers so that they safely can make investments in renewable energy knowing that their costs will be covered by the sale of

electricity their projects will generate. The system works, but the demand for feed-in tariffs is much greater than the amount allocated, limiting investment in local renewable-energy projects. Israel needs to raise the cap on the number of projects that can be eligible for feed-in tariffs in order to spur more investment in renewable energy.

If Israel's 10-percent goal is reached, it will mark a more than 2,000-per-

EVERY HOUR THE SUN SHINES ON EARTH ENOUGH ENERGY TO MEET THE PLANET'S HUMAN NEEDS FOR ENERGY FOR AN ENTIRE YEAR.

cent increase in a half dozen years — quite an accomplishment — but it also will mean that 90 percent of the grid will remain powered by fossil fuels. In other words, 10 percent isn't enough.

Every hour the sun shines on

Earth enough energy to meet the planet's human needs for energy for an entire year. And if there's one natural resource that Israel has in abundance, it's sunlight. Israel should dramatically increase its solar-energy production using both large-scale and small-scale methods — both by constructing large solar farms and encouraging localized rooftop solar-panel installation.

Fossil-Fuel Exploration

Bereft of its own oil, coal and natural gas, Israel has long relied on imports for its fossil-fuel needs, but that is about to change. At sea off its Mediterranean coast, Israel has discovered large reserves of natural gas



that it will be exploiting in the coming years. The natural-gas deposits are some of the largest remaining in the world, and have an estimated value of \$300 billion — enough to turn Israel from a natural-gas importer into a natural-gas exporter.

Natural gas burns relatively cleaner than Israel's current primary fuel, coal, but it's still a fossil fuel — it's still limited in supply, non-renewable and polluting, further contributing to climate change. However, Israel is also readying to exploit a fossil fuel that the country's founders didn't realize laid beneath the soil: oil.

It's estimated that Israel has as much oil as Saudi Arabia. Sure, the eyes see dollar signs, but the lungs cough smoke: Our oil addiction has been one of the leading drivers of climate change. Exploiting newly accessible oil deposits is akin to digging deeper graves for ourselves as we're trying to find our way out of the hole. How can we chart a sustainable future for Israel while starting to increase our use of the king of unsustainable fuels?

The oil in Israel isn't the same as Saudi Arabia's oil — it's actually worse. Saudi Arabia and other large oil-producing countries such as Venezuela and Norway have what is called crude oil — oil that is viscous and flows, as one might picture it. Israel's oil is shale oil, saturated in rock like water in a sponge. Crude oil pollutes when it's burned, but shale oil pollutes twice, first from the energy used in its extraction and then when it's burned. The only way to extract the shale oil is to heat the rock hundreds of degrees — so much that the oil oozes out from it, like juice out of a baked apple — through a process called retorting.

Conventional oil-shale surface retorting involves digging up the ground — uprooting all trees and plants in the process — exposing the oil shale and heating it to about 900 degrees Fahrenheit, burning it in what is literally a scorched-earth

process. In Israel, companies are testing out a new process called in-situ retorting — digging wells and baking the earth underground to about 600 degrees Fahrenheit, converting the oil shale into shale oil while it's all in place underground. Hydraulic fracturing — yes, the same hydrofracking that has been linked to poisoned water supplies in the United States — is sometimes added to the process to help prime the well or to help get the shale oil to flow.

Retorting is incredibly energy intensive, so much so that it actually takes more energy to extract the oil than the amount of energy contained in the oil. The only reason why the

NATURAL GAS IS STILL A FOSSIL FUEL — FINITE IN SUPPLY, NON-RENEWABLE AND POLLUTING.

process is economically feasible is because the fuel that's used to heat the shale — coal, since Israel is mostly powered by coal — is cheaper than the fuel that's extracted, oil. But from a climate and pollution perspective, shale oil is doubly as destructive as conventional crude oil.

Oil-shale exploitation in Israel is not a done deal — it's only in its testing phases right now. The Green Zionist Alliance and its partners in Israel are working on political fronts to prevent the project from going forward.

If Israel were to allow its oil shale to be fully exploited, though, it likely would fall far short of its targets for both production of renewable energy and for reduction of greenhouse-gas emissions. Bringing more oil to market in Israel would have the effect of making oil cheaper, increasing its use and making renewable energy less competitive. If Israel is

serious about transitioning to sustainable-energy sources, then it must block oil-shale exploitation. An investment in oil is an investment in the past, instead of in the future.

Riding a New Wave

Renewable-energy goes beyond solar and wind. There are many other renewable-energy technologies, but the most promising may be wave energy — utilizing the energy in the rise and fall of the waves.

Since the fuel is waves, it's a renewable energy that doesn't pollute or contribute to worsening climate change. Wave-energy plants are cheaper to build than coal, natural-gas, wind and solar plants. The electricity is cheaper to produce as well.

And the first wave, so to speak, already has landed: Israel-based S.D.E. Energy built a small pilot project at Jaffa's port and is waiting for financing to build a large-scale 50-megawatt plant in Jaffa.

The biggest challenge to desalination is the energy cost of powering the technology. But future desalination plants could be powered by waves instead of coal, with wave-energy plants incorporated into the desalination plants so that they become self-sufficient closed-loop energy systems.

With so little land on which to develop new energy solutions, the development of wave-energy systems could help Israel preserve its remaining open space. And Israel may find that the answer to the country's energy needs may not be in the natural-gas deposits beneath the Mediterranean, but in the sea's waves above them.

China has contracted S.D.E.'s rival Israeli firm Eco Wave Power to develop wave energy on its shores. Israel should follow suit, and ride this new energy wave.

The New Hydro: Power of the Pipes

Having seen the environmental

damage wrought by coal, Theodor Herzl envisioned a Jewish state run by clean, renewable energy — specifically hydroelectric power. Israel's Leviathan Energy is developing a technology that will help make Herzl's dream a reality: Tapping excess water pressure in underground water pipes to produce hydroelectric energy.

Think about it: We could harness energy just from the water moving through our pipes, and do so without hurting our environment. And we could generate pollution-free electricity in cities and rural areas alike.

The system already has been tested in Israel and the Philippines, and will be ready for widespread use soon.

Conservation

Israel also needs to turn its attention to energy conservation. Israelis know to take short showers, but do they know to always turn off the lights when leaving the room? A recent study by the nonprofit think tank RAND Corporation found that Israel is using energy at an unsustainable rate.

"The single most important factor to having a successful energy policy is for Israel to slow the growth in demand for electricity and use its energy more efficiently," the study's lead author, Dr. Steven Popper, told the Jewish Telegraphic Agency. "The higher the demand for electricity, the fewer choices you have, and the more likely it is that you'll pay some pretty severe penalties — higher costs, more pollution, a coastline filled with power plants, or Israel might be much more [vulnerable] to supply cutoffs."

The Israeli government has begun phasing out the sale of conventional incandescent light bulbs and has begun subsidizing the sale of compact-fluorescent bulbs, which are

four times as energy efficient, but increased public-awareness campaigns are needed to better educate the Israeli public about energy-conservation methods, such as turning off the lights.

Vampire appliances — electronic devices that continue to drain power even when turned off — suck energy in Israel the same way that they do in the United States. But while America represents a large enough market that a change in law to prohibit vampire plugs would lead manufacturers to change the way they produce products, Israel's market may be too small to have such an effect. However, Israel could still take on vampire appliances by following the lead of countries such as Ghana and Australia, where electronic outlets include cut-off switches, enabling people to turn off power to an outlet with the flick of a switch at the outlet itself.

When people know how much energy they are using, and how much it costs, they are more likely to reduce their energy consumption. Israel's electric companies should be required to provide indoor electricity-usage monitoring systems to enable citizens and corporations to better monitor and reduce their electricity usage.

Another way that Israel could save energy — particularly in the summer, when energy demands are highest — would be to incentivize improved insulation and the installation of multiple-paned windows in buildings, helping them to maintain cooler temperatures. Even better: The government could mandate that all new windows incorporate the new Israeli technology of solar-panel windows. Essentially, a layer of transparent solar-power cells are placed between two panes of glass, leading to both energy conservation by reducing heat leakage as well as energy production

from the solar cells. The technology has the potential to revolutionize the way that buildings are powered in Israel and around the world.

Transportation

Transportation and energy are invariably linked. The widespread use of private vehicles in Israel is a leading factor in producing air pollution and it accounts for the country's largest consumption of oil. Israel has made some good strides to green its transportation — in some ways, it has jumped past the United States in this regard — but much more must be done to put Israel on the path to a sustainable future.

Much hubbub was made over the launch of a nationwide electric-car network, making Israel the first country with one. But are electric cars better than conventional ones? Think of every car as a portable power plant. As it drives around, it burns fuel and spews smoke all around the country. It's easier to scrub and control the emissions from one central power plant than it is to scrub and control the emissions from a million power plants driving across the country. By powering cars through the grid, an electric-car network centralizes the pollution, reducing it slightly in the process. Electric cars also may use fuel more efficiently, since a large power plant can burn fuel more efficiently than the small car-based power plants known as internal-combustion engines. But that doesn't necessarily make electric cars significantly greener than conventional cars. It really depends upon the type of fuel.

An electric car may not need oil, but its energy still needs to come from somewhere. Electric cars are powered by whatever fuel powers the grid. And in Israel, that's coal. So electric cars in Israel are basically swapping one dirty fossil



fuel — oil — for another — coal.

Electric cars can only be as green as the energy of the grid that powers them. So then what makes electric cars so great? Consider electric cars as part of the solution, but not the solution itself. The second necessary step is to convert the electric grid from fossil fuels to renewables. If Israel's grid was powered by the sun, the wind, or waves, then its electric-car network would be too.

Still, moving cars off of gasoline and onto the electric grid only addresses some symptoms of the problem of Israel's car-driven society and it does not address the problem itself. Aside from spewing greenhouse gases that contribute to climate change, Israel's car culture leads to fragmented communities and a siphoning of infrastructure funding away from mass-transit, bicycle and pedestrian projects. Additionally, cheap cars and cheap fuel are a key factor driving suburban sprawl, which leaves less and less wild space for native plants and animals.

Switching to an electric-car network isn't enough — the next steps must be taken to reduce Israel's automobile dependence through smarter urban planning and investments in mass-transit, bicycle and pedestrian infrastructure.

Some alternative-transportation infrastructure projects are already being undertaken. For example, beginning in the early 2000s, Israel reinvested and expanded its national intercity railway system. Today, the train is a quick and affordable way to travel between Nahariya and Haifa in the north to Tel Aviv and Ben Gurion International Airport in the center to Beer Sheva and Dimona in the south. The reinvestment has led to a rapid rise in train use, from about 4.8 million annual passengers in 1995 to about 36 million in 2011.

Planned expansion in the coming years will lead to a truly nationwide rail system, with a new high-speed link planned for Jerusalem, new lines planned to reach Eilat, Arad, Tiberias and Tsfat, and possibly a new extension to Irbid, the second-largest city in Jordan.

Intracity rail also has received a big push with the opening of a light-rail network in Jerusalem, stewarded under the guidance of Jerusalem Deputy Mayor Naomi Tsur, a Green Zionist Alliance advisory-board member. Although the new system currently only consists of one line, it has 23 stops and extension plans call for the construction of another seven lines, some of which will be light rail and some of which may be bus rapid transit — essentially buses running along dedicated lanes.

New bus rapid transit lines also are planned for Haifa to supplement the country's only subway, the Carmelit, an underground single-line funicular train with six stops.

Tel Aviv is set to be transformed by new investments in public transportation. Seven light-rail lines, including some underground stations, are planned for the Tel Aviv metropolitan area. Construction began in 2011. The Dan bus company is transitioning to an all-electric fleet. And NASA-incubated skyTran plans to build the world's first personal-transport-pod system in Tel Aviv. Looking like something out of a sci-fi film, the egg-shaped pods will be powered by magnetic-levitation technology and glide in the air along beams that will be installed connecting existing power-line poles.

Tel Aviv is also the site of the country's first urban bike-share system. So far there are more than 150 stations and 2,000 bikes across the city.

Tsur has spearheaded the construc-

tion of many bike trails across Jerusalem and hundreds of miles of bike trails have been built across the country — including the Kinneret Circumference Trail and the Trans-Israel Bike Trail — thanks to the work of the Green Zionist Alliance.

While all of these developments are good steps toward sustainable energy use, Israel needs to continue to further invest in public transportation so that trains and buses become cheaper and more convenient than private cars. Cities need to make commuting by foot and bicycle easier — that means wider sidewalks, more bike lanes and fewer car lanes. Additionally, new and expanded neighborhoods should be built as mixed use, allowing for people to work near where they live. And focusing development on infill in cities instead of sprawling homes into the suburbs will help reduce the need for private vehicle use.

One possibility for moving suburban Israelis to public transit is a hybrid approach — such as by incorporating small, electric-powered vehicles that people could use to get to a mass-transit stop and then take public transportation from there, allowing the vehicle to charge while the person is gone. Ideally, a metropolitan area could use both a bike-share system as well as the small electric vehicles. But either way, the result needs to be making public transportation easier and cheaper than private automobile transit.

A culture shift is needed, as cars permeate Israeli society even more than in America. For example, it's common for Israeli companies to offer free cars to employees as a perk, in the same way that U.S. firms offer paid sick days.

In 2013, the government announced an ambitious plan to cut some forms of air pollution by 60 percent in the

next decade. The Ministry of Environmental Protection identified two small moves that could have sizable effects: the retirement of older heavily polluting trucks and buses, and switching employers' incentives from offering free cars to offering free or discounted public transit. But a lot more will need to be done in order to make a major reduction in air pollution.

Taxes

The word "taxes" may send shivers down the spine of some, but like anything, taxes can be used for both good and evil. Think of taxes not just as a revenue generator for government, but also as a policymaking tool to help generate a desired outcome. Used properly, taxes can incentivize positive behaviors and discourage negative behaviors. Changing Israel's taxing structure would further help build a sustainable Israel.

To some extent, this is already happening. One big change has been that new-car purchases are now taxed differently depending upon the amount of pollution they emit. Higher-polluting cars are taxed more and lower-polluting cars are taxed less, depending upon where each car falls on a 15-point green-index scale that measures the car's particulate-matter and greenhouse-gas emissions. The difference in scores can amount to thousands of shekels in extra taxes.

The car's score on the scale is included in all advertisements for the car — even on billboards. The lower the score the better. For example, a Mercedes C 63 AMG sports coupe and a Ford Explorer both score a 15, a Toyota Corolla scores a seven, a manual-transmission Ford Focus scores a four, and a Toyota Prius scores a two.

With the green-index taxing system

in place, Israel should regularly increase taxes on higher-polluting vehicles in order to continue discouraging — and eventually phase out — their sale.

But Israel also should take the next logical step, and either institute a full-fledged carbon tax or a cap-and-trade system. Many people argue over which option is better, but both are poorly understood and in reality each is simply a different means to the same end: rapidly reducing greenhouse-gas emissions.

A carbon tax would place a fee on every item based on the amount of greenhouse gases released in the product's manufacturing and transportation. The system would encourage manufacturers and service providers to decrease their carbon footprints, and tax proceeds could be used to help individuals and corporations offset the costs of transitioning to less-carbon intensive options. The end result is that a carbon tax uses the market and market forces to lower greenhouse-gas emissions.

Cap-and-trade systems, though widely criticized by pro-market legislators, also utilize the market and its natural forces to lower greenhouse-gas emissions. Simply put, a cap is placed on all greenhouse-gas emissions and companies are granted pollution credits that allow them to pollute fixed amounts. Those companies that pollute less than their allotted amount may trade their credit to other companies. And those that pollute more than their allotted amounts must either reduce their pollution, trade for credit from less-polluting companies, or face heavy fines. But that

simply would keep greenhouse-gas emissions at the same fixed levels. In order to continue lowering greenhouse-gas emissions in a cap-and-trade-system, the cap needs to be lowered regularly — perhaps every year or two — and the volume of pollution credits, likewise, needs to be reduced regularly, until eventually the cap is set so low that pollution occurs at an environmentally sustainable level.

Because there's no tax in a cap-and-trade plan, the government would have less funds to help people and companies transition, but the lack of a tax component also would mean

that the dead-weight loss — the economic burden — is smaller, leading to what economists consider a more efficient system.

QUICK ACTION IS NEEDED TO HELP AVERT THE WORST.

Both systems help to put a price on the externality of greenhouse-gas emissions, both incentivize their reduction, and both utilize the market to do so. In that sense, it isn't as important which system Israel enacts — it is more important that it enacts one of the two. Quick action is needed to help avert the worst potential effects of climate change.

Conclusion

Overall, many steps have been taken toward a green and sustainable Israel, but much work remains. The longer that environmental issues are ignored in Israel, the more difficult they become to address. The time to green Israel is now. ☀️

Follow-up online

Greenprint Israel: A Blueprint for a Green Israel:
greenprintisrael.org



WASHINGTON'S GREEN SHULS

BY JOELLE NOVEY

Every Jewish community I have visited strives to honor the words of the Torah. Physically, we adorn the scroll beautifully, carry it carefully, touch it lovingly and read from it publicly. Spiritually, we pray that our hearts will open to its teachings, we study its words and generations of commentary on its words, and we affirm in community that its ways are ways of pleasantness and all its paths are paths of peace. To many Jews, the thought of a ripped or damaged Torah scroll is almost physically painful.

In the Tanya, a classic work of Hasidic philosophy, Rabbi Shneur Zalman writes that the actual words God used to create the world are present inside the elements of Creation, animating them. That means that nature — the mountains and oceans and forests and animals — is the living embodiment of the words of God, and the living embodiment of Torah. And it would mean that nature should be treated just as precisely as the Torah we kiss in synagogue. But while we honor the Torah of the synagogue, the Torah of parchment, we often fail to honor the Torah of nature, the Torah of the Earth.

Half of the electricity lighting our synagogues, protecting the Torah of parchment, is generated from burning coal, damaging the Torah of the Earth. Taking Rabbi Zalman's lesson a step further, when mining companies blow off the tops of Appalachian mountains and dump the waste rock in streams, God's mystical words with which those mountains and streams were created are being destroyed as well. Coal-fired power plants are making people sick, putting mercury in the water

and giving children asthma — what if we knew that the divine speech that had created us as human beings was itself being harmed and disrespected?

And coal-fired power plants are our country's single greatest source of the heat-trapping gasses that are causing global climate change, bringing stronger storms, devastating floods, and food scarcity for some of the world's poorest people.

Perhaps our wasteful use of coal-powered electricity in the places we gather to read from the Torah are damaging something just as holy as the words of the Torah itself — the people around the world and in the future who depend on a stable climate.

Synagogues as Green Leaders

I work as the director of Greater Washington Interfaith Power & Light, which supports hundreds of local congregations, including many Jewish communities, in saving energy, going green and responding to climate change. I have learned that every congregation has at least one person who feels in their *kishkes* — in their guts — that their congregation should be taking environmental issues seriously, but who may feel alone in rousing their rabbi or other community members.

If someone approaches you and pushes you to consider a new program or a change in practice, first honor the fact that his or her concern is not peripheral to your mission as a Jewish organization. Green efforts are not just of interest to the extent they save money, or engage "young professionals," or serve some other purpose. Striving to

honor the Torah of nature as fully as we honor the Torah of parchment isn't a side project for people who are serious about Judaism. It is Judaism. When a Jewish community examines its impact on the natural world, it is doing something that is as core to its mission as teaching and learning Torah.

Second, learn. Look for ways to bring environmental teachings to every age group in your community. At Beth Sholom, an Orthodox congregation in Potomac, Md., the preschool and synagogue organized a family-friendly "Yom Yarak" — a green expo of environmental organizations and green businesses, educational panels, and kids' activities — on the Sunday following Tu B'Shvat. Congregations throughout our area have hired educators from the Teva Learning Alliance to bring environmental programming to youth in their synagogues. They also have led outings to Kayam Farm at Pearlstone Center in Reisterstown, Md., where Jewish agricultural teachings come to life.

Synagogues in this area are finding many other ways to incorporate environmental education into their activities. Am Kolel offered a high-holiday sermon by Mike Tidwell, founder and director of the Chesapeake Climate Action Network. Kehila Chadasha invited Evonne Marzouk, founder of the Torah-based environmental organization Canfei Nesharim, to learn Jewish texts with them last spring. At my own havurah, Tikkun Leil Shabbat, members have heard messages from local environmental activists, including the Anacostia Watershed Society, 350.org, the Capitol Climate Action, the March on



Blair Mountain and the Washington Area Bicyclists' Association.

A Green Jewish Beltway

Synagogues also are looking to green their buildings operations. At Congregation Beth El, a Conservative synagogue in Bethesda, Md., members of the green team rolled up their sleeves and assessed the contents of their trash bin, discovering that a very large component of their garbage was compostable food waste. They arranged for a composting service to pick up their food waste separately, and made polo shirts for the custodial staff with a custom logo to celebrate their role in greening the shul's operations. Adat Shalom Reconstructionist Congregation, also in Bethesda, partnered with a solar-services company that installed solar panels on the synagogue's roof. The congregation then purchases the solar power from the company at below-market rates.

Fabrangen *havurah* in Washington is one of many congregations to reduce waste by shifting kiddush from disposable plates and cutlery to reusable plates, cups, cutlery and cloth napkins, which a volunteer washes between each service. And Ohev Sholom Talmud Torah, an Orthodox congregation in Washington, undertook energy-efficiency improvements to earn the EPA Energy Star for Congregations certification. Ohev is only one of many shuls across the area which have placed reminders on their light-switch plates that read: "*Lo tashchit*: Don't waste. Please remember to turn off this light."

Additionally, synagogues are supporting congregants to take green steps in their own lives. The "Not By Power" initiative, which we launched at Sixth and I Historic Synagogue in Washington last spring, will bring workshops to local shuls

over eight months, challenging Jewish homeowners to get their homes audited and weatherized before Chanukah, the original holiday of energy efficiency. When couples and families meet with rabbis in our area to plan weddings and bnei-mitzvah celebrations, many distribute a Jews United for Justice booklet, "Green & Just Celebrations," that offers practical advice for aligning *simcha* — celebration — purchases with Jewish values.

Tikvat Israel, a Conservative synagogue in Rockville, Md., and an urban *havurah*, DC Minyan, have both organized community-supported-agriculture programs that drop off local produce for pickup at the congregations. They connect Jewish communities more closely to their food and area farmers, and back it up with educational curriculum from Hazon.

A Green Jewish Voice

As Jews, we have a unique contribution to make to civic debates about energy and climate issues. As people who prioritize continuity across the generations, who affirm the dignity of all human beings, and who bless the natural world as the sacred source of our sustenance, we can bring powerful moral voices to our cities' decisions. For example, members of Shirat HaNefesh, a minyan in Chevy Chase, Md., marched alongside a multifaith contingent at Appalachia Rising, a rally that called for an end to mountaintop-removal coal mining. Members of Tikkun Leil Shabbat gathered after selichot services to sign postcards to the U.S. Environmental Protection Agency in support of stronger rules to protect communities from the dumping of toxic coal ash.

Rabbi Warren Stone, of Temple Emanuel in Kensington, Md., blew the shofar to sound the climate alarm at the opening of an Earth Day climate rally on the National Mall in Washington. At Temple Rodef Shalom, a Reform temple in Falls Church, Va., green-team members have been particularly vocal in green advocacy issues. In 2010, they joined the local Jewish Community Relations Council in lobbying in the state capitol of Richmond for energy-efficiency measures, and they have been reaching out to local congregations and to Reform temples around the country to join them in climate-advocacy efforts.

A Green Lesson

So, on one foot: Look for ways to learn both Torah and environmental issues in your communities; green the operations of your

building and congregants' practices at home; and speak out about what you are learning by taking action locally. Most of all, remember what it means to truly live a Jewish life in our time — by honoring God's revelation contained in the mountains and the sea and the people and animals as dearly as you treasure the words of the Torah itself. ☀

Follow-up online

Interfaith Power & Light:
interfaithpowerandlight.org

Green & Just Celebrations:
jufj.org/green_just_celebrations

Hazon's CSA programs:
hazon.org/programs/csa

COEJL's green-shul resources:
tinyurl.com/coejlgreenshuls

SYNAGOGUES ARE SUPPORTING CONGREGANTS TO TAKE GREEN STEPS IN THEIR OWN LIVES.



THE JEWISH GREENING FELLOWSHIP

BY MIRELE GOLDSMITH

In 2008, UJA-Federation of New York was just beginning to think about sustainability. Green changes were under consideration as the organization remodeled its headquarters. Adam Berman, then-executive director of Isabella Freedman Jewish Retreat Center, was invited to speak about climate change to the Federation and Agency Executives Committee.

Challenge

In order for UJA Federation to implement a “meaningful, Jewish response to global climate change,” it was essential to involve its beneficiary agencies. After Berman spoke, the agency executives agreed that it was time to respond to climate change. Rabbi Deborah Joselow, managing director of UJA-Federation’s Commission on Jewish Identity and Renewal, sketched the outlines of a program on a napkin and handed it to Berman. He turned to Rachel Jacoby Rosenfield, then on the staff of the Riverdale YM-YWHA and a green champion. They filled in the details to design what became the Jewish Greening Fellowship.

UJA-Federation made a \$630,000 two-year grant to Isabella Freedman Jewish Retreat Center to fund the program in 2008, just before the recession began. If the proposal had been considered just a few months later, it might not have been approved. Just as the Jewish Greening Fellowship began recruiting agencies to participate, most were facing reduced budgets and staff layoffs. It seemed

to be the worst possible time to ask the agencies to take on new responsibilities. What would motivate executive directors to take on this new agenda? How would executive directors be persuaded to devote staff time to greening? Where would agencies find the expertise needed to upgrade their facilities and develop new educational programs?

HOW WOULD EXECUTIVE DIRECTORS BE PERSUADED TO DEVOTE STAFF TIME TO GREENING?

Solution

The decision was made to start by engaging community centers and summer camps as they would be able to model best practices in their own facilities as well as to educate their constituents both informally and through direct educational programming. The program was structured as a fellowship to insure that each agency would have to appoint a staff member to take responsibility for the effort. The fellow would function as a green champion and in-house expert. The term of the fellowship was set for 18 months — enough time for the fellow to get up to speed, engage other critical staff, identify opportunities for greening

appropriate to their agency, and begin to implement changes in operations and programs. By participating in a cohort, fellows would benefit from peer support and collaboration.

The Jewish Greening Fellowship was designed, implemented and directed by Jacoby Rosenfield. A key decision was made to provide funding directly to each agency to defray the expense of the staff time devoted to the fellowship. By supporting the salary of the fellow, the fellowship was able to insist that every fellow spend four to six hours per week on greening activities. Agencies in the fellowship also could apply for additional matching funds to help them meet the requirements of the fellowship. All together, agencies received between \$15,000 and \$20,000 each.

Participating agencies were expected to set goals to be accomplished during the period of the fellowship. Although there was plenty of room for the agencies to tailor the goals to their own situations, expectations were high. Every agency was required to complete an energy audit. Each agency also set goals in seven required categories: implement facility energy-efficiency upgrades, improve sustainable operations, create educational programming, inspire cultural and behavioral change, facilitate youth involvement, heighten community engagement, and build community partnerships.

Twenty-four agencies applied to participate in the fellowship’s



first cohort. Twenty agencies were accepted and the fellowship was launched in March 2009 with a retreat for the fellows. Fellows participated in 14 days of training, carefully planned to build their skills as leaders and to give them the knowledge they needed to serve as in-house experts on sustainability. Topics included climate change and energy use, purchasing and disposal of materials, food and transportation, faith-based programming, and communication. One highlight was an environmental justice and innovation tour in the Bronx and East Harlem. The fellows were introduced to many local resources with the potential to benefit their agencies.

Jacoby Rosenfield stayed in close touch with the agency executive directors, including making site visits, to insure that each agency was making adequate progress and to trouble-shoot. The biggest issue to emerge was turnover in staff, which resulted in some fellows leaving the fellowship. All of the 20 agencies were able to find a way to move forward with the fellowship except for one, leaving 19 in the cohort.

Results

The fellows and their agencies achieved results beyond the expectations of UJA-Federation and the agency executive directors. Individual agencies implemented significant projects:

- Surprise Lake Camp installed a 20-kilowatt solar array on the roof of its gymnasium.
- Ramapo for Children installed an interpretive nature trail and launched a new environmental-ed-

ucational program for school groups.

- YM & YWHA of Washington Heights and Inwood eliminated disposables from the daily-lunch program for 200 seniors.
- Central Queens Y forged new community partnerships that brought 500 people to an Earth Day fair.
- Joan and Alan Bernikow Jewish Community Center of Staten Island worked with local legislators to obtain \$98,800 from New York State for a solar-thermal hot-water system and \$200,000 from the federal government for a solar-energy system.

Collectively, the 19 agencies that completed the Jewish Greening Fellowship achieved the following results:

- 6 solar-energy systems installed.
- 13 switches to green-cleaning regimen.
- 15 energy audits.
- 17 launched or upgraded recycling and composting programs.
- 19 Green Teams formed.
- 98 new environmental-education programs.
- 1,750 energy-efficient light bulbs installed.
- \$50,000 in annual saved costs from energy-efficiency improvements.
- \$850,300 in new funding, exclud-


ing UJA-Federation's funding.

Across the agencies, executive directors reported that the Jewish Greening Fellowship developed the fellows' leadership skills, inspired and engaged employees, built new partnerships with other organizations, enabled the agencies to connect with new constituencies and attracted new volunteer leadership. As one executive director said, "The fellows have total buy-in from the staff. I'm somewhat surprised because everyone is busy and when someone asks for something new, you expect resistance. This has

been an interesting learning experience about how to change the culture of the agency about anything."

The members of UJA-Federation's Commission on Jewish Renewal, which made the grant to fund

the Jewish Greening Fellowship, were very pleased with the results.

"Although we cared about environmental stewardship, at the end of the day that is not really our mission," said Joselow. "We thought perhaps greening could catalyze caring, connection and inspiration. And we were right!" 

Follow-up online

Jewish Greening Fellowship:
isabellafreedman.org/environment/greening

THE FELLOWS AND THEIR AGENCIES ACHIEVED RESULTS BEYOND UJA-FEDERATION'S EXPECTATIONS.



THE LEED-CERTIFIED OFFICE

BY KENNETH BANDLER

The imperative to address environmental challenges is rooted in our tradition, which has informed the political advocacy work of American Jewish Committee for more than a century. Those values impel action on environmental issues. At AJC, we've responded by changing the way that we do business as an organization, and by helping motivate staff, lay leaders and supporters to think creatively and act both individually and collectively so that together we can make a difference.

We want to lead by example. And through programs large and small, we're making a difference. AJC employees in Chicago, Los Angeles, New Jersey and Washington have participated in our program offering cash incentives to purchase or lease hybrid cars. Los Angeles County's government even adopted our model to create a similar program for its 100,000 employees.

Eight years ago, we set a goal to become the first national Jewish organization to receive green-building certification through the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program.

The task was made a bit easier because we own our own headquarters building in New York. But transforming a 1950s office building into a modern, energy-efficient structure was not a simple endeavor, and we never could have achieved LEED certification without commitment to this project from the very top levels of our agency. The project's importance and consonance with our mission was communicated clearly and regularly to all employees, and we embraced it. In June 2011 we cele-

brated the awarding of LEED gold-level certification to AJC.

"We applaud AJC for demonstrating a commitment to the environmentally friendly innovations that are so critical to our residents' quality of life," Mayor Michael Bloomberg wrote in a letter to AJC. "Together, we look forward to AJC's National Headquarters serving as a green design model for more nonprofits and corporate citizens."

MOVES TO SAVE ENERGY AND WATER HAVE CUT EXPENSES BY MORE THAN \$200,000 ANNUALLY.

Investments in energy-efficient machinery and materials already have yielded significant savings. Total power usage has been reduced by some 45 percent, and water usage by 20 percent, cutting annual expenditures by more than \$200,000.

Additionally, AJC has taken advantage of renewable-energy credits by purchasing power from resources such as wind and biogas. AJC doesn't receive electricity directly from wind farms, but obtains credits by supporting renewable-energy generation to balance carbon-dioxide emissions from our headquarters building. Participating in a renewable-energy-credit program is an important factor in green-power

evaluations conducted by the U.S. Environmental Protection Agency, which named the AJC a Green Power Partner.

Recycling is also an essential component of the green-building program, and we've been aggressive in recycling paper, cardboard, plastics, metals, glass, batteries, light bulbs and electronics. About 70 percent of our headquarters' waste is recycled.

We implemented a comprehensive sustainable procurement program, so that 90 percent of supplies, including pens and pencils, contain sustainable features. And our cleaning staff uses 100-percent nontoxic Green Seal-certified products, which protects building occupants from harmful chemicals.

Achieving LEED certification is not the end of our green-renovation project. AJC has modernized the elevators in our headquarters to become more energy efficient. And we're encouraging our local AJC offices across the country to implement green measures and to encourage their landlords to do likewise. Efforts are underway to enhance office recycling and sustainable-product procurement.

There have been other examples of leadership on environmental issues in the Jewish community — all have begun by recognizing the present dangers, appreciating the imperative of our own Jewish tradition to act, and then moving ahead with determined commitment. At the root is the understanding that each one of us is responsible for the environment in which we live. ☀️

BALTIMORE'S GREEN FEDERATION

BY NINA BETH CARDIN

The stars aligned over Baltimore in 2006 when three serendipitous efforts, launched independently, coalesced into one green network for Baltimore's Jewish community.

The Sustainability Department

The first project began when the local Jewish Federation, The Associated, assembled a cross-departmental committee to examine how to green its practices and operations. The green committee, made up of lay and professional leaders and headed by Rachel Siegal, an Associated vice president at the time, started by switching the building's conventional bulbs to compact fluorescents and moved on to eliminate plastic water bottles. When it came time for The Associated to construct a new housing-assistance building in 2010, the committee ensured that the new building would meet the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) standards, leading to the building's LEED certification.

In 2011, The Associated became the first Federation in the country to develop a sustainability department that will guide the community through the steps of creating and meeting sustainability goals.

Kayam Farm at Pearlstone

The second project started when The Associated's Pearlstone Center, located just outside of Baltimore, hired Jakir and Netsitah Manela, alumni of the environmental education-focused Teva Learning Alliance and Adamah, the farming fellowship. The Manelas established Kayam Farm, which has become the most active Jewish community farm in America today, attracting more than 4,000 visitors annually.

Kayam's programs, particularly its conferences on Jewish agricultural text study, attract people locally and

from across the country. Kayam also hosts a community-supported agriculture program that provides fresh produce to the community, as well as a summer-long *kollel* — a group of people who learn together and discuss important questions — focused on Jewish agricultural laws.

BJEN

The third project, the Baltimore Jewish Environmental Network (BJEN), began as a group effort at Baltimore's first Jewish environmental conference. As part of Pearlstone, BJEN became the umbrella organization of 14 environmentally minded congregations. BJEN member groups have committed to pursue specific steps toward sustainability and have partnered with The Associated, the local JCC and other agencies that are promoting and pursuing green behaviors, learning and advocacy. Jewish organizations seeking to green their operations now look to BJEN for guidance.

Passion, Patience and Persistence

Each project was born from a passion for positive change and a stubborn commitment to make that change possible. And each had a leader who invited others to join in the work. We presented visions of what could be, built grassroots organizational structures that could refine and pursue those visions, and plowed ahead without knowing how our efforts would be supported financially. Each effort took years to take root, attract funding and attain the technical knowledge needed to build a solid foundation. But patience, persistence and advocacy paid off.

While these are three discrete efforts, each grounded in its own domain and organizational structure, they are all stitched together, working with and for each other.


This happy confluence of initiatives, which began serendipitously, has

merged into an intentional, strategic and holistic community-wide approach. Our agencies and institutions are adopting new ways of operating that are more efficient, produce less waste and save money. There is a renewed sense of energy and engagement across all generations: From the JCC's kindergarten to The Associated's senior housing, people are planting gardens and restoring an appreciation of our dependence on the soil. Reconnecting to the Earth and the food it offers also reconnects individuals to each other and to the deeper strands of Judaism that bind them through and across the generations.

Our work is also taking us beyond the Jewish community by:

- Working with local green builders to showcase green-building efficiencies;
- Advancing the city's sustainability goals with Baltimore's municipal-sustainability office;
- Partnering with local universities in research and application projects;
- Joining with interfaith groups to improve our country's food system;
- Working with the power company for energy retrofits and upgrades;
- Improving water management and quality by dealing with local watershed and neighborhood associations;
- Providing advice to businesses to make green consumer practices more affordable;
- And improving our recycling and composting performance, by consulting with waste-disposal services.

In each of these arenas, novel partnerships are being forged. Jews who never before found a home for themselves in the Jewish community are attracted by our efforts, coming forward and saying, "We want to help."

There is still much to do, but much has begun. It took dedicated leaders, committed financial supporters, persistent passion and creativity. If there is anything the Jewish community has in abundance, it is all of these. 

THE ENVIRONMENTALLY FRIENDLY CONFERENCE

BY DAVID EZER

Getting hundreds of Jewish leaders to the Jewish Funders Network Conference in Jerusalem was not only a logistical challenge — it was also an environmental one. From air travel to Styrofoam cups to reams upon reams of paper, a conference like this one had the potential for a large environmental impact. But some simple changes that I and my colleagues instituted while planning the conference went far toward offsetting the gathering's environmental burden.

The most significant environmental impact was participants' travel. We had hundreds of people taking long-haul transcontinental flights to Israel from around the world, resulting in tons of greenhouse gases being released into the atmosphere. The travel was necessary, but we lessened the impact by purchasing carbon credits — fiscal support for projects, such as afforestation, to remove the equivalent amount of greenhouse gases from the atmosphere, offsetting our environmental impact.

The other major potential impact of the conference was waste. To minimize this, we attempted to find meeting venues with good composting and recycling practices. We also ended the practice of allowing attendees to leave brochures and materials on a distribution table — stacks of paper handouts that would later be discarded. Instead, we provided all of the same information on flash drives. It added a moderate cost, but the flash drives also saved a lot of paper — not to mention many hours of labor sorting handouts and stuffing them into tote bags.

We undertook several other efforts that helped minimize our environmental impact for a small cost, making it fairly easy for our organization to commit to maintaining a high standard of environmental sustainability at future conferences. Today, Jewish Funders Network's green-meeting practices have grown to include the following:

FOR A SMALL COST, IT WAS FAIRLY EASY TO COMMIT TO A HIGH STANDARD.

- Printing conference marketing and program materials on recycled paper, using vegetable-based inks; reducing the size and number of pages of brochures in favor of electronic materials; and making all registration processes online and paperless;
- Distributing all other conference materials on flash drives;
- Promoting ride shares between the airport and the hotel;
- Donating leftover food to a local soup kitchen or shelter;
- Avoiding disposable silverware or flatware, except where unavoidable for kashrut observance, and then using only biodegradable products;
- Serving water and juices in pitchers, providing straws and stirrers on

request only, serving condiments in bulk containers instead of in individually wrapped packets, and asking bar staff to give out napkins only when asked;

- Using Energy Star-rated office equipment;
- And requesting paperless hotel check-in and check-out.

We also ask that our attendees help us keep our conferences as green as possible by:

- Purchasing additional carbon-offset credits;
- Recycling glass, newspaper and plastic on-site;
- Bringing their own reusable bottles for beverages;
- Returning name badges to us at the end of the conference for reuse;
- Participating in the hotel's linen-and-towel reuse program;
- And thanking the hotel for its efforts to be environmentally friendly.

With a simple orientation shift, a few questions asked of our venues and vendors, and letting attendees know about the environmental impact of our work, we've been able to reduce waste and provide a considerably greener event for a very small increase in cost. And most importantly, we have introduced the idea of holding conferences in a more environmentally sustainable way to a community of Jewish funders who might be inspired to adopt these same practices at their organizations. ☀️



ENGAGING TEENS IN ST. LOUIS

BY GAIL WECHSLER

Israel isn't the only place where Jews can plant trees. Every year, members of the Jewish Environmental Initiative, a committee of the Jewish Community Relations Council of St. Louis, plant trees here in St. Louis. Over the years, we have planted hundreds of trees, often partnering with groups from other faiths and engaging community members of all ages. In 2011, we joined with the First Baptist Church of Elmwood Park to plant trees in memory of Alfred Kahn, a Jewish environmental leader who co-founded the Jewish Environmental Initiative, and Ida Scott, an African-American community leader from the Elmwood Park neighborhood.

Launched in 1999 with an initial focus on planting trees, the Jewish Environmental Initiative today addresses energy efficiency, climate change and the local food movement. One of our group's major activities is "Project Noah: A Week for the Environment." It's held every autumn during the week that the story of Noah and the flood is read from the Torah. We send materials to area congregations and day schools and encourage them to engage in environmentally themed programs during the week. We also organize a community event — such as visiting a green-certified building and touring a family-owned organic farm — and a how-to workshop, such as how to bike in and around St. Louis, and how to buy or make environmentally friendly cleaning products.

From May through October, the Jewish Environmental Initiative is a partner of Hazon's local community-

supported agriculture (CSA) program, whose members pre-purchase a share of produce from a local, organic farm and receive seasonal vegetables from the farm every week.

In 2009 we started a teen group for students in grades 8 to 12. The teens select their own projects and research and implement them. One of the teens' first activities was to develop a PowerPoint presentation called "Greening Your Synagogue," presenting their findings — which included reducing paper use, increasing recycling and eliminating Styrofoam use — to synagogues.

"Having the teens talk to us reinvigorated us," said Bev Fogelman, chair of Congregation Brith Sholom Kenesth Israel's Social Action Committee. "Because the teens offered specific solutions to issues that had come up in the past, we were able to do a little follow-up research on our own and now we are completely Styrofoam-free."

And after the teens' presentation, Central Reform Congregation introduced single-stream recycling — all types of recycling are intermingled in one container and sorted at the waste-disposal facility. The ease of eliminating on-site sorting leads to higher recycling

rates. As a result of the teens' research, the synagogue discovered that it could convert to single-stream recycling using its same trash hauler and without any increases in cost.

In 2010, the teens added to their presentation a focus on the importance of growing native plants and using rain barrels to save water from roof gutters. The Jewish Environmental Initiative

teens also launched an annual event to sell native plants and raffle rain barrels.

"I joined JEI because I believe that it's our responsibility not only as people but as Jews to work to protect the Earth," said Jenny Koshner, who graduated from the teen

program last year. "I hope the JEI can help the Jewish community to understand exactly why it is so important to care about the environment." 🌞

“THE TEENS OFFERED SPECIFIC SOLUTIONS TO ISSUES THAT HAD COME UP IN THE PAST. ... NOW WE ARE COMPLETELY STYROFOAM-FREE.”

Follow-up online

Jewish Environmental Initiative:
jrcrstl.org/jei.php

JEI's Planet Jewish blog:
tinyurl.com/stlgreenblog



THE NATIONAL SYNAGOGUE GOES GREEN — HALLELUJAH

BY JEN SINGER

It was my love of the environment and dedication to living life as an observant Jew that led me to start the Green Committee at Ohev Sholom: The National Synagogue in Washington, D.C. From modest beginnings, after just a few years, we already have made a big impact. In 2011, our synagogue became the first in the country to be recognized for energy efficiency with Energy Star certification from the U.S. Environmental Protection Agency.

We started out small, with a group of a few congregants meeting on a monthly basis. In 2008, we implemented a recycling program to collect paper from staff offices, and bottles and cans from our weekly Shabbat lunch. Children helped gather and sort the recyclables.

A year later, we joined Greater Washington Interfaith Power and Light, a branch of the national faith-based nonprofit offering basic energy audits for houses of worship. We swapped out many incandescent light bulbs in favor of more energy-efficient compact fluorescents, and we hung signs reminding congregants to turn off lights when not in use.

While we received a warm response from the synagogue leadership and board for our efforts, we faced great challenges motivating congregants to join our endeavor. We countered their apathy with education. In 2010, I led a Tu B'Shvat seder with our youth director, Sarah Shapiro, to teach about the

value of eating fruits in their seasons and how our food, sustenance and protection are dependent on changes in nature. We also ran an eco-arts-and-crafts booth at our annual Purim carnival, where kids assembled mishloach manot baskets of food for families and friends using reusable containers collected by synagogue families.

THE FIRST SHUL RECOGNIZED FOR ITS ENERGY EFFICIENCY BY THE ENVIRONMENTAL PROTECTION AGENCY.

With our education initiative underway, we returned to our original focus of greening the physical space of our synagogue.

We launched an initiative to improve the energy efficiency of our synagogue. By collecting 12 monthly utility bills and inputting them into the EPA's Energy Star portfolio-manager tool, we created a baseline of energy consumption and energy performance for our building. To improve, we changed our remaining bulbs, replaced the bulbs in exit signs with LED bulbs, and switched incandescent menorah lights in both the chapel and the main sanctuary to compact fluores-

cents. The summation of these small changes was enough for our building to earn Energy Star certification.

While we are proud of our accomplishments, we aren't finished improving. We began a procurement policy that includes a switch to environmentally safe and family-friendly green cleaners. We replaced Styrofoam disposables with compostable and post-consumer recycled products. We hope to bring in an energy-service company for an audit of our lighting, heating, ventilation, and air-conditioning systems. And we are exploring the possibility of installing energy-generating solar panels or temperature-insulating sod on our building's roof.

Simultaneously, we are helping our greater community by starting a greening group of neighboring congregations to collaborate together on efforts to improve our local environment.

Ohev Sholom has spent the past five years developing an environmental policy and bringing sustainability into the lives of the community. By considering the environment, and the health and wellness of our community in the decisions we make on a daily basis, we are taking the law of *baal tashchit* — the prohibition against waste — very seriously. We at Ohev Shalom are proof that traditional Judaism can go hand in hand with protecting the environment. It's our responsibility to protect our environment not just through prayer, but through action as well. ☀️



FULFILLING THE IMPERATIVE: GETTING TO A 14-PERCENT REDUCTION IN ENERGY USE BY 2014

BY MIRELE GOLDSMITH

Why did the Jewish Energy Covenant Campaign set a goal to reduce greenhouse-gas emissions 14 percent by 2014? The year 2014 is the next *shmita*, or sabbatical year. And the 14-percent reduction goal was selected because it can be achieved by every Jewish organization. For example, in a single year, Temple Beth Rishon in Wyckoff, N.J., reduced electricity usage by 30 percent and natural gas usage by 16.8 percent without purchasing new equipment.

Since most energy is produced by burning fossil fuels, nearly every activity that uses energy results in greenhouse-gas emissions. This includes traveling, heating your home or office, operating office equipment such as computers and copiers, and using products that were made using energy. In other words, the bad news is that practically everything you do causes emissions. But the good news is that there are many opportunities to reduce the amount.

Start by conducting an energy audit — often available from your local utility for free — that will determine what steps you should take to reduce your electricity usage and your electricity bill. If you lease office space, or do not pay a separate electricity bill for some other rea-

son, your energy use can be estimated based on occupied square footage.

An easy first step is to switch to energy-efficient lighting and to shut down equipment when not in use. Encouraging car pooling and purchasing products manufactured using less energy are other steps you can take to reduce greenhouse-gas emissions from travel and use of manufactured products.

You also can reduce your emissions by purchasing electricity produced from renewable sources such as solar and wind, and by purchasing carbon offsets.

The U.S. government has set a goal for all federal agencies to reduce their emissions 28 percent by 2020, and for the country to reduce emissions by 83 percent from 2005 levels by the year 2050, which according to some authorities also happens to be the next *yovel*, or jubilee year — the year following seven *shmita* cycles. If we are going to meet government targets for emissions reductions, we have to start working toward it now. Fourteen in '14 isn't just a catchy slogan — it's the beginning of a Jewish response to climate change that has the potential to change the world. ☀️

THE YEAR 2014 IS THE NEXT *SHMITA*, OR SABBATICAL YEAR. AND THE 14-PERCENT REDUCTION GOAL WAS SELECTED BECAUSE IT CAN BE ACHIEVED BY EVERY JEWISH ORGANIZATION.

Follow-up online

Carbon-footprint calculator:
coolcalifornia.org/business-calculator

U.S. Climate Action Report 2014:
tinyurl.com/climatereport2014

White House directive:
tinyurl.com/whitehouse012910

N.Y. State Climate Action Council:
tinyurl.com/nyclimateactioncouncil

The savings at Temple Beth Rishon:
tinyurl.com/bethrishonreport



GREEN YOUR HOME

BY DAVID KRANTZ

Maybe Kermit was wrong — maybe it actually is easy to be green. Or, at the very least, it is pretty easy to start being green. There are many projects that you can do that will not just green your home, but will keep the green in your pocket, too.

Plant a Garden

There's no better summer treat than fresh fruits and vegetables grown in your own backyard. And no plot of land is too small for a garden, even if that garden is only a few potted cherry-tomato plants on a windowsill.

Plant Trees

As long as you're planting, plant big! Trees around a home can help cool a house in the summer and keep a house warmer in the winter. Specifically, trees on a house's southern side only help cool a house if their shade extends over the roof, so it's best to plant evergreen trees on the northern side of the house to help block cold winter winds, and deciduous trees (the kinds that lose their leaves in the fall) on the house's eastern and western sides to protect the house from summer sun.

Switch to Energy-Efficient Lighting

Compact-fluorescent light bulbs use about a quarter of the energy of their traditional incandescent-lighting brethren. Compact-fluorescents last for years, and although they contain mercury, it's still less than the amount of mercury released into the atmosphere by producing the extra amount of energy needed to power conventional bulbs. But the best option may be LED bulbs. They don't use mercury and they only use about a quarter of the energy of compact fluorescents — or about 1/16th of the energy of conventional bulbs.

LEDs also last much longer: One incandescent can last about 1,000 hours, or a few months at normal usage. One fluorescent can last

about 8,000 hours, or a few years at normal usage. But one LED can last about 50,000 hours, or about 25 to 30 years at normal usage. Additionally, LED bulbs produce much less heat than other bulbs, which is particularly helpful in summer.

Install Solar Panels

The sun showers the earth's surface with 180 million gigajoules (50 billion kilowatt hours) of energy every second. That's the equivalent of about 5.68 quadrillion gigajoules a year. For a basis of comparison, all of the countries in the world consume a total of about 353 billion gigajoules of energy a year. In other words, every day the sun shines enough energy on the Earth's surface to meet an entire year's energy needs for about 44 Earths.

Even though current solar-energy technology only allows us to capture a fraction of that power, the sun provides basically free energy, and we'd be foolish not to use more of it. Fortunately, the U.S. government offers financial incentives to help the public install energy-generating solar panels. To find the incentives for which you qualify, check out the Database of State Incentives for Renewables & Efficiency, funded by the U.S. Department of Energy and run by North Carolina State University and the Interstate Renewable Energy Council. Then start powering your house with the sun!

Save Water with Every Flush

Why flush away more gallons than you need to do the job? In Israel and other countries, it's common for toilets to have two settings — one for when less water is needed, and a second for when a more powerful flush is required. But with a \$100 kit, your toilet also can have two flush options.

An even simpler way to save water is by placing a sealed half-gallon con-

tainer of water in your tank. The container displaces new water, saving a half-gallon per flush. With the average American flushing five times per day, each half-gallon adds up to significant water savings.

Even better: Use the water once before it reaches your toilet tank. Another \$100 kit can add a simple sink to the top of your toilet, allowing you to wash your hands with clean tap water that then drains into your toilet tank. Or, if you're feeling really ambitious, you can install a greywater system to funnel water from the sink and shower drains into the toilet tank and leave plenty left over for the garden. Just remember that you'll need to switch to all-natural, biodegradable soaps and shampoos.

Save Water in the Shower

New low-flow shower heads can use 70 percent less water without sacrificing full-flow shower sensation. And, of course, one of the best ways to save water in the shower is to turn off the water when lathering and take shorter showers.

A Green Start

These are just a few of the many things that can be done to reduce your environmental impact and lower your energy and water bills this summer. You can find much of what you'll need through the Green Zionist Alliance, and anything else is readily available elsewhere online. With a little effort, you make your home a bit more green and save some green in the process, too. ☀️

Follow-up online

Database of State Incentives for Renewables & Efficiency:
dsireusa.org

GZA green-products page:
greenzionism.org/programs/affiliates/greenhome

MAKING YOUR SYNAGOGUE A GREEN HOLY PLACE

BY LAWRENCE TROSTER

One of Judaism's most important concepts is that of *kedusha* — holiness. *Kedusha* is inherent in God, but also can be created by people in their actions. These actions are usually found in three categories — sacred time, sacred space and sacred life — and can be expressed in both ritual and ethical commandments, and sometimes in both at once, like the practice of Shabbat.

Individuals can and should strive to live a life of *kedusha*. In Jewish environmental ethics, one of the most important ways that a community can express the idea of *kedusha* is through the greening of their sacred space, the synagogue. Synagogues traditionally have been designed to reflect the structure and ethos of Creation. In a modern ecological context, we can continue to have our synagogue spaces reflect Creation by turning them into living, green, healthy buildings that support life rather than contributing to its destruction. The synagogue can truly be a symbol and center of *kedusha* and inspire everyone in the community to green their own homes, thus making them sacred spaces as well.

The benefits of greening your synagogue building include:

- Protecting ecosystems and biodiversity;
- Improving air and water quality;
- Reducing solid waste;
- Conserving natural resources;
- Reducing operating costs;
- Improving the air, thermal, and acoustic environments and enhancing the comfort and health for anyone using the facility;

Adapted from GreenFaith resources.

- And contributing to the overall quality of life of the community.

In order to green your synagogue, GreenFaith, after many years of helping religious communities green their congregations, recommends the following steps for any organization launching environmental efforts:

1. Form a Green Team

The first step is to form a Green Team — a group of leaders responsible for planning and overseeing your environmental initiatives. Members of the best Green Teams care about the environment and represent different areas of responsibility, such as worship, education, facility maintenance, finance and social outreach. Good Green Teams include respected leaders within your community who know how to get others involved. It is critical that the rabbi take an active role in the Green Team in order to make it a success. Forming a Green Team is the best way to get your synagogue's environmental initiatives off to a strong start.

2. Take Quick Action and Communicate

In order to build momentum for your efforts, take a few quick actions. Here are some examples:

- a. Hold a compact-fluorescent light bulb sale.
- b. Invite your members to sign an environmental petition.
- c. Sponsor an educational forum.

Taking quick actions allows you to identify supporters within your congregation, and build momentum for future efforts. But don't stop once you've taken action. Successful institutions communicate actively about

their accomplishments. They understand that by celebrating small victories, they lay the foundation for long-term success.

3. Have the Rabbi or a Guest Speaker Give a Green Sermon or Lecture, and Invite Members to Affirm their Religious-Environmental Values

A good way to build momentum is through a sermon focused on religion and the environment. Whether it's offered by the rabbi or a guest speaker, a sermon or lecture raises awareness and moves your synagogue along its path to environmental action as it publicly establishes the values that the community is trying to express. After the sermon or program, get your members involved by providing them with the opportunity to sign a pledge or letter affirming their religious-environmental values. Post the letter or pledge in a prominent location for several weeks, giving your members the chance to embrace these values publicly. Once your members have stated their belief publicly, they're more likely to support future environmental initiatives.

4. Conduct an Audit and Make a Plan

Assessing or auditing your synagogue's current environmental activities provides an important foundation for future efforts. This audit should not only include the physical facility and its maintenance but also worship and liturgy, religious education and social justice-activities. It is very important that the Green Team invest the time and effort to complete this audit, or a comparable tool. Once you've conducted your audit, review its results and make an action plan for the coming year. Set specific, achievable goals within a two-year time period

if possible. List the resources you'll need to succeed. Good planning is an integral part of successful religious-environmental leadership. By creating the audit, you will also be able to calculate if you have achieved the 14-percent energy reduction-goal of the Jewish Energy Covenant Campaign.

5. Work Your Plan, and Be Persistent

It is often the case that many religious communities have an initial burst of environmental programming that is often followed by a long period of inactivity. While all institutions need time to rest after launching a new initiative, the religious institutions that enjoy the most environmental success are the ones that demonstrate persistence, and that are disciplined and intentional about working their environmental plan.

There are several things you can do to help your synagogue build environmental momentum. Your Green Team can set a regular meeting date every four to six weeks to identify new activities and assess your progress. You can provide an article or an eco-tip for your congregation's newsletter. You can meet with environmental leaders from your area, building important relationships. Persistence pays off, so work hard and you will succeed.

Priority Areas

Priority #1: Use Fuel-Efficient Transportation to Reduce Harmful Tailpipe Exhaust and Greenhouse-Gas Emissions

Many researchers have concluded that transportation represents the greatest negative environmental impact created by the average U.S. citizen. Encourage congregants to use mass transit, buy cars getting at least 30 miles per gallon, carpool, bike, and most importantly, walk wherever possible. Ask people to calculate

their transportation-related carbon footprint and reduce it by 14 percent. Some synagogues have instituted a regular carbon-free Shabbat when members walk or bike to services.

Priority #2: Eat Less Meat and Fish to Reduce Toxic Contamination and Greenhouse-Gas Emissions, and to Reduce Cruelty to Animals

Meat production is the leading source of greenhouse-gas emissions worldwide, and creates enormous amounts of toxic waste. Animals are treated with appalling cruelty on factory farms. Ocean-fish populations are rapidly declining, and fish farming releases large amounts of pollution. Decrease the congregation's use of meat, dairy and fish at communal meals and celebrations.

Priority #3: Conserve Energy to Fight Air Pollution and Climate Change

Conduct an energy audit of the synagogue and create a checklist of important areas to improve energy efficiency. For example, conserve energy by using a programmable thermostat, decreasing temperature when parts of the synagogue are not being used. Use energy-efficient lighting such as compact-fluorescent light bulbs. Create a campaign to make sure that lights, computers and other electronic equipment is turned off when not in use.

Improve insulation throughout the building. Plan future renovations to replace the building's old boilers, furnaces and air-conditioning units with modern energy-efficient ones. Reduce the water temperature on water heaters to no more than 110 degrees Fahrenheit.

Contact a local solar installer to see if the building can accommodate solar panels and check out if your state government provides subsidies or grants for solar installations and other energy improvements. If

possible, buy the synagogue's electrical power from a "Green-e"-certified company that uses sustainable sources, such as wind and solar.

Priority #4: Make Your Synagogue a Toxic-Free Zone to Protect Human Health and the Environment

Studies have linked ingredients in many cleaning, pest-management and lawn-care products to cancer, reproductive disorders, respiratory problems and other ailments. It is important that the synagogue become a toxic-free zone by using green cleaning products, organic lawn care and alternative pest-management strategies. Make the commitment to purchase products with full ingredient lists and plant-based ingredients.

Priority #5: Create Outdoor Community Programs to Strengthen the Bond with Creation

The average U.S. citizen spends more than 90 percent of his or her life indoors, which weakens our bond with Creation. Create regular synagogue services and programs that take the community outdoors and encourage congregants to spend some time outside each week. This healthy habit is the best way to deepen people's motivation to green their lives and become environmental leaders. ☀️

Follow-up online

GreenFaith:
greenfaith.org

Carbon-footprint calculation:
carbonfootprint.com

Green-e:
green-e.org

Consumer Reports' Greener Choices:
greenerchoices.org

Children & Nature Network:
childrenandnature.org

Energy Star for Congregations:
energystar.gov/congregations

THE GREEN SCHOOL: USING BUILDINGS AS TEACHERS

BY CYNTHIA THOMASHOW

green school /grEn skül/ n. a school building or facility that creates a healthy environment that is conducive to learning while saving energy, resources and money.

When I was a child in school, I never questioned the source of the building's heat or light. I didn't ask about where the food in the cafeteria came from. I didn't care about how many materials were used in the classroom or what happened to them after they were no longer needed. Then, in 1972, my perspective shifted. As the iconic photo of Earth taken by the crew of Apollo 17 was discussed in my college classroom, the "blue marble" floating in space suddenly seemed small, fragile, limited. I started asking questions about the way I lived — the way we related to each other as a society, the way we consumed resources — and I started weighing the amount that we waste against what we recycle. It was an important awakening.

Every school day, more than 55 million students and five million faculty, staff and administrators spend the day inside school buildings. Yet the majority of us don't understand the systems that support their operations, such as how they use energy, where water comes from, and where waste goes. One of the richest areas for environmental education comes from uncovering the secret life of a school building.

"We have assumed that learning takes place in the buildings but that none occurs as a result of how those buildings are designed and built," said David W. Orr, an environmental-studies professor at Oberlin College.

"We should view academic architecture as crystallized pedagogy — buildings are a physical form of curriculum that teach lessons in the way they are designed, built and operated."

From 2008 to 2010, more than \$35 billion tax dollars were spent on K-12 school construction. It is the largest construction sector of the U.S. economy. But, typically, schools are built to meet code and nothing more. They tend to have poor ventilation and poor lighting. They tax our resources and contribute to climate change. But new construction and green renovations promise a different kind of consumption.

Green schools use at least 30 percent less energy, reduce carbon emissions by 35 percent, reduce water usage by 50 percent and can cut the cost of waste disposal between 50 to 90 percent. The total financial benefits of green schools are 20 times greater than the initial costs, including significant energy and water savings. A green school can save \$100,000 per year in operational costs, or roughly enough to hire two new teachers, buy 200 new computers or purchase 5,000 new textbooks. Greening schools can make a large impact on student health, test scores, teacher retention, school operational costs and

the environment.

There are many elements to a green school, including energy efficiency, recycling, school gardening and composting, sustainable materials, transportation, and indoor air quality. Although integrating these elements is critical, it is important that students learn how all of these elements contribute to making a green

“BUILDINGS ARE A PHYSICAL FORM OF CURRICULUM THAT TEACH LESSONS IN THE WAY THAT THEY ARE DESIGNED, BUILT AND OPERATED.”

school. This will ensure that future generations will continue to make our environment more sustainable.

One of the most interesting activities coming out of green schools is how sustainability education permeates the curriculum. Green

schools connect children to the real world in unimaginable ways. They inspire kids to want to read and do math and learn so that they can protect what they love — the oceans, the forests and wetlands that provide ecological services and resources. As parents and as communities, we owe kids healthy, nurturing environments that also teach and inspire them. That's what green schools do.

Young people love to figure out how things work. Children seem naturally inclined to untangle complex systems, getting to the heart of how things operate. Our goal should be nothing less than to train a new gen-



eration of sustainability leaders, graduates from all levels of education, who understand the intricate connections between economics and ecology, place and planet, how we live and the consequences of our actions. In the coming decades, the public will more frequently be called upon to understand complex environmental issues, assess risk, and evaluate proposed environmental plans. The ability to understand how individual decisions affect the environment on local and global scales requires a collective, systematic approach to sustainability education.

Young people in schools today are also the next workforce. They will be designing, building and maintaining our living and working spaces. Green buildings can become powerful teachers, developing in our children, as environmentalist Paul Hawken said, "the capacity and ability to create a remarkably different economy, one that can restore ecosystems and protect the environment while bringing forth innovation, prosperity, meaningful work, and true security."

Business leaders agree that an environmentally literate workforce with better environmental practices and improved efficiencies will impact positively on the bottom line and help to better position and prepare their companies for the future. For example, the National Environmental Education and Training Foundation estimates that environmental education about topics such as health, sanitation, recycling, energy, water and waste management would save small- and medium-sized businesses at least \$25 billion a year.

Michael Stone, in his book, "Smart by Nature: Schooling for Sustainability," suggests a method for organizing learning around the principles that sustain ecosystems in order to build basic ecological knowledge.

Stone suggests that we need to teach our children the fundamental facts of life through our interaction with our constructed and natural learning environments. Those basic concepts include:

- Matter — the particles that make up the universe — cycles continually through the web of life.
- Most of the energy driving the ecological cycles flows from the sun.
- Diversity assures resilience.
- One species' waste is another species' food.
- Life did not take over the planet by combat but by networking.
- Everything is connected.

These principles create a cohesive focus for integrating sustainability and ecological literacy into the curriculum. They can be applied by aligning the operations of the school with the ecosystem services that support that building. If a school represents environmental quality, efficiency and care, the students will carry those lessons home.

Students learn best when they are engaged and inspired. Imagine the learning potential when the school building itself becomes an interactive teaching tool, educating the next generation of sustainable leaders through hands-on learning. High school students could learn about renewable energy from the solar panels on their building's roof. Middle-school students could study ecosystems in their school's constructed wetland. Kindergarteners could grow organic vegetables that they would eat for lunch.

The school building no longer needs to be a passive vessel filled with students, teachers and books, but could be an opportunity for experiential learning and discovery.

The whole school can become a sustainability laboratory for living and learning in an integrated approach that captures the interest and curiosity of students, teachers and the community. ☀️

Follow-up online

K-12

U.S. Green Building Council's Center for Green Schools:
centerforgreenschools.org

The Green School Network:
greenschoolnetwork.org

The Green Schools Initiative:
greenschools.net

Project Learning Tree:
pltgreenschools.org

Green Education Foundation:
greeneducationfoundation.org

Green Community Schools:
greencommunitieschools.org

The Green Schools Alliance:
greenschoolsalliance.org

The Cloud Institute:
cloudinstitute.org

Envirosax:
envirosax.com/education_resources

Colleges and Universities

The Association for the Advancement of Sustainability in Higher Education:
aashe.org

American Colleges and Universities President's Climate Commitment:
presidentsclimatecommitment.org

National Wildlife Federation:
nwf.org/campusEcology

Clean Air — Cool Planet:
cleanair-coolplanet.org

U.S. Partnership for Education for Sustainability:
uspartnership.org

GREEN YOUR OFFICE

BY LAWRENCE TROSTER

Holiness can be created anywhere; it is not confined to the synagogue or home. In Judaism's holistic approach to life, the exercise of making a livelihood is critical — the presence of God also should be felt in the way we conduct our business. There is a considerable classical and modern literature on Jewish business ethics, and now that area of ethics should include environmentalism. In Jewish environmental ethics, one of the most important ways of expressing *kedusha* — holiness — is through the greening of physical space, wherever it may be.

Since modern offices are where many people spend a great deal of their daily lives and must be considered part of local ecosystems, they also should reflect the Jewish environmental value of the preservation of Creation. This means turning our workplaces into living, green, healthy buildings that support life rather than contributing to its destruction.

The office can then take its place with the home and the synagogue in being a symbol and center of *kedusha*, inspiring people to participate in *tikkun olam*, the healing of Creation.

It is important to green your office because the built environment has a profound impact on our natural environment, economy, health and productivity. In the United States alone, buildings account for:

- 72 percent of electricity consumption;
- 39 percent of energy use;
- 38 percent of all carbon-dioxide emissions;
- 40 percent of raw-material use;
- 30 percent of waste output; and
- 14 percent of potable-water consumption.

The benefits of greening your office

Adapted from GreenFaith resources.

building include:

- Protecting ecosystems and biodiversity;
- Improving air and water quality;
- Reducing solid waste;
- Conserving natural resources;
- Reducing the building's operating costs;
- Enhancing asset value and profits;
- Improving employee productivity and satisfaction;
- Optimizing life-cycle economic performance;
- Improving the air, thermal and acoustic environments;
- Enhancing employee comfort and health;
- Minimizing strain on local infrastructure;
- And contributing to the overall quality of life of the office community.

In order to green your office, GreenFaith, after many years of helping religious communities green their congregations, recommends the following steps for any organization launching environmental efforts:

1. Form a Green Team

The first step is to form a Green Team, a group of leaders responsible for planning and overseeing your environmental initiatives. Members of the best Green Teams care about the environment and represent different areas of responsibility within your office. Good Green Teams include leaders within your office who know how to get others involved. It is critical that the head of the office take an active role in the Green Team in order to give it credibility and make it a success. Forming a Green Team is the best way to get your office's environmental initiatives off to a strong start.

2. Take Quick Action and Communicate

In order to build momentum for your efforts, take a few quick actions. Here are some examples:

- a. Hold a compact-fluorescent light-bulb sale.
- b. Invite your co-workers to sign an environmental petition.
- c. Sponsor an in-house environmental-educational forum.

Taking quick actions allows you to identify supporters within your institution and build momentum for future efforts. But don't stop once you've taken action. Successful institutions communicate actively about their accomplishments. They understand that by celebrating small victories, they lay the foundation for long-term success.

3. Have the Office Leader or a Guest Speaker Give a Green Lecture or Communication

A good way to build momentum is through a lecture or program (e.g. a short documentary) focused on environmental ethics. A lecture raises awareness and moves your office community along its path to environmental action as it publicly establishes the values that the community is trying to express. As part of the program, ask co-workers to express the spiritual or secular basis of their interest in environmentalism and what actions they have taken in their own lives. After the program, get your co-workers involved in the office greening campaign by providing them with the opportunity to sign a pledge or letter affirming their environmental values. Post the letter or pledge in a prominent location for several weeks, giving your co-workers the chance to embrace these values publicly. Once your co-workers have stated their beliefs publicly, they're more likely to support future environmental initiatives.

4. Conduct an Audit and Make a Plan

Assessing or auditing your office's current environmental activities provides an important foundation for future efforts. This audit should not only include the physical facility and its maintenance but also other activities that could become a part of the campaign, such as office fundraising for social-action causes. It is very important that the Green Team invest the time and effort to complete this audit, or a comparable tool. Once you've conducted your audit, review its results and make an action plan for the coming year. Set specific, achievable goals within a specific timeframe. List the resources you'll need to succeed. Good planning is an integral part of successful environmental leadership. By creating the audit, you will also be able to calculate if you have achieved the 14-percent energy-reduction goal of the Jewish Energy Covenant Campaign.

5. Work Your Plan and Be Persistent

It is often the case that many communities have an initial burst of environmental programming that is followed by a long period of inactivity. While all institutions need time to rest after launching a new initiative, the institutions that enjoy the most environmental success are the ones that demonstrate persistence, and that are disciplined and intentional about working their environmental plan.

There are several things you can do to help your institution build environmental momentum. Your Green Team can set a regular meeting date every four to six weeks to identify new activities and assess your progress. You can provide an article or an eco-tip for your office's communication platforms such as newsletters. You can find other offices nearby that also are involved in environmental efforts and perhaps create joint programming. Persistence pays off, so work hard and you will succeed.

Priority Areas

Priority #1: Use Fuel-Efficient

Transportation to Reduce Harmful Tailpipe Exhaust and Greenhouse-Gas Emissions

Many researchers have concluded that transportation represents the greatest negative environmental impact created by the average U.S. citizen. Encourage people to use mass transit, buy cars getting at least 30 miles per gallon, carpool, bike — and, most importantly, walk wherever possible. Get people to calculate their transportation-related carbon footprint and then ask them to reduce it by 14 percent. Some synagogues have instituted a regular carbon-free Shabbat when members walk or bike to services. Something similar can be done at the office once a month.

Priority #2: Eat Less Meat and Fish to Reduce Toxic Contamination and Greenhouse-Gas Emissions, and to Reduce Cruelty to Animals

Meat production is the leading source of greenhouse-gas emissions worldwide, and creates enormous amounts of toxic waste. Animals are treated with appalling cruelty on factory farms. Ocean-fish populations are rapidly declining, and fish farming releases large amounts of pollution. Encourage employees to decrease their consumption of meat, dairy and fish at meals during the workday and create a weekly vegetarian-lunch program.

Priority #3: Conserve Energy to Fight Air Pollution and Climate Change

Conserve energy by using a programmable thermostat, decreasing temperature when parts of the office are not being used. Use energy-efficient lighting such as compact-fluorescent light bulbs. Create a campaign to make sure that lights, computers and other electronic equipment are turned off when not in use.

Improve insulation throughout the office, especially around windows. If the company owns the whole facility, plan future renovations to replace the building's old boilers, furnaces and air-conditioning units


with modern energy efficient ones. Reduce the water temperature on water heaters to no more than 110 degrees Fahrenheit.

Contact a local solar installer to see if the building can accommodate solar panels and check out if your state government provides subsidies or grants for solar installations and other energy improvements. If possible, buy the office's electrical power from a "Green-e"-certified company that uses sustainable sources, such as wind and solar.

Priority #4: Make Your Office a Toxic-Free Zone to Protect Human Health and the Environment

Studies have linked ingredients in many cleaning, pest-management and lawn-care products to cancer, reproductive disorders, respiratory problems and other ailments. It is important that the office become a toxic-free zone by using green cleaning products, organic lawn care and alternative pest-management strategies. Make the commitment to purchase products with full ingredient lists and plant-based ingredients.

Priority #5: Create Outdoor Community Programs to Strengthen the Bond with Creation

The average U.S. citizen spends more than 90 percent of his or her life indoors, which weakens our bond with Creation. Try to encourage your co-workers to spend some time each week outside. This healthy habit is the best way to deepen people's motivation to green their lives and become environmental leaders. 

Follow-up online

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Green-e:
green-e.org

Consumer Reports' Greener Choices:
greenerchoices.org

GREEN YOUR CONFERENCE

BY DAVID KRANTZ

Conferences offer the opportunity to meet new people, exchange ideas and learn about new developments in your fields. They also tend to be very wasteful of natural resources — but they don't have to be. The following tips would help to green conferences of all sizes — even ones as large as the World Zionist Congress and the Jewish Federations' General Assembly.

Nix the Waste

Plastic cups, plastic bottles, plastic cutlery, plastic plates, plastic coffee stirrers — we use all of these things once and then toss them, a clear violation of the commandment of *baal tashchit* — the commandment not to waste. The solution? Forget disposables and go with reusables.

Ask people to bring their own bottles with them for the conference. Perhaps it's time to revive the old Yemenite Jewish custom of traveling with your own water cup.

If you absolutely need to use something only once, use something that's compostable — something that will biodegrade, like paper or compostable plasticware made from plants such as corn or sugar cane. However, if you use the latter, it's especially important to collect compostable waste at the conference using an industrial composter. While paper returns easily back to the earth, most compostable plastics only biodegrade when exposed to the high temperatures reached inside industrial composting piles. Smaller composting piles, like those found in your local community garden, tend not to get warm enough to biodegrade most compostable plastics.

Either way, conference organizers should pay closer attention to waste management. Arrange for compost and recycling bins next to every trash can — and tell people about them. Ensure there's good signage.

Make announcements in advance and at the conference to let people know how waste will be handled and why. If you expect low compliance, assign volunteers to politely monitor the bins and help people choose the right bin for their waste. There's also a lot of leftover conference food that never even makes it to people's plates. Arrange in advance for a soup kitchen to receive leftovers.

And when the conference ends, collect the name-badge holders to reuse at your next conference.

Location, Location, Location

Choose a location that enables people to travel easily by foot or public transportation between their lodging and the conference. Select a hotel or conference center that shares your green values. Facilities that utilize energy-efficient lighting, low-flow water fixtures and green cleaning products have demonstrated a commitment to sustainable practices.

Revamp Transportation

Coordinate a rideshare so that registrants can carpool together to get to the conference. Plan events in close proximity to one another so that people can walk. For farther distances, when you offer buses, also offer bicycles. By asking registrants to select their transportation preferences in advance, you can calculate the number of bicycles that you would need in the same way that you calculate the number of buses needed. Designate bike-ride leaders to help ensure the biking caravan reaches its destination quickly and safely.

Source Locally

Transportation is a major contributor to climate change, but it isn't just the transportation of participants that releases greenhouse gases — it's the transportation of food and supplies as well. To cut the event's carbon footprint, source locally from regional

organic farms and other suppliers.

Forget the Meat

The biggest impact you can make may be the most difficult: Skip the meat. While transportation is a big contributor to climate change, meat production and consumption is even bigger. Kosher and non-kosher alike, meat is actually the biggest contributor to climate change in the world, according to the United Nations. So if you really want a green conference, forgo the meat.

Go Carbon Neutral

As much as you may reduce the environmental impact of the conference, it still will have a sizeable carbon footprint, particularly if participants are flying in to attend. For that which you can't eliminate, offset, preferably through carbon-mitigating projects in Israel. You can use a web program to calculate the volume of greenhouse gases that will be released as a result of your conference — and the participants' travel to it — and pay for the same amount of greenhouse gases to be removed from the atmosphere through green projects.

Document and Measure

How effective were your greening efforts? You won't know for certain unless you measure. Calculate the amount that's recycled, composted and given away to the soup kitchen. Keep track of the number of people who walk, bike and carpool. Celebrate your success and use it as a benchmark for improving next year. ☀️

Follow-up online

GZA's carbon-offset calculator:
greenzionism.org/take-action/goodenergy

EPA green-meeting guide:
tinyurl.com/epagreenmeetings

Green Meeting Industry Council:
gmicglobal.org

FORMING A GREEN TEAM

BY RACHEL JACOBY ROSENFELD

A Green Team is a group of people who come together at least every four to six weeks to set greening goals for their community and who work between meetings with other members of the community and external partners to implement those goals. A Green Team can be as few as four people or as many as 24, but the most effective Green Teams have these characteristics:

- Include people with diverse expertise and talent.
- Include key staff or volunteers who have the time and ability to implement changes.
- Include people who have personal commitments to and are passionate about environmental responsibility.
- Include people who are leaders and have power within the organization.
- Have support from upper management or senior leadership.
- Meet regularly and are on-going.
- Set goals and work with others in the community as well as external partners to meet goals.
- Celebrate “wins” together.

What Resources Does a Green Team Need?

- Space to meet: Decide on a comfortable space that will accommodate people easily. Sometimes a living room is better than a boardroom.
- Food or snacks that are local, seasonal and fun.
- Meeting times that work for people. Provide the opportunity to call in for those who have young chil-

dren or the need to be at home.

- Time to work on projects. Deadlines should be reasonable and somewhat flexible.
- Inspirational and educational material to keep the creative juices and energy flowing. Take 10 minutes at each meeting to learn something new, such as by learning a text from a Jewish or secular source. This can be a rotating responsibility.

INCLUDE PEOPLE WITH DIVERSE EXPERTISE AND TALENT.

Key Steps to Forming and Maintaining a Green Team

1. Find a like-minded partner or colleague and generate a list of people you think should be on your Green Team.
2. Approach them and be honest about the time commitment and what's expected. Green Team members should be prepared to come to meetings and to take on at least one project.
3. Set your first meeting date and time and confirm attendance.
4. Create an agenda and send it out in advance. Send out at least two reminders the week prior to the meeting.
5. Green Team meetings should be no longer than an hour and a half or two hours. Stick to the time you promised.

Tips from Jewish Greening Fellowship Participants

- “Realize it’s a process!”
- “Give the group time to gel.”
- “Get buy-in from key management.”
- “Find people who care and let them work with their passion and interests.”
- “Identify skills of participants and let them exercise those skills”
- “Create opportunities to connect passion for greening in personal lives with work.”
- “Delegate responsibilities and then ask people to be responsible about reporting back.”
- “Establish project-oriented goals.”
- “Set goals that reflect the needs/mission of your agency and population.”
- “Help people implement their ideas successfully so that they are excited to keep going!”
- “Celebrate victories and milestones!”
- “Make meetings fun: Wine and cheese or ice cream are always good.”
- “Be ambassadors: Spread the word about what you’re doing with colleagues and community members.”
- “Be persistent in the face of failure. You may need to reconfigure at a certain point.”
- “Provide rewards or incentives.”
- “Be open to doing things in a new way. Be flexible.” ☀️

ROSH HASHANAH: WAKE UP AND TAKE ACTION

BY JULIE SCHONFELD

Hayom harat olam — today the world is conceived. The midrash teaches us that on Rosh Hashanah the world was first created. And Rosh Hashanah is, in some ways, a giant birthday party — filled with pageantry, food and a gathering of friends and family. But in contrast to how birthdays and New Year's Eve are celebrated in secular society, *hayom harat olam* signals a sense of serious reflection. Rosh Hashanah is, after all, when all of creation is called to judgment. It is the day on which we are called to take stock of our actions.

But Rosh Hashanah is more than just self-evaluation. The Rosh Hashanah service, in fact, is about providing us with a call to action. The Torah portion for the second day of Rosh Hashanah begins in Genesis 22:1 with God hailing Abraham, who responds with one word: *hineni* — here I am. But *hineni* is more than one's physical location. It is a declaration that one is ready to transform ideals into actions, to concretize one's beliefs into conduct. As Rashi suggested, *hineni* "is the language of humility and readiness." The time for thinking, evaluating and pontificating is over. Now is the time to act.

The parsha goes on to show that *hineni* means not just moving from thought to action, but even reversing course if one is traveling down the wrong path. In Genesis 22:11 an angel interrupts Abraham just as he is about to sacrifice Isaac. How does Abraham respond? "*Hineni.*" The angel tells Abraham to sacrifice an

animal instead of his son, and Abraham complies. He obeys God and finds a more enlightened path.

The shofar that we hear on Rosh Hashanah also serves as a wake-up call. Its repeated sharp, piercing blasts are meant to rouse us from the slumber of our lives, to startle us into urgent action.

So what is the wake-up call we need this year? What is the transformative behavior we need to embrace — to stop talking and finally start acting? There are many, but one of the most urgent crises — one we have talked about incessantly but failed to act upon — is caring for the world in which we live. The laws of the Torah reflect an agrarian society with a strong attachment to the Earth. The Torah teaches us that if we don't care for the Earth, there will be serious consequences: famine, drought and disease.

The world desperately needs a comprehensive strategy to preserve its resources. The United States needs to adopt a national energy policy, one that both reduces our consumption of environmentally destructive fossil fuels and promotes the development of clean, affordable energy sources and technologies. In the

process, such a policy will generate well-paying, long-lasting "green" jobs.

Our continued use of coal and oil is hastening the effects of climate change — a threat to our very existence. We also must lessen our dependence on foreign oil for the sake of geo-political stability: Our oil ad-

dition props up despot Middle East regimes that are hostile to Israel and Western values.

We all know that our current energy policy is unsustainable. The imperative of the Torah is that we need to take action. So what can we do? Recycle. Unplug unused appliances. Ad-

just our heating and air conditioning thermostats by a few degrees. Drive less — or, better yet, carpool, take public transit, bike or walk.

On Rosh Hashanah, may we finally heed the wake-up call and transform our words, our proclamations, and our thoughts into concrete action. May we finally take seriously our obligation to till and to tend God's created world. *Hayom harat olam*: It is up to us to make sure that our world will still be here for our children and our children's children to celebrate. ☀

**THE TORAH
TEACHES US
THAT IF WE
DON'T CARE FOR
THE EARTH,
THERE WILL BE
SERIOUS
CONSEQUENCES:
FAMINE, DROUGHT
AND DISEASE.**

YOM KIPPUR: MICK JAGGER, ENERGY, A HORSE AND THE JEWISH QUESTION

BY SHMUEL SIMENOWITZ

Ten days before Yom Kippur, there is a divine reckoning on Rosh Hashanah of all our deeds from the past year. A heavenly ledger book is produced at our trial, and the evidence scrutinized and carefully considered. Each *mitzvah* — divinely ordained commandment — we have performed during the past year is akin to a defense attorney who vigorously argues our case before the celestial tribunal, and advocates for leniency if not outright clemency. Conversely, each *avera* — transgression — of the Divine will creates a *k'tagor* — a prosecuting angel who demands justice. Our goal is to seek acquittal, have our names inscribed in the Book of Life and have our lease on life renewed.

We believe and pray that on Rosh Hashanah we are inscribed in the Book of Life, while on Yom Kippur the verdict is sealed and made final.

Yet, contrary to popular belief and despite the somber tone, Yom Kippur is not a sad day. In the Talmud, Yom Kippur actually is discussed along with *Tu B'Av* — the Jewish holiday of love — as one of the happiest days of the year. On Tu B'Av, the single women would engage in an elaborate dance ritual to attract potential spouses. Significantly, we are taught that the women would go out in borrowed white dresses in order not to em-

barrass those who could not afford them — a powerful metaphor for the proposition that just because you can do something does not necessarily mean that you *should* do it. For example, while

JUST BECAUSE YOU CAN DO SOMETHING DOES NOT NECESSARILY MEAN THAT YOU SHOULD DO IT.

baal tashchit — the prohibition against wanton destruction — technically may allow for the destruction of a tree under circumstances such as needing the wood or empty ground to improve adjacent trees, the law simultaneously offers the individual the opportunity to reframe the debate in terms of what we *should* do rather than what we merely *can* do.

It is an exercise in both spiritual growth and self-restraint. Such self-restraint is firmly embedded in the heart of a genuine sustainability ethic.

A further manifestation of such self-restraint is evident from the fact that having fasted for more than 25 hours on Yom Kippur, we still take the moment to wash our hands and say the blessings on both the hand washing and the bread upon which we break our fast. Indeed it is those 15 seconds that allow us to transcend our animalistic tendencies and simultaneously focus on the “can-should” continuum.

Miracle in the Temple

The Mishneh (Avos 5:8) relates that one of the miracles that occurred in the Temple in Jerusalem was *omdim tz'fufim mishtachavim r'vachim* — when the Jews were packed into the courtyard to hear the high priest utter the ineffable name of God, they would fall to the ground face down and prostrate themselves. Miraculously, although the crowd was packed in tighter than a mosh pit at a Korn concert, there was enough room for each one to stretch out fully on the ground. Perhaps the miraculous nature of this occurrence underscores for us the challenges inherent in our own perennial jostling for more space without regard to the consequences or to our encroachment on the space of others, the displacement of persons and the destruction of wildlife habitats. As the famous quote attributed to Oliver Wen-

dell Holmes, Jr., but actually written by Zechariah Chafee, Jr., goes: "Your right to swing your arms ends just where the other man's nose begins."

Similarly, when spices were ground and compounded for incense to be used in the Temple service, the Mishneh tells us that the artisan would speak to the spices and say, "chop up finely, chop up finely," for it is known that the sound of the voice is beneficial for the spices. This demonstrates that our impact on our surroundings is ever so subtle and delicate.

Fingerpointing

During the year, it is not uncommon for us to seek to place blame on and to point an accusatory finger at others — Bernie Madoff, multinational corporations, big government — who we feel have brought us to where we are. Yom Kippur teaches us that we indeed have to point a finger — at ourselves. A deep, thorough search of the nooks and crannies of our spirit is the order of the day. Yom Kippur shows us that the people, places and things around us — our own personal ecosystems — mirror the discontent in our own souls, a sad byproduct of our own rapacious behavior. Perhaps Mick Jagger expressed this sentiment best when he sang, "I shouted out, who killed the Kennedys? When after all, it was you and me."

Or Walt Kelly's famous line from his comic strip, "Pogo": "We have met the enemy and he is us."

Chassidic thinkers have suggested that the formal name *Yom (Ha)Kippurim* can also be read as *Yom K'Purim* — a day similar to

YOM KIPPUR SHOWS US THAT THE PEOPLE, PLACES AND THINGS AROUND US — OUR OWN PERSONAL ECOSYSTEMS — MIRROR THE DISCONTENT IN OUR OWN SOULS, A SAD BYPRODUCT OF OUR OWN RAPACIOUS BEHAVIOR.

Purim. They ask why Yom Kippur, the majestic day in which we transform ourselves into angels — wearing white, abstaining from food, drink and other carnal delights — would aspire to become Purim, a day known for consumption, ribaldry and levity. They explain that it is no great thing to become an angel when you act like one and dress like one, but it is a genuine tribute to the ability of the Jewish soul to transcend its limitations while indulging in the pleasures of this world. Granted it is no easy task to keep our feet firmly on the ground while our heads and souls soar through the clouds but our very existence is a delicate dance on

the high wire suspended between those two poles.

The Horse and the Jewish Question

A story is told about a distraught father whose son was beginning to stray from the path of his ancestors. He brought his son to Rabbi Shneur Zalman of Liadi, known by Chabad chasidim as the Alter Rebbe. Rabbi Zalman asked the boy what he enjoyed doing. The boy responded that he liked riding horses.

"And what qualities do you look for in a horse?" Rabbi Zalman asked him.

"Speed," the boy replied.

"And what if you are on a fast horse which takes a wrong turn in the road?" the sage continued.

"You can get very lost in a hurry," was the boy's response.

"And what if you turn the horse around?" the elderly sage pressed on.

"You can get back just as fast."

A slight smile crept across Rabbi Zalman's face as the boy nodded his head, indicating that he understood the message.

While Yom Kippur remains a day devoted to introspection, contrition and self-improvement, perhaps we can extrapolate that mindset for year-round use and turn around our own coal- and oil-powered horses currently galloping out of control toward the oblivion of climate change. Then we can finalize the transition from that which we merely can do to that which we ought to do. ☀️

SUKKOT: DWELLING IN THE MIDST OF NATURE'S ENERGY

BY HOWARD COHEN

"In this modern age very little remains that is real. Night has been banished, so have the cold, the wind and the stars. They have all been neutralized. The rhythm of life itself is obscured. Everything goes so fast and makes so much noise and people hurry by without heeding the grass by the roadside, its colors, its smell and the way it shimmers when the wind caresses it." — Gaston Rebuffat

Biblical Judaism— that is, the way of life for the Israelites — was shaped and molded by their direct experience with the landscape around them. The physical geography, communities of plants and animals, soil condition and weather all left indelible impressions on their way of life, and our understanding of Judaism. For example, the native plant *Salvia palaestina* — the model for the menorah used in the Temple — is described exclusively in botanical terms in the book of Exodus (25:31-35).

This fundamental connection to the environment is culturally expressed in the Torah in ways subtle to our contemporary ears. For example, many biblical names reflect nature, such as Rachel (ewe), Leah (bovine antelope), Caleb (dog), Jonah (dove), Hamor (male donkey), Tamara (date tree), and, of course, Adam (earth).

In many parts of the Torah the influence of the seasons, weather patterns and other environmental factors are impossible to miss. In his book, "The Savage in Judaism," Howard Eilberg-Schwartz notes that "Israelite thought is saturated with metaphors drawn from do-

mains of experience concerned with raising animals and growing crops. Fauna and agriculture supplied Israelites with images for thinking about human experience and social life."

The psalms overflow with images of leaping mountains, gushing springs, flowering plants, dancing stars and many other metaphors drawn from nature. Indeed, the very rhythm of life for the ancient Israelites was intimately and inextricably grounded in their relationship with the natural world.

In a journal entry dated July 27, 1869, American naturalist John Muir described his own spiritual and environmental awakening this way: "When we try to pick out anything by itself, we find that it is bound fast by a thousand invisible cords that cannot be broken, to everything in the universe."

Written more than 2,500 years after Avram wandered into the arid region of the Negev and the culture of biblical Judaism developed, Muir's journal entry neatly describes the way Judaism was once so tightly attuned to the ebb and flow of the natural world.

Unfortunately, we're no longer so attuned. As rabbinic Judaism evolved after the destruction of the Second Temple, it not only grew distant from its biblical roots metaphorically, but also literally. I want to discuss the importance of rediscovering this lost connection to the natural world around us — once understood as an essential quality

of Judaism. My urgency is both self-ish and altruistic: I truly believe that the future of our planet and its ability to sustain diverse life, something I want for my remaining years and for my children and their children and their children, is necessarily linked to a worldwide awakening of our connection to the universe as described by Muir. I also truly believe, backed up by ample scientific evidence easily accessible for any skeptics, that we, human beings, are at once the cause of the rapid depletion and degradation of natural resources, yet, at the same time, are part of the solution to our growing environmental crisis.

David Ben-Gurion, first prime minister of the modern State of Israel, said it eloquently when he saw the Negev for the first time at the recently formed community of Sde Boker that overlooks the stunningly beautiful valley of Ein Avdat: "The energy contained in nature — in the Earth and its waters, in the atom, in sunshine — will not avail us if we fail to activate the most precious vital energy, the moral-spiritual energy inherent in the inner recess of our being; in the mysterious, uncompromising, unfathomable, and divinely inspired soul."

This brings me to my altruistic motivation: Connecting deeply, intimately and frequently with the Earth is good for our spiritual and physical well being. In the words of Walt Whitman: "Now I see the secret of making the best person: It is to grow in the open air and to eat and sleep with the Earth."

Spending time outdoors is not just fun — it is fundamental to our well-being. Muir wrote that when we spend time in the mountains, “nature’s peace will flow into you as sunshine flows into trees. The winds will blow their own freshness into you, and the storms their energy, while cares will drop off like autumn leaves.”

Sukkot is arguably the most important nature-related holiday in the Jewish calendar. Yes, virtually all Jewish holidays have strong ties to the Earth, especially Passover and Tu B’Shvat. However, only Sukkot was once so prominent that it was known simply as “The Holiday.” Only Sukkot connects to the Earth and what we today call environmental concerns, in all of its manifestations, from the *sukkah* — the branch-covered shelter — to the ritual *etrog* and *lulav* — palm heart, myrtle and willow— to the agricultural themes and desert-trekking history of the holiday. Sukkot is simply and unequivocally the most nature-related holiday, bar none, in the Jewish calendar.

Alas, despite our ever-growing environmental awareness and passion for outdoor activities, it is with sadness that I, a rabbi, confess that it is also a holiday that few Jews celebrate. It seems that Rosh Hashanah and Yom Kippur exhaust us as well as eat up the too few days we can miss from work or school, leaving us with little left over for Sukkot. However, today it is time for us to reapportion our energy and resources and reconnect with our roots and perhaps hurry along world environmental healing.

The key element of celebrating Sukkot involves building and living in a little structure, a *sukkah*. Paraphrasing Muir, when we go out and

into the *sukkah*, we discover that we are really going in — into the world. There is no easier way to encounter the divine presence than when immersed in the world, devoid of the modern conveniences that distract us.

When we enter into the *sukkah*, life becomes real again. Our skin comes alive as wind caresses us. The movement of clouds in the sky and the sun across the heavens creates shadows and reflections that evoke new ways of seeing the world. Our olfactory sense is sent swirling with the aromas from the *etrog*, myrtle and slowly decaying roof coverings.

Weather becomes an experience, not just a guideline for how to dress. Our sense of connection with the world intensifies and becomes intimate as squirrels and other often-missed creatures sneak in and out of our *sukkah* to feast on the decorations hanging from the open walls and roof. A growing awareness that we are both fragile and insignificant creatures in the grand scheme of things enters our consciousness. This new sense of humility opens our soul and frees us from the hubris of self-importance that impedes our ability to enter into relationship with the natural that is so utterly indifferent to us.

To dwell in a *sukkah* mimics the experience of entering a wilderness, nature in full force. In the wilderness we learn to be attentive to all that is happening around us. Danger lurks behind trees and rocks. But so does the divine presence. In the interior of

the *sukkah*, a place surrounded by nature uncontrolled, one gets a taste of what it is like to enter into the wilderness, the place where we are most likely to meet an untamed God — a God unencumbered with rabbinic and metaphoric baggage. That is not only where our ancestors had most of their divine encounters, but also where most people say they most feel God’s presence.

The wilderness is a place where the soul is free to roam. At times in our life we need this invigoration that comes with entering the *midbar* — the wilderness beyond the borders

of society. Such enveloping encounters with unbridled nature rejuvenate and inspire us. Sukkot is all about connecting with nature.

There is a tradition of inviting *ushpizin* — ancestral or exalted guests — into the

sukkah. *Ushpizin* are inspirations, mentors and guiding spirits for us. My *ushpizin* have included Muir, Walt Whitman, Ralph Waldo Emerson and Henry David Thoreau. These 19th-century American philosophers have provided me with much theological and environmental wisdom.

In rabbinic tradition, Sukkot is linked to the coming of the messiah. Perhaps this is just the rabbi in me, but I believe that when we start to embrace and celebrate Sukkot with the energy we devote to Rosh Hashanah and Yom Kippur, we will move closer to the better future associated with the dawn of a messianic era. ☀️

TODAY IT IS TIME FOR US TO REAPPORTION OUR ENERGY AND RESOURCES AND RECONNECT WITH OUR ROOTS.



CHANUKAH: 8 DAYS OF ACTION

BY ARTHUR WASKOW

The first night of Chanukah comes at the time of the Northern Hemisphere's winter solstice, when the sun is at its darkest and the night at its longest.

It is during this time of darkness that we kindle a growing array of lights. Likewise, as we face the darkness of the current environmental crisis on our planet, it's also the time to bring the power of our light to bear.

There are three levels of wisdom through which Chanukah invites us to address the planetary dangers of the global climate crisis (a crisis some of us call "global scorching," since "warming" sounds so pleasant and comforting). These are the deep teachings of Chanukah:

- The Talmud's legend about the one day of oil that miraculously met eight days of need is a reminder that if we have the courage to change our lifestyles to conserve energy, the miracle of our own creativity will sustain us.
- The prophet Zechariah, whose visionary passages we read on Shabbat Chanukah, described the Temple menorah itself as a living being, uniting the worlds of nature and humanity. The menorah was not only fashioned in the shape of a Tree of Light, as the Torah teaches, but it was flanked by two olive trees that fed olive oil directly into it — truly a green menorah!
- We remember that a community of the powerless can overcome a great empire. The memory of the Maccabees' victory over the elephantine Hellenistic Syrian Empire can give us courage to face our modern corporate empires of oil and coal when they defile our most

sacred Temple: Earth itself.

On each of Chanukah's eight days, commit to taking personal, communal and political action to protect the Earth from the global climate crisis. After lighting your menorah each evening, dedicate yourself to making the changes in your life that will allow our limited sources of energy to last for as long as they're needed, with minimal impact on our climate.

ON EACH OF CHANUKAH'S EIGHT DAYS, COMMIT TO TAKING ACTION TO PROTECT THE EARTH.

Day 1: Choose today, or one other day this week, to avoid using your car at all. The rest of the week, drive less by carpooling and clustering errands into one trip.

Day 2: Call your electric-power utility and ask to switch to wind-powered electricity. For the average home, switching to 100-percent wind power for one year reduces carbon-dioxide emissions by the same amount as if you reduced your car travel by 20,000 miles.

Day 3: Urge your congregation and community organizations to switch to wind-powered rather than coal-powered electricity.

Day 4: Call on newspaper editors, real-estate developers, architects,

bankers and other community leaders to strengthen the green factor in all of their decisions and actions.

Day 5: Ask the top officials at your workplace or school to conduct an energy audit (your utility company may offer one for free or at low cost).

Day 6: Petition municipal officials to require greening of buildings through ordinances and executive orders. Creating change is often easier on the local level.

Day 7: Lobby state legislators to reduce subsidies for highways and increase them for mass transit. In states where fossil-fuel companies are using hydraulic fracturing (a potentially environmentally destructive way of obtaining natural gas embedded in shale rock), demand a moratorium until we can get full information on what chemicals the gas and oil companies are using to shatter the shale, and the subsequent effects on our freshwater supply.

Day 8: Urge your senators and members of Congress to strengthen the authority of the Environmental Protection Agency to regulate carbon emissions from coal-burning plants, oil refineries and vehicles. Not only would reducing these emissions help our planet's climate, but it also would lessen pollution-related asthma outbreaks among our children.

It's true that no single individual or action will solve the global climate crisis. Yet acting together, a small group of people can overcome a seemingly intractable crisis, and — as in days of old — turn this time of darkness into one of light. ☀️



PASSOVER: THE FOUR SIGNS OF CLIMATE-CHANGE ACTION

BY BARRY SCHWARTZ

"... for the place on which you stand is holy ground." — Exodus 3:5

One: Religion begins with wonder. We stand in awe of the universe around us. We sense the miracle that is existence. Abraham Joshua Heschel called this spiritual feeling "radical amazement." Such amazement, he taught, is the root of religion and the responsibility that flows from it. We want to preserve that which is precious; safeguard that which we deem sacred. We sense a calling; an obligation. The spiritual is prelude to the ethical.

Passover is a statement of radical amazement. Later, Passover comes to commemorate the miraculous rebirth of a people, but at its most ancient heart, the holiday celebrates the miraculous rebirth of the Earth as it emerges from the dead of winter to the glory of spring. In the same way, the people of Israel emerge from the dead of slavery to the glory of redemption. These foundational stories of radical amazement are retold year after year, generation after generation, to keep the motivating spirit of Jewish identity and responsibility alive.

Moses experiences his own transformational moment of radical amazement while in the embrace of nature. He arrives to a great mountain and on that mountain side beholds a burning bush that is not consumed. Precisely when Moses turns aside to marvel at this sight does he hear the voice of God. Moses feels summoned in that time and place. He hears God call him by name. Moses responds with that

classic affirmation of presence, "*Hineni*" — here I am.

Is it because Moses feels so truly awed and humbled that he removes his sandals in recognition that he treads on holy ground?

Do we recognize the miracles around us? Do we turn aside to marvel? Do we hear the commanding voice? Do we affirm our presence? Do we acknowledge that the very ground upon which we stand is holy?

*"Earth's crammed with heaven,
And every common bush afire with God!
But only he who sees, takes off his shoes."* — Elizabeth Browning

Two: The Torah tells us that Moses is "tending his flock" when he comes upon the place that is called "Horeb, the mountain of God."

Indeed, Moses has withdrawn into the wilderness of his personal isolation. At this point he is far from family and community, minding his goats and his business. He has observed the desperation of his people, reacted impulsively to the injustice before him, but now has withdrawn from the fight. The encounter on the mountain changes something at his core. Moses is still reluctant and afraid. Yet inertia is no longer a plan; apathy is no longer an option.

*"God says to man as he said to Moses:
Put off thy shoes off thy feet — put off
the habitual which encloses your foot
and you will recognize that the place
on which you happen to be standing
at this moment is holy ground."* — Martin Buber

Moses has come upon a sacred place of understanding that compels him to act. The rest, as they say, is history. The Exodus hinges on this pivotal moment. Moses reengages the fight. He returns to the belly of the beast. Against all odds he will overcome not only the heartlessness of Pharaoh but the despondency of a broken people.

One would like to think that the memory of a mountain, of that amazing encounter that birthed the vision of a covenant restored, sustained him through the darkest period.

That mountain of God is identified as one and the same with Sinai. Moses' personal epiphany foreshadows the grand event of communal revelation yet to unfold. An entire people will experience their moment of radical amazement. Like Moses, they will be changed forever — not completely, not perfectly, but enough to dare to dream of a different destiny.

Three: The dreariness of winter and the renewal of spring; the dark of Egypt and the light of Sinai; the crush of despair and the release of hope: All this propels the mixed multitudes forward during the long and winding trek toward the promised land.

The eternal rhythms of the Earth, echoed by the story of a people, will animate our ancestors in their annual celebrations of the cycle of the seasons. The Torah commands the first of three great pilgrimage festivals to be "...in the month of spring, the time when you came out of Egypt." (Exodus 23:14) Radical amazement at the turn of the Earth, and the turn of history, cannot be missed.



*"Arise, my darling;
My fair one, come away!
For now the winter has past,
The rains are over and gone.
The blossoms have appeared in the land;
The time of singing has come ..."*
— Song of Songs 2:10-12

The flowers push through the soil to greet the sun.

*"Fueled
by a million
man-made
wings of fire
the rocket tore a tunnel
through the sky —
and everybody cheered.
Fueled
only by a thought from God —
the seedling
urged its way
through the thickness of black —
as it pierced
the heavy ceiling of the soil —
up into outer space*

*no
one
even clapped."* — Marcy Hans

Flowers, flocks, family, community — all is reborn. Pesach applauds the miracle of the seed of life sprouting anew. Of course this festival also memorializes the dark side of degradation — the winter of discontent is an inescapable part of the story — but it does so in the context of the stirring song of spring.

Four: When we sense with radical amazement this spring awakening we will reengage both the fight for the planet and the fight for humanity.

We understand that a more responsible environmental policy in general, and a drastically more disciplined energy program in particular, is called for to insure that "so long as the Earth endures, seedtime and harvest, cold and heat, summer

and winter, day and night, shall not cease." (Genesis 8:22)

During Passover, with close proximity to Earth Day, a discussion on the perils of ignoring energy conservation and the spiraling consequences of climate change as a series of modern-day plagues can be provocative. So too can an exploration of our personal enslavements to habit and inertia, coupled with the entrenched indifference and hostility of modern-day bureaucracies that echo Pharaoh's insecurities and hardened heart.

Signing on to an energy covenant as a family and as an institution becomes an ethical imperative and a sacred task. Passover shows the way — the reawakening of the Earth to new life, the reawakening of our spirit to new possibilities, the transformative recognition of self-empowerment — for we stand on holy ground ... and our name is called. ☀️

SHAVUOT: CHEESECAKE, TEMPTATION AND CONSERVATION

BY NATAN LEVY

During the 2011 riots here in London, teachers and social workers were said to have been among the looters. British Prime Minister David Cameron called them opportunistic criminals. Perhaps temptation simply got the best of them.

Yielding to temptation may be pandemic in our culture. When we argue about mitigating climate change, the discussion is often framed as a question of progress versus conservation — but it may ultimately be revealing the tension between temptation and self-control. The average

THE AVERAGE AMERICAN RELEASES ABOUT 19 TIMES THE AMOUNT OF CARBON AS THE AVERAGE GUATEMALAN.

American releases about 19 times the amount of carbon into the atmosphere as the average

Guatemalan; the average citizen of the United Kingdom releases about seven times as much carbon as the average Bulgarian; and the average Israeli releases about three times as much as the average Lebanese. Why? Objects of temptation, such as flat-screen TVs and vacations to the Caribbean, all involve a large input of energy resources. And because we can acquire more objects, because we can fly more, we invariably do. We take what we want when we can, and scientists' warnings about the changes we're causing to our planet's environment are as unheeded as a



London policeman's calls for looters to restrain themselves.

"Cities all over the world have caught America's affluenza," Pulitzer Prize-winning journalist Thomas Friedman wrote in his book, "Hot, Flat and Crowded." For example, he cited the southern Chinese city of Shenzhen, where a single Walmart sold 1,100 air conditioners during one weekend. The world is not just getting more crowded with people, it is becoming more crowded with consumers who have the economic clout to acquire the objects of their temptations.

And it is temptation that brings us to the humble cheesecake of Shavuot. Many of us are familiar with the routine — the all-night Torah learning, the battle of will against the *nosh* table, the inevitable succumbing to copious amounts of cheesecake in the mid-night hours, and, finally, the regret over the calories. But this creamy custom may be the antidote to temptation. Let's begin with a question that has multiple answers: Why do we eat cheese and milk products on Shavuot?

According to *G'ulat Yisrael* (as quoted in Sefer Ta'amie Hamin-hagim, par. 623), the dairy tradition goes directly back to the first meal after revelation. The households in Israel were in a quandary. God had just given the nation the laws of how to keep kosher and the cooks realized that all their previous meals had rendered their pots and pans unkosher and therefore unusable. The first meal needed to be cold so that the food wouldn't come into contact with heated unkosher vessels, so they turned to milk and cheese that didn't need to be heated. Today we continue this 3,000-year-old

tradition with cheesecake.

More than an anecdotal tale, the story of cheesecake is a story of community-wide self-restraint. In keeping with most of the pivotal moments in the Torah narrative, the revelation at Sinai is distinguished by massive quantities of barbecued meat. On the morning of revelation, Moses had erected 12 altars of roasting cows (Exodus 24:4-5) and sprinkled their warm blood on the people (Exodus 24:8). The redolent odor of meat must have permeated the entire camp. One can imagine the scene, with the sacrificial animals burning, blood sprinkled on head and clothing, and the people returning home and asking hungrily: What's for dinner? And the mothers serve up a plate of yogurt.

It's a morality tale written into the ritual of food: The first thing Israel does with its new Torah is curb desire.

Just days before the revelation at Sinai, the people cried out to Moses and Aaron: "Better that God would have killed us in Egypt, whilst we sat by our pots of meat, eating to satiation, than that we should die of hunger in the desert!" (Exodus 16:3)

Before Sinai, the nation would

have chosen to remain as meat-sated slaves rather than struggle for food in the desert. After Sinai, they spurned the very cows they sacrificed. When did the self-restraint begin?

A midrash tells the story of the moment just before revelation: God is worried that the nation of Israel will reject the covenantal obligations and wants guarantors on the contract. The nation offers the patriarchs, but God refuses: "They are already in my debt, they cannot be your guarantors."

"But who is not yet in your debt?" Israel asks.

"WHAT MATTERS WHEN IT COMES TO SELF-CONTROL ISN'T SO MUCH WILLPOWER AS VISION — THE ABILITY TO SEE THE FUTURE, SO THAT THE LONG-RUN CONSEQUENCES OF OUR SHORT-RUN CHOICES ARE VIVIDLY CLEAR."

"The babies," God replies.

"Then they brought their babies on the breast, and those yet in the womb. Their mothers' bellies became as glass, and the little ones saw the Lord of the Universe. ... The Lord said to them: Will you be guarantors for your parents that if they do not observe this Torah you will be held liable? Yes, they said." (Midrash Tehillim 8)

Take the midrash with a fantastical grain of salt, but listen closely to its deeper motives and outcomes. Behavior transformation from meat-addicted slave to self-disci-



plined covenantal agent is facilitated with a glance at the children through the looking glass.

“What matters when it comes to self-control isn’t so much willpower as vision — the ability to see the future, so that the long-run consequences of our short-run choices are vividly clear,” Daniel Akst wrote in his book, “We Have Met the Enemy.”

Religion is grounded in long-range planning and long-term visions. Rites and rituals endure because they were never intended to fulfill our immediate gratifications; they stand the test of time because they are our re-

EVERY BITE OF CHEESECAKE IS A REMINDER OF LONG-TERM PATTERNS OF DECISION MAKING.

sponse to the eternal. Choosing dairy over meat for one meal may seem prosaic and small, but it is the first time Israel says no to temptation. Choosing walking over driving or turning down the thermostat in winter may be small acts in themselves, but they are

part of the same set of careful choices made because our children are forever holding their bated breath as our guarantors.

On Shavuot, every bite of cheesecake is a reminder of long-term patterns of decision making, that God’s command is more meaningful than the craving for barbecue, and that our unborn children are watching us through the looking glass of time. The failure to respond to the crisis of climate change and to redirect our lives in accordance with scientific data is a failure not only of imagination into our future, but the acceptance of the tyranny of temptation into our present. ☀️

ROSH CHODESH: LESS IS MORE

BY JAMIE KORNGOLD

My husband once asked me what I wanted for my birthday.

“Less,” I said.

“Less?” he asked. “How do I get you less?”

After I explained it to him, he hired a babysitter and we spent a day clearing out our cabinets and closets. We gave away the china we never use, filled boxes with books we no longer needed, and stuffed bag after bag with clothing to give away. There is something about an uncluttered shelf or an un-crammed closet that fills me with peace. It was the best birthday present ever.

Sometimes I feel that the abundance in my life — the stuff on my shelves and in my closets, the never-ending line of e-mails in my inbox, the plethora of events on my calendar — threatens to engulf me.

Perhaps this is why Rosh Chodesh, the celebration of the new moon, receives my vote for the holiday most deserving of making a comeback in prominence. For two weeks of the month the moon waxes, becoming larger and larger until finally it reaches its fullness. Our society has no shortage of teachings telling us to be like the full moon. We must do more, achieve more, own more and consume more — we get the message loud and clear. But Rosh Chodesh celebrates the emptiness of the new moon. During Rosh Chodesh, the nothingness in the dark sky neither overwhelms us with its brightness nor demands that we notice it. The new moon makes no demands upon our thoughts or vision, but in its quiet absence it enables us to see the stars.

Rosh Chodesh is the holiday of less. With the moon’s darkness, Rosh

Chodesh reminds us to conserve energy — to turn off lights when we don’t need them — and to consume less. Rosh Chodesh reminds us that only when we take a break from consuming can we see the stars.

This Rosh Chodesh, I invite you to embrace the less. Install light bulbs such as compact fluorescents that consume less energy. Use fans instead of air conditioning when it’s hot and wear sweaters instead of turning up the thermostat when it’s cold. Give away those jeans that really are not ever going to fit again. Recycle those old water bottles that have the potentially harmful BPA chemical in them. Take a break from the computer and all of the other energy-draining electronic devices that consume our lives. Make space not for more things and more electrical gadgets but for your eyes to rest on the peace of emptiness. Who knows what stars you might see! ☀️



OIL SLICK: THE UGLY TRUTH ABOUT PETROLEUM

BY BENJAMIN KAHANE

Petroleum — or, plainly, oil — has many applications in the industrial age. Petroleum is used to make plastics, lubricants, wax, asphalt and many other industrial products, but it's mostly used for fuel. Oil is usually black or dark brown before any refinement; however, it also can be found in the form of tar shale, as in Colorado and Utah, and tar sands, as in Alberta, Canada. Tar-shale oil and tar-sands oil are more energy-intensive to extract, but as oil prices go up, the choice to extract those natural resources is becoming an economic reality. Climatologist Dr. James Hansen, former director of the NASA Goddard Institute for Space Studies, warns that fully exploiting Canadian tar sands and U.S. tar shale will more than double the amount of carbon in the atmosphere — what he calls “game over for the climate.”

Petroleum must be refined before Americans can use it for power. By volume, 84 percent of the hydrocarbons in petroleum are converted into fuels, including petrol, diesel, jet, heating, and other fuel oils. The other 16 percent is used for the industrial products listed above. Lighter-based oils are best for converting petroleum to fuel, but as the world's reserves of light and medium oil are depleted, refineries must come up with better ways to distil heavy oil into the fuels that we use.

In the United States, we use fuel from petroleum almost exclusively in the transportation sector. The fact that a mere 1 percent of petroleum is used in electricity generation makes it hard to monitor the pollution emissions from oil; it is much easier to monitor the combustion byproducts of a stationary power plant than the pollutants expelling

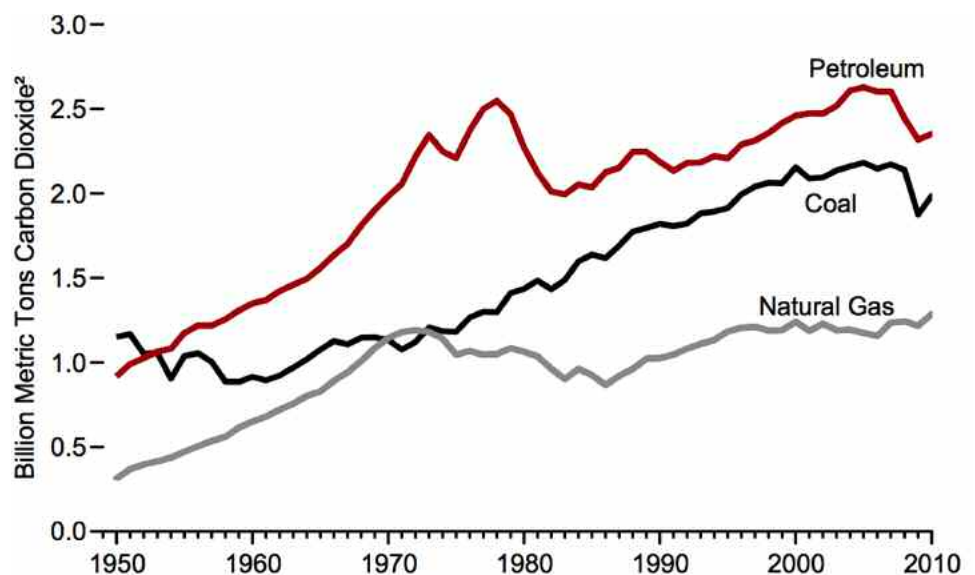


Figure 1: Historical U.S. carbon-dioxide emissions, in billions of metric tons, by fuel type. Among fuels, oil is the largest U.S. contributor to greenhouse gases. Dips in consumption due to recessions and mandated increases in fuel efficiency.

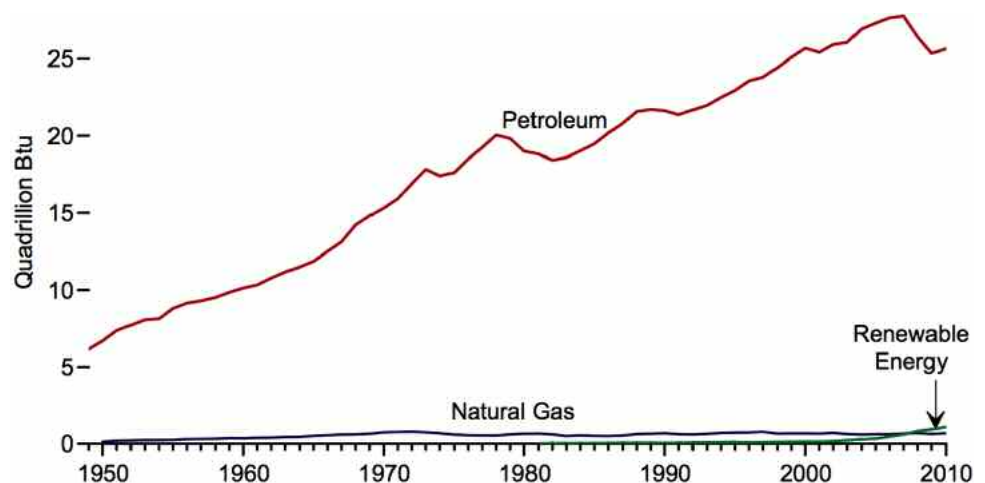


Figure 2: Historical U.S. fuel consumption, in quadrillion British thermal units, for transportation. Oil is practically the sole energy source used for transportation.

from millions of different types of transportation vehicles. There are numerous environmental impacts from the burning of petroleum, most notably, the greenhouse gas carbon dioxide, which has been directly linked to climate change.

If the petroleum is “sour” instead of

“sweet,” that means it has a larger percentage of sulfur content. If the sulfur is not completely removed from the rest of the contents of the oil, the combustion of that oil will result in sulfur-oxide byproducts. Sulfur dioxide is a major air pollutant and has significant negative impacts on human health. There are

other potential environmental pitfalls to the use of petroleum fuel: The extraction of petroleum can be disruptive to the natural habitat, and has the potential to be very environmentally damaging. If the extraction is based offshore and anything goes wrong, a massive spill could occur, damaging natural ecosystems, as occurred recently with the BP spill in the Gulf of Mexico. Oil spills are a concern during its transportation as well. Oil tankers historically have had accidents, such as the Exxon Valdez disaster, spilling anywhere from a few hundred to several thousand tons of oil into the ocean.

EXTRACTING OIL CAN HARM THE NATURAL HABITAT AND THE ENVIRONMENT.

Viable alternatives to oil require more investment. There is promise of cleaner burning fuel in hydrogen-powered vehicles, but the technology is still being developed and the petroleum-fuel infrastructure is very much embedded into our lifestyle. The use of biofuels, created from plants such as corn, soy and sugar cane, has grown to become a relatively popular substitute for petroleum-based fuel, but its production competes with our food supply. Grown on the sea instead of on land, algae offers a potential solution as a biofuel because its cultivation would not compete with our food supply, but much research and development remains to be done in order for algae to become a viable alternative fuel.

The best way to transition from oil to a cleaner energy source may be to convert our electric grid to being powered by renewable fuels and switch to battery-powered cars that would be charged from the renewable-energy electric grid. ☀️

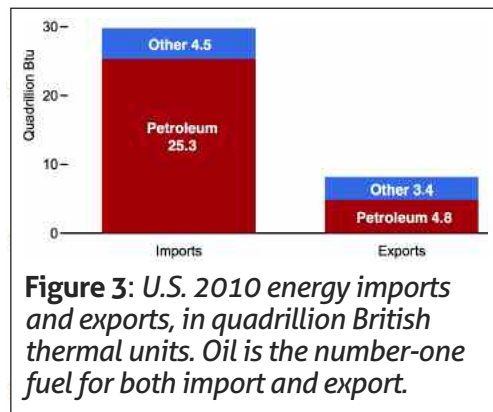


Figure 3: U.S. 2010 energy imports and exports, in quadrillion British thermal units. Oil is the number-one fuel for both import and export.

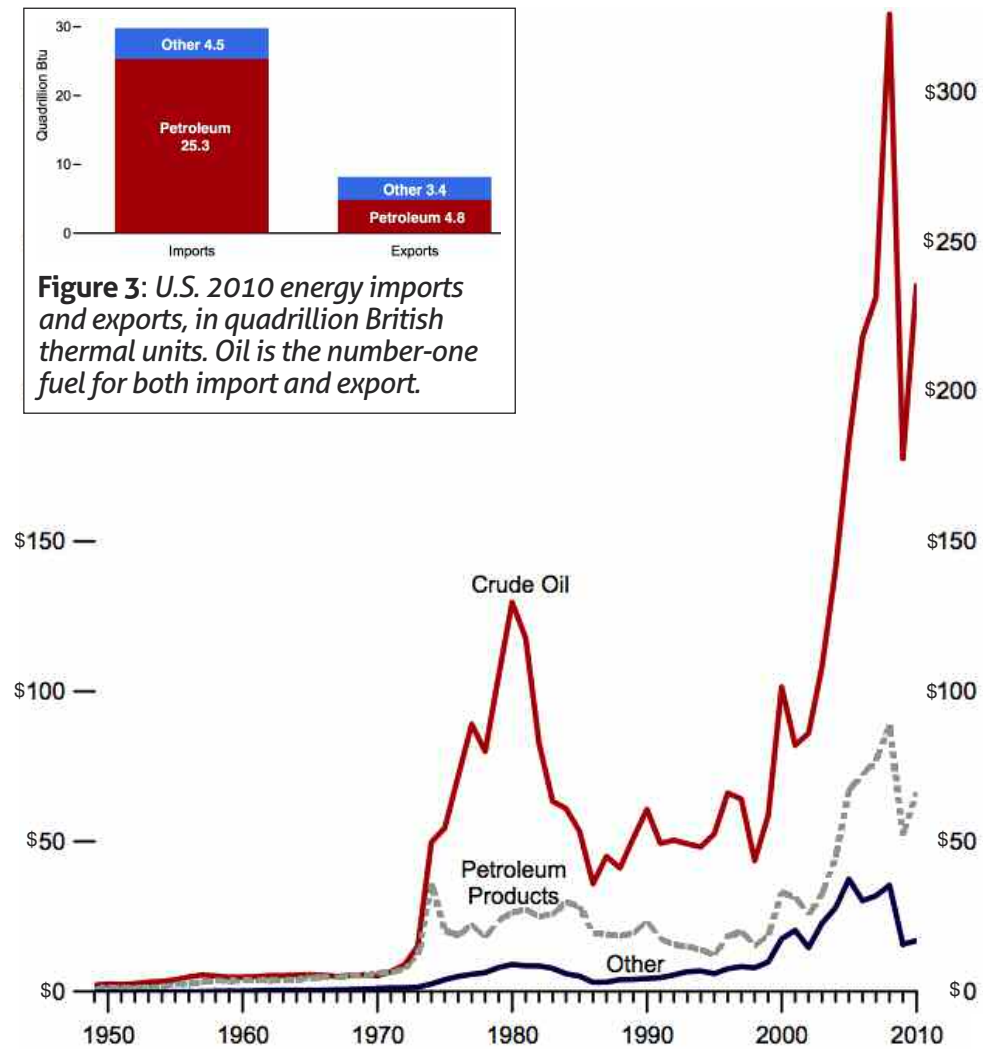


Figure 4: Historical inflation-adjusted value of U.S. fuel imports, in billions.

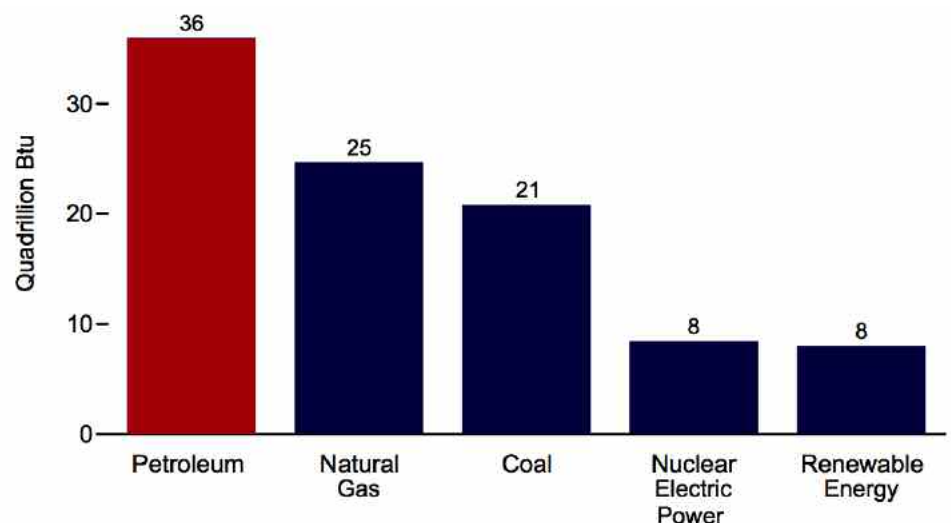


Figure 5: U.S. 2010 energy consumption, in quadrillion British thermal units, by fuel type. Biofuels, such as ethanol, are included under the renewable category. Americans consume more oil than any other energy source.

A SEA CHANGE: WAVE, TIDAL AND HYDROELECTRIC POWER

BY CHRISTOPHER VAUGHAN

With populations and concomitant demands for energy growing at rates that existing resources are not projected to meet indefinitely, the tide may be turning for technologies tapping new and abundant energy sources. No larger reservoir of potential exists than the one covering 70 percent of the globe's surface. Ocean energy, long dreamed of but to date the subject of insufficient investment, may be at least one of the answers to the energy-shortage forecast to challenge future growth. It is almost certainly the most renewable, as long as the globe keeps spinning.

The complex relationship between energy and water promises to be one of the most significant factors in global development going forward. Freshwater supplies are endangered in general, but the equation varies greatly by region and state of development. Most uses of water in energy production result in electricity generation, typically using hydraulic turbines in dammed rivers. Energy derived from water sources varies from an almost complete reliance on hydroelectric power in many nations to relatively scanty percentages in the United States (about 6.6 percent) and Israel (less than 1 percent). Worldwide, hydroelectric sources comprise 20 percent of energy supplies.

While imposing considerable impacts upon the environment, hydroelectric constitutes by far the largest source of renewable energy in the world. Small-scale hydroelectric-energy production can be obtained from any source of running water, and while it is not yet a significant factor in energy production, it has one of the best returns on investment of any renewable-energy

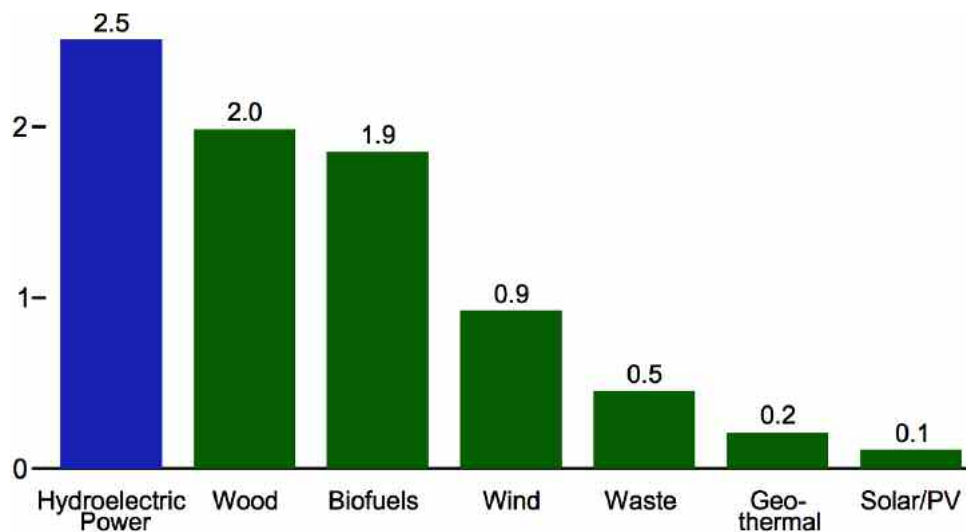


Figure 1: U.S. 2010 renewable-energy consumption, in quadrillion British thermal units, by fuel type. Hydroelectric is the top U.S. renewable energy source.

source, with hydro systems available at roughly 10 percent of the cost of a photovoltaic solar system of comparable energy output.

Other uses of water to generate energy offer promising possibilities, but none have yet emerged to play significant roles in the portfolios of the United States, Israel, or, indeed, any other nation. Still, the future may see increasing shares of energy supply coming from water-based solutions. These range from the obvious — such as tidal power, which draws upon the relationship between the Earth and the moon — to hybrid categories, such as wave energy and biofuels, natural gas, coal and tar-sands oil, all of which can draw heavily upon water supplies to extract and convert into energy. Traditional fossil fuels, nuclear power and geothermal involve use of water in production. Balancing human needs for fresh drinking water with energy and agricultural uses will pose one of the great challenges of coming decades.

The oceans may provide solutions. Ocean energy, which converts naturally occurring processes into storable energy, is in the early stages of development and thus constitutes a negligible share of national energy production in any of the locales where it is being tested, but it has been estimated that it could eventually meet up to 10 percent of worldwide energy demand. Such estimates include utilization of everything from thermal properties, salinity gradients and tidal patterns to the ocean's most visible dimension, the surface waves that provide the conversion methods now closest to commercial viability.

Already, desalination plants can convert seawater to freshwater uses, but at a high cost in energy — although a wave-powered desalination project in Mexico seeks to ameliorate that drain. At the same time, energy derived from the seas could provide sig-

nificant power solutions once technological progress advances to a point where costs translate into prices competitive with conventional sources. Scores of projects currently compete to produce the best results in the emerging marketplace, with no clear leader yet established. In the United States, numerous trial projects are under way, while Israel already has seen its first wave-energy system — a pilot project under the auspices of S.D.E. Energy — at Jaffa's port. S.D.E. says that its design for only 10 percent of the system's parts to be submerged increases durability, a key element in the sustainability of ocean-power projects. S.D.E. is awaiting financing to construct a larger-scale 50-megawatt project in Jaffa.

Compared with other forms of offshore renewable energy, such as solar photovoltaic, wind, or ocean current, wave energy is continuous but highly variable — although wave levels at a given location can be confidently predicted several days in advance, enhancing the likelihood of effective integration into a multi-pronged energy strategy. Wave energy's enormous potential, given the sheer volume of the oceans, is undeniable, but its costs include electricity transfer from the site of generation and potentially significant maintenance and repair bills due to the harsh treatment the seas can mete out to equipment. Wave energy's variability may be its largest liability. Its greatest potential is in areas of strong wave activity, but larger waves threaten the lifespan of energy-collection systems, while less destructive smaller waves deliver less energy. Deep-water waves may offer a better equation than near-shore waves, but no systems focused on such sources have been steadily employed to date.

The effects of wave-energy sys-

tems on the environment include potential interference with wildlife and coastline sediment accumulation patterns, but on the whole the pollution and environmental impacts appear relatively minor.

Wave-energy conversion devices of various sorts have been shown to be technically feasible, but from *terminators* — devices oriented perpendicular to the direction of wave propagation, which use trapped subsurface water to drive oscillating water columns like pistons — to *attenuators* — devices oriented parallel to the di-

WAVE ENERGY'S ENORMOUS POTENTIAL, GIVEN THE SHEER VOLUME OF THE OCEANS, IS UNDENIABLE.

rection of wave propagation, which convert surface waves into energy using flexible floating devices — the relative values of extraction processes being tested remain variable. Buoys and other floating or partly submerged devices drive electromechanical or hydraulic energy converters, while overtopping devices use reservoirs in which water is used to drive hydro turbines or other conversion devices. Hybrids and new devices continue to emerge in an unsettled marketplace.

Tides and river and ocean currents offer additional potential, with tidal power plants now established in many locations worldwide. Dynamic tidal power, which envisions long dams headed straight out into the ocean with a perpendicular barrier at the end forming a T-shaped dam that does not actually enclose

any area, is new and untested, but its system of drawing energy as the horizontal acceleration of the tides is blocked by the dam is thought to hold promise, since the water-level differential, or head, is converted to energy as water passes through turbines installed in the floating dam. The theoretical advantages of working on the envisioned scales of 30 to 60 kilometers are not testable at smaller scales; however, posing problems for gaining buy-in by the large institutional forces that would logically take on any such venture.

Wave energy and tidal energy both create electricity, but in different ways. While wave energy captures the energy in the vertical rise and fall of waves, tidal energy captures the energy in the horizontal ebb and flow of the tides.

The vast resources of the oceans may yet prove an answer for many energy problems, but it may require investments of similarly grand scale to fully realize the potential in easy view of the coasts where most of the world's populations are concentrated. The political will to take such chances may well be the most valuable renewable resource of all, on par with the water from which the users of the world's energy resources once emerged. ☀️

Electric-grid generation

U.S. hydroelectric:

6.6 percent

U.S. wave:

Negligible

U.S. tidal:

Negligible

Israel hydroelectric:

Less than one percent

Israel wave:

Negligible

Israel tidal:

Negligible

COAL: THE DIRTIEST FUEL

BY BENJAMIN KAHANE

Depending on how much pressure and temperature to which it has been subject, coal is a sedimentary or metamorphic rock comprised mostly of carbon. Coal is a fossil fuel used primarily in the generation of electricity. To turn coal into electricity, the rock is pulverized then combusted in a furnace, the heat from which converts water into steam used to spin turbine blades to create electricity.

THERE ARE MANY NEGATIVE ENVIRONMENTAL IMPACTS TO USING COAL.

Coal is mined from the Earth in one of two basic methods: surface mining and underground mining. Surface mining — or strip mining — is the most economical way to extract coal if it is located close to the surface; it's also the most ecologically devastating method, since the surface of the land, complete with trees, topsoil and all plants, are removed. This method is particularly common in the Appalachian Mountains, where the entire tops of mountains are removed, with debris pushed into valley streams.

Underground mining accounts for about 60 percent of world coal production and is the preferred method when the coal seams are too deep or the land is protected. Strip mining accounts for the remaining 40 percent. However, in the United States the numbers are reversed, and surface mining dominates.

There are many negative environmental impacts to using coal. Although coal is comprised mostly of carbon, smaller quantities of sulfur,

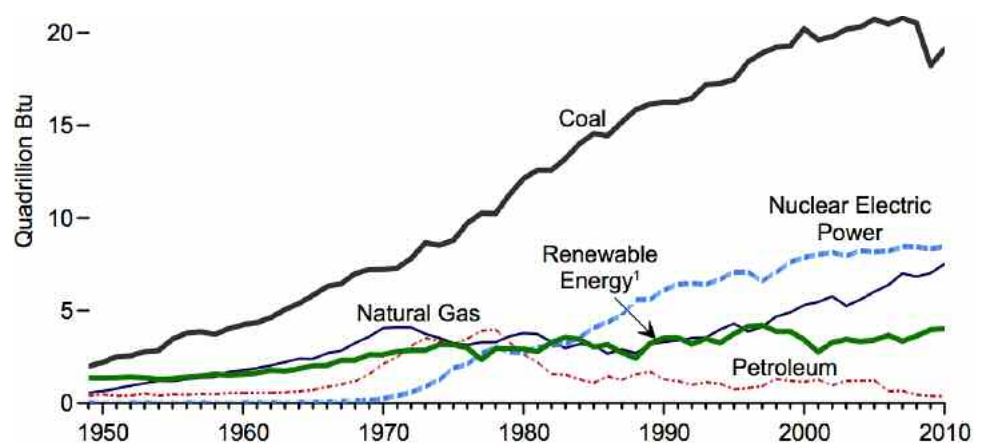


Figure 1: Historical U.S. electric-grid production, in quadrillion British thermal units, by fuel type. When it comes to powering the electric grid, coal is king.

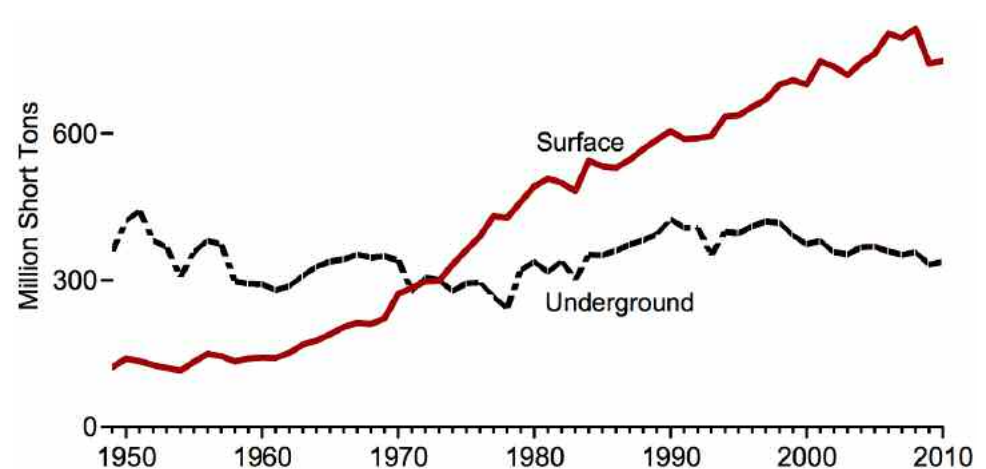


Figure 2: Historical U.S. coal mining, in million short tons, by type of extraction.

hydrogen, oxygen, nitrogen, and other heavy metals including mercury also exist in the coal we burn. There are higher and lower qualities of coal, just like petroleum, however the use of lower-quality coal is widespread due to more widespread availability. If these harmful byproducts are not removed before or during combustion, they can lead to damaging events such as acid rain, background radiation exposure and cancer in humans and animals. Carbon-dioxide emissions are also a cause for concern since carbon dioxide is a major contributor to climate change.

There have been some major technological advances in the pursuit of so-called "clean coal." Power plants have been outfitted with scrubbers and filters to reduce the pollution emitted. Carbon-dioxide sequestering, or containment, also has been explored as a method to mitigate greenhouse-gas emissions.

Many people believe we need to rid ourselves of this dirty form of energy as soon as possible. Unfortunately, that is a lofty goal: We'll need to put into place thousands of gigawatts of alternative-energy sources before being able to wean ourselves off of coal-fired electricity. ☀️

SOLAR: LET THE SUN SHINE

BY BENJAMIN KAHANE

There are two major types of solar power technologies: photovoltaic and solar thermal.

Photovoltaic solar power utilizes the photoelectric effect. A semiconductor material absorbs light and the photons in the light beam are routed through the semiconductor and harnessed in the form of direct-current electricity. The semiconductor cells are electrically tied together in what is commonly called a solar module. These modules can be used to power a direct-current source, such as a battery bank or a water pump, or more commonly the power can be converted into alternating-current power to be used in a home or fed into the electric grid.

Solar-thermal power harnesses the heat derived from the sun's rays. A common use of solar-thermal power is to mount a solar-thermal collector on the roof to use the hot water running through the collector to heat the water for the house. This is widespread in Israel. However, with respect to electricity generation, the sun's rays also can be used to heat a fluid, converting water into steam to turn an electricity-generating turbine.

The United States has about 500 megawatts of operational solar thermal power, most of which comes from the largest single project, a 354-megawatt plant in California's Mojave Desert. Photovoltaic power is much more widespread, mostly because it is a much more scalable technology. The total U.S. grid-connected photovoltaic capacity in 2010 was 2,152.5 megawatts — more than four times the total solar-thermal electric power installed — and installed photovoltaic capacity

is growing at an exponential rate. Currently, solar power represents a very small portion of the total energy demands of the United States — less than half of 1 percent of the country's energy usage — but advances in solar-cell manufacturing processes and competition in the market are allowing the American solar-energy sector to grow rapidly.

However, solar power is not without its negative impacts to the environ-

EVERY STUDY SHOWS THAT A SOLAR POWER PLANT IS AN EASY DECISION IF YOUR MAIN CONCERN IS GREENHOUSE-GAS EMISSIONS.

ment. Although solar energy creates no pollution during its operation, the manufacturing and installation of solar panels certainly does. Still, it's estimated that solar water heating reduces the units of heat per unit of fossil fuel energy by a factor of two compared to heating with natural gas, and by a factor of at least eight when compared to electric water heating. There have been many studies done to try and tabulate the amount of fossil fuels burned in creating a solar farm to quantify how much greener solar is than conventional-fuel electricity-generation plants. The problem is that there are many factors to con-

sider and most of the studies show different findings; the bottom line, however, is that the longer the plant is in operation, the smaller its carbon footprint gets. Also, every study shows that a solar power plant is an easy decision if your main concern is greenhouse-gas emissions, even if they do not agree on the total tabulated emissions from the solar plant.

There is also public concern about some of the materials used for certain photovoltaic modules. Some modules contain potentially hazardous materials such as arsenic and cadmium. Although the materials are safe for human contact while encapsulated in a photovoltaic module, the danger lies near the end of the module's useful lifespan if it is not disposed of properly.

Technological progress has been made in both the photovoltaic and solar-thermal industries, but the majority of growth in the world has been with photovoltaics. The introduction of thin-film solar wafers promises much cheaper semiconductor material with only slightly reduced efficiency. Many wafer manufacturers have been analyzing the production processes to find ways to produce the same cells at lower costs. There also have been leaps in recorded efficiencies of solar cells. For example, Solar Junction, a Silicon Valley startup, has recorded a peak efficiency of 43.5 percent in their proprietary solar cell, a world record. The company uses multi-junction technology to take advantage of many different band-gaps of light striking the solar cell. By both increasing efficiencies and reducing production cost, the case to build a solar installation will become stronger and stronger. ☀️



THE LOWDOWN ON NATURAL GAS AND HYDRAULIC FRACTURING

BY MIRELE GOLDSMITH

Natural gas is a fossil fuel formed hundreds of millions of years ago out of the decaying remains of plants and algae in ancient oceans. Natural gas is found in a variety of geological formations. In the past, natural-gas wells were drilled in areas where layers of impermeable rock lay above more porous, oil and gas-rich sediments containing reservoirs of gas. The gas is extracted by drilling a well through the impermeable layer to release the gas below.

Most of the natural gas used in the United States is produced domestically or imported from Canada and transported via pipelines. Natural gas also can be cooled to liquid state — liquefied natural gas — to be transported by tanker ships and trucks where pipelines do not exist.

Usage

In the United States, about 30 percent of natural gas is used for electric power; about 25 percent is used for industrial uses, such as producing steel and glass, and as a raw material; about 20 percent is used in residences for heating and to power appliances; and about 15 percent is used in commercial facilities. Most of the remaining gas is used for oil- and gas-industry operations and a tiny amount is used as vehicle fuel. The top natural-gas consuming states are Texas, California, Louisiana, New York, Florida and Illinois.

Recent Developments

The natural-gas industry uses the term “unconventional” for gas deposits that are more difficult to extract than those described above. These deposits include: deep gas formations occurring 15,000 feet or more below the surface; “tight gas” contained in impermeable rock;

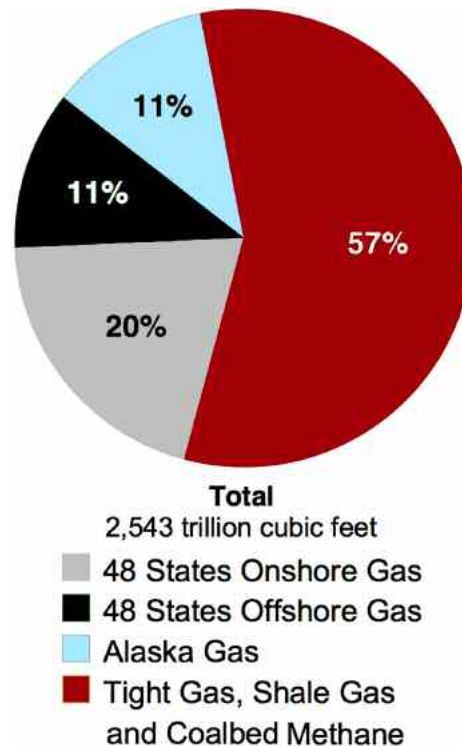


Figure 1: *The remainder of U.S. natural gas, by type, that is technically recoverable, as of 2010.*

shale gas contained in layers of sedimentary rock; coal-bed methane that occurs with coal; geo-pressurized zones where gas occurs in sand or silt under layers of clay; and methane hydrates occurring in permafrost. New technology has made it possible to extract gas from some of these unconventional formations.

Positives

In comparison with coal and oil, burning natural gas produces fewer emissions of air pollutants, including carbon dioxide, per unit of heat produced. This is why many homes and power plants, especially in cities, have switched to gas from oil and coal. According to the Energy Information Administration, producing one million British thermal units

of heat with natural gas results in 117 pounds of carbon dioxide released into the atmosphere. Burning the equivalent amount of oil results in 160 pounds, and burning the same amount of coal results in 200 pounds.

Negatives

Natural-gas extraction and production poses risks to land, air and water similar to those posed by other fossil fuels. The extraction process involves the destruction of the natural environment. Wastes generated in the drilling process are toxic and are often treated inadequately. Transportation of gas over long distances in pipelines or in tankers brings the risks of spills to far-flung communities.

As unconventional drilling has expanded, new risks have drawn attention. For example, hydraulic fracturing — also known as hydrofracking or fracking — is a process used to extract gas from shale formations. This technique involves injection of large quantities of water mixed with sand and chemicals into a well to fracture the rock and release the gas. It may cause earthquakes and poses significant risks of water pollution through multiple pathways.

Pollution

Burning natural gas causes greenhouse-gas emissions, albeit fewer than those caused by burning other fossil fuels. Additionally, it is important to understand that natural gas primarily consists of methane, which is a greenhouse gas 25 times as potent as carbon dioxide. Methane is released when natural gas leaks from wells, storage tanks, pipelines, and processing plants. If natural gas cannot be used, it is

flared — burned off in a process that worldwide consumes the equivalent of more than 20 percent of the United States' gas consumption every year, according to the World Bank. This is safer than releasing it into the atmosphere, but when gas is flared other dangerous compounds are released into the air. Preliminary studies suggest that overall, if emissions throughout the process of extraction, production and transportation are taken into account, natural gas may be just as great a contributor to the warming of the atmosphere as other fossil fuels.

Recommendations

Natural gas provides one quarter of the energy consumed in the United States, and the use of natural gas in Israel is expected to increase as a result of the discovery of offshore deposits in the Mediterranean Sea. Many environmental experts view increasing use of natural gas as a positive because of the lower greenhouse gases emitted in comparison to other fossil fuels. However, even these experts recommend that natural gas be considered a bridge fuel that can help us make the transition from fossil fuels to renewable energy.

In addition to the damage done to the atmosphere, the production of natural gas has many other environmental impacts. Many areas where gas is found are in pristine natural areas on land and under the seafloor. Drilling in these places is inherently dangerous to natural environments and resources. Transporting natural gas in pipelines results in spills, and transporting it as liquefied natural gas puts pressure on coastal areas where port facilities are being developed. Liquefied natural gas also poses risks from potentially devastating explosions.

The rapid expansion of hydrofracking in the past decade is generating significant opposition. Shale formations currently being exploited or vulnerable to hy-

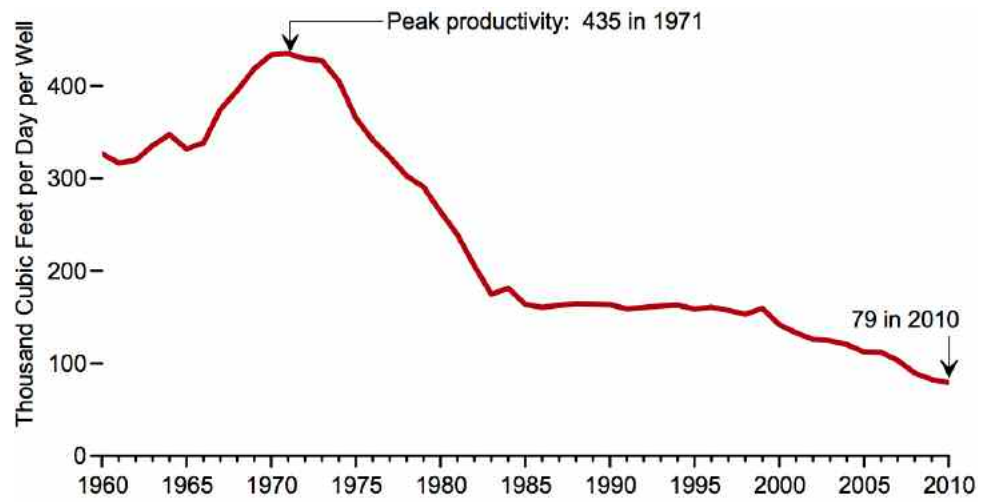


Figure 2: Although overall extraction volumes of natural-gas reserves continue to increase, the average amount extracted per well, measured in thousand cubic feet per day per well, peaked in 1971.

drofracking are present in more than 30 states. The largest area is the Marcellus Shale, which runs under the northern Appalachian Basin through New York, Pennsylvania, eastern Ohio, northwestern New Jersey, western Maryland, Kentucky western Virginia, most of West Virginia and a small part of Tennessee.

Accidents and leaks, along with new scientific studies, have raised awareness that hydrofracking is not adequately regulated. Hydrofracking is exempt from many federal laws that typically regulate industrial activities, and state regulators do not have the tools and resources to monitor this highly decentralized practice. Campaigns to ban hydrofracking, enact a moratorium on drilling, and to enact much stricter regulations are active in several states.

The energy industry has invested heavily in advertising to convince the public that natural gas is the fuel of the future and to insure that natural-gas production is exempt from regulations that apply to the extraction of other fossil fuels. Despite what the industry claims, natural gas is not a clean fuel. Natural-gas production must be strictly regulated and must be viewed as a transitional fuel, at best. ☀️

Natural-gas consumption

United States (2012):
25,502 billion cubic feet

Israel (2011):
117 billion cubic feet

World (2010):
116,327 billion cubic feet

Follow-up online

U.S. Energy Information Administration:
eia.gov/naturalgas

Energy Justice Network Natural Gas Factsheet:
tinyurl.com/naturalgasfactsheet

Natural Gas Supply Association:
naturalgas.org

Food & Water Watch:
foodandwaterwatch.org/water/fracking

Sierra Club's "Beyond Natural Gas" campaign:
content.sierraclub.org/naturalgas

COEJL's background info on fracking:
tinyurl.com/coejlfracking

Info on fracking in Israel:
greenzionism.org/greenisrael/antifracking

Jews Against Hydrofracking:
jewsagainsthdrofracking.org

ENERGY'S ANSWER IS BLOWING IN THE WIND

BY BENJAMIN KAHANE

For hundreds of years, humans have used wind to pump water and grind grain, mostly with small windmills. Large, modern wind turbines are used to generate electricity for individual use and to feed into the electric grid. Wind turbines generally have three blades and, because higher altitudes yield higher wind velocities and lower turbulences, the turbines are mounted on tall towers to capture as much energy as possible. As the blades turn, the central shaft spins a generator to make electricity.

In the United States, total wind power constitutes a little more than 1 percent of the total country's energy output — about 40,000 megawatts as of 2010. The 1,020-megawatt Alta Wind Energy Center, In California's Tehachapi Pass, is currently the largest onshore wind farm in the world. Offshore wind power is even more promising since the winds over the oceans are more consistent and less turbulent than over land. Currently, most of the world's offshore wind farms are in Northern Europe, but there are groups in the United States fighting to build offshore wind farms here as well. It is estimated that by 2020, worldwide capacity for offshore wind farms will reach 75 gigawatts.

The major roadblock to wind-farm development is the aesthetics complaint. Some people believe that wind turbines will ruin scenic views of the shoreline, mountain peaks and open fields. However, wind turbines made today are different and more aesthetically pleasing than the turbines of even 10 years ago; the truss structure which would make up

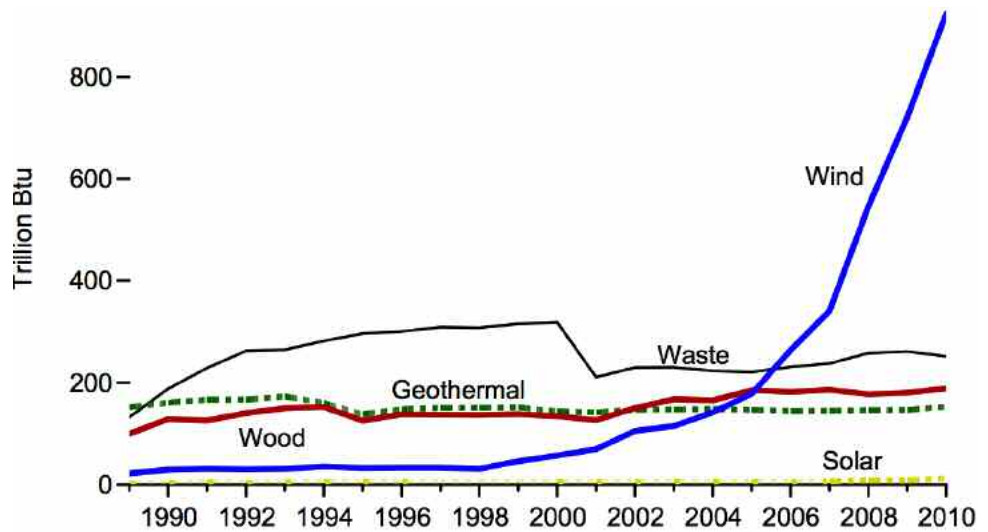


Figure 1: Historical U.S. electric generation, in trillion British thermal units, from non-hydroelectric renewable sources. Hydroelectric is excluded in order to allow for scale. Wind power is really taking off. (Waste includes municipal solid waste, landfill gas, sludge waste, agricultural byproducts and other biomass; until 2000 it also included non-renewable waste, such as tire-derived fuels.)

the tower of a wind turbine was much less elegant than the long mono-pole that supports today's modern wind turbines.

Compared to the environmental impacts of fossil fuels, wind power has a relatively minor climate impact. Since there are no emissions from the farm in operation, the only factors to consider are the fossil fuels consumed during production of the necessary components of the wind farm and the construction efforts to build it. This question is similar to that posed of the solar plant: There are varying opinions, but the bottom line is that it is a vast improvement to continually polluting the air and water with combusted fossil-fuel byproducts. There also have been some incidents of bird and bat deaths due to collision with

the turbine blades. Wind-power enthusiasts will tell you that large buildings cause more bird deaths than a wind farm ever has. While this is a true statement, it does not make killing birds right; caution must be taken when siting a wind farm. It should not be sited in a known path of migrating birds and studies also should be done to determine if there are large populations of bats in the area to avoid harming local wildlife. That said, modern wind turbines are designed to turn their blades at slower speeds, naturally reducing any potential negative impact on bird and bat populations.

If we are going to move beyond our dependence on fossil fuels, then wind power will need to be part of the basket of solutions. ☀️



NUCLEAR: CARBON-FREE BUT RADIOACTIVE

BY BENJAMIN KAHANE

Nuclear energy isn't quite a fossil fuel, since unlike coal, natural gas and petroleum, nuclear is not powered by fuel that developed over millennia from pressurized dead organisms — but nuclear isn't renewable, either, since it uses a finite non-renewable fuel source. Nuclear power also presents many environmental problems, such as how to handle its radioactive waste product, and, in extreme circumstances, is disastrous, such as in Chernobyl, Ukraine, and recently in Japan.

Nuclear energy is derived from the splitting of an atom, most commonly an isotope of uranium with an atomic mass of 235. The process is called fission.

In a nuclear reactor, fission events are induced by the bombardment of atoms with neutrons. Splitting an atom of uranium consumes about 7 to 8 million electron volts and each fission event creates about 200 million electron volts for a 25:1 power-output ratio. This generated energy heats water, which turns into steam and powers a turbine to create electricity.

Currently 104 nuclear reactors operate at 64 power plants across the United States, providing America with about 20 percent of its electricity.

Nuclear power is sometimes confused as a sustainable or renewable power. It is not, simply because there is a finite amount of uranium and plutonium on Earth. Nuclear power does not create any greenhouse gasses or expel any other environmentally harmful gasses into the atmosphere. However, fossil fuels are used in the mining for uranium, the uranium enrichment process, transportation of the nu-

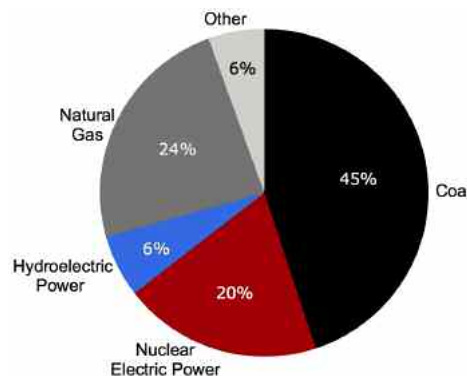


Figure 1: Total U.S. electric generation in 2010. Nuclear energy made up about 20 percent of the electric grid.

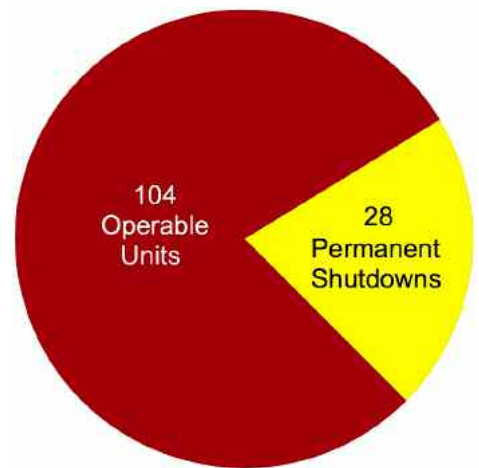


Figure 2: Of 132 U.S. nuclear reactors to open, 28 have been shut down permanently.

WE ARE DEALING WITH A THREAT THAT HAS A LIFESPAN OF 10,000 TO MILLIONS OF YEARS.

clear fuel, and of course the erection of the power plant. It is difficult to quantify the fossil fuels burnt for nuclear power, but so much power can be extracted from the fission process that the power generated dwarfs the amount of harmful gasses emitted into the atmosphere compared to a coal or natural-gas plant.

Of course there is another completely unique harmful agent as a result of nuclear energy: radioactive nuclear waste. Once the fuel is spent, it must be stored safely, and this is a major point of contention among advocates and opponents of this source of energy. Governments around the globe are considering different types of nuclear-waste

management options, although the most prevalent involve deep geologic placement — burying it deep in the earth, perhaps under a mountain. The main issue is that we are dealing with a threat that has a life span of 10,000 to millions of years.

Following the nuclear emergencies at Japan's Fukushima nuclear reactor, many countries are reevaluating their current safety measures in existing plants. Given the gravity of the hazardous radioactive waste as a byproduct of this type of energy production, it is not surprising that no new nuclear plants have opened in the United States since 1996. And before then, the last time that a nuclear plant was approved to be built was before Pennsylvania's Three Mile Island nuclear meltdown in 1979. But we may be entering a new nuclear era: In 2012, the U.S. Nuclear Regulatory Commission approved licenses for two new reactors to be built at an existing nuclear plant in Georgia. Applications for an additional two dozen nuclear plants across the country are pending. ☀

TEN TORAH TWEETS FOR CREATION CARE

BY FRED SCHERLINDER DOBB

Today the environment — God’s Creation, our one and only home — needs all the friends and all the help it can get. People of faith have rich traditions that should place us among Creation’s most passionate defenders. Somehow, though, despite strong statements from religious leaders and much scholarship

at the intersection of religion and ecology, the message hasn’t sufficiently gotten through. So maybe some spiritual sound bites on sustainability — some Tweets on Creation care — will better reach the faithful and encourage them to curb their carbon. While the Ten Commandments are all found in one

place, here are 10 Torah talking points on sustainability, two taken from each of the five books of Moses. Nothing here is new, but the Torah — central in Judaism, revered in Christianity, honored in Islam — can yet guide and inspire us, all in 140 characters or fewer, complete with its own Twitter hashtag:

1. Genesis 2:15: God put humans in ecosystem “2 serve & guard” it. Earth shouldn’t degrade but improve or stay the same on our watch. #TT4CC
2. Genesis 13:17: God told Abraham “get up & walk yourself around the land.” People of faith, go walk the land, serve & guard it. #TT4CC
3. Exodus 7:14-12:30: 10 plagues as environmental punishment for social ills. Eco-justice: Don’t be Pharaoh to Earth or to people. #TT4CC
4. Exodus 34:7: God “recalls sins of parents onto ... 3rd & 4th generation.” Today’s carbon emissions hurt us & our descendants. #TT4CC
5. Leviticus 19:16: “Love your neighbor as yourself.” Applies to non-human neighbors too. Love your neighbor, love the Earth. #TT4CC
6. Leviticus 25:8-55: Sabbatical & jubilee join justice with sustainability. Give the voiceless -- Earth and indebted -- respite. #TT4CC
7. Numbers 11:4-34: “The graves of craving”: When Israelites demanded meat, too much meat killed many. Consume less, especially meat. #TT4CC
8. Numbers 11:26-30: Moses says prophets are tireless advocates for what’s right. Be prophetic: Save the Earth & all its inhabitants. #TT4CC
9. Deuteronomy 11:13-20: Do right by God, you’ll enjoy nature; do wrong & “you’ll be quickly banished from the good land.” #TT4CC
10. Deuteronomy 22:8: “When you build a house put a parapet around the roof”: origin of precautionary principle. Be careful w/carbon! #TT4CC

So says Scripture, in 140 characters or fewer. And so we should do, whether or not it’s “because God said so.” Let’s care for Creation because Earth and all its inhabitants, human and non-human, today and in the future, deserve no less. ☀

SHABBAT NOAH: GLOBAL CLIMATE-HEALING SHABBAT

BY EINAT KRAMER

"And the bow shall be in the cloud; and I will look upon it, that I may remember the everlasting covenant between God and every living creature of all flesh that is upon the Earth." — Genesis 9:16

The Torah portion of Noah details a terrible ecological disaster — the flood that immerses the world in water and brings an end to all life — all because of humankind's despicable behavior. Noah may have been the first environmental activist. He acted upon a divine commandment to keep every species of animal safe on his ark. The biblical story ends with an eternal covenant between God and humanity, in which we are promised that the land will never be destroyed again at the hands of the Creator.

Today, we are once again experiencing widespread destruction of the Earth, this time not as a divine punishment, but as a direct result of human actions. What is the connection between our generation and the generation of Noah? What can we learn from Noah's story? And how, with our collective strengths, can we prevent the next flood?

Let's start by answering the following question: Do we control the world or are we dependent on God's gifts? The story of the flood begins with a description of the evil that has fallen upon the land: *"And the Earth was corrupt before God, and the Earth was filled with violence."* (Genesis 6:11)

The biblical commentator Rashi explains that the word "violence" refers to stealing. If so, what did people steal in order to bring upon themselves such a punishment?

One interesting idea presented in

the Midrashic anthology *Yalkut Shimoni* is that the generation of the Flood committed the sin of hubris — intense pride before nature and the order of the world. The *dor haflagah* — the generation that built the tower of Babel after the flood — is described as the generation that revealed how to control nature and its

WHAT'S THE CONNECTION BETWEEN OUR GENERATION AND THE GENERATION OF NOAH? AND HOW CAN WE PREVENT THE NEXT FLOOD?

resources. With the help of technological developments and other means, the people of this generation reached a state in which they felt that they were without fear before the strengths of nature and no longer relied on divine intervention.

The midrash (Sanhedrin 108:2) further emphasizes this point, describing the reactions of the people upon seeing Noah building the ark. If a flood of water should come from the land, says the generation of Noah, they will reinforce the land with poles of steel. And a flood of fire will not scare them. They feel so perfected that they have no reason to fear anything — they feel prepared for any kind of natural disaster.

The ability to act from within nature

brings the generation of the flood to heightened pride before the world and before God. This pride brings them to stealing — perhaps by stealing the world's resources. All these together, led to the inevitable consequence: the flood that destroyed the world.

Noah Acts

In the arrogant, violent world of the generation of the flood, Noah was chosen to save and perpetuate the existence of life. But why was Noah chosen to survive, while the rest of humanity was decimated?

The Torah says that Noah "found favor" in the eyes of God, but it is never quite clear to us why this man and his family were saved from disaster while others were not.

Still, Noah and his family were not saved alone. Following God's commandment, he placed into his ark all the species of the world and cared for them for an entire year.

Our sages describe Noah's difficult work in the ark in detail — holy work done through selflessness and kindness. According to the midrash Tanchuma, "throughout those 12 months, Noah and his sons did not sleep, because they had to feed the animals, beasts and birds."

The Talmud also explains that the ark had three levels — one for Noah and his family, one for the animals, and one for the animals' waste — revealing how much energy he put into their care. Another legend says that Noah endangered his life, and was even wounded, when he went to feed a lion. According to Rashi, Noah worked so hard that he would groan and grow faint from the burden of the animals.

Noah's concern extended beyond the animals of the world. He also considered the continuity of plant life, bringing with him onto the ark "good things to plant, fig shoots and olive saplings" (Midrash Rabba: Noah 1:14). Clearly, Noah, in the earliest known case of nature preservation, went out of his way to save animals and plants. There is only one species that Noah made no effort to save: humans.

The Zohar — the book of Jewish mysticism — relates the following story: When Noah left the ark after having seen the world destroyed, Noah began to cry before God and he said, "Master of the universe, You are called compassionate. You should have been compassionate for Your creation." God responded and said, "You are a foolish shepherd. Now you say this? Why did you not say this at the time I told you that I saw that you were righteous among your generation, or afterward when I said that I will bring a flood upon the people, or afterward when I said to build an ark? I constantly delayed and I said, 'When is Noah going to ask for compassion for the world?'... And now that the world is destroyed, you open your mouth, to cry in front of me, and to ask for supplication?" (Zohar Hashmatot: Genesis 254b)

We will never know why Noah did not fight to revoke the evil decree and spare the world from destruction. Perhaps in his heart Noah believed that the world, harsh and depraved as he knew it, was not suited for redemption. Only the "innocent" animals were meant to survive. Or perhaps Noah was afraid that the essence of his generation would rub off on him, and he also would be destined for destruction. In this sense, Noah essentially was living in his own ark even before the flood and didn't feel a connection or responsibility to the world that was to be decimated.

It is impossible to know what stopped Noah from requesting God's mercy. Yet we do know that

his descendent Abraham did not suffer from the same complacency regarding his fellow human beings. Ten generations later, we see Abraham pleading with God to exercise mercy on the people of Sodom. Abraham opens his eyes to the plight of the innocent and attempts to intercede on their behalf.

After the Flood

After the waters receded from the face of the earth, Noah sacrificed an offering to God, who, upon smelling the pleasing scent, made a fundamental decision: "I will not again curse the ground any more for man's sake; for the imagination of man's heart is evil from his youth; neither will I again smite any more everything living, as I have done. While the Earth remains, seedtime and harvest, and cold and heat, and summer and winter, and day and night shall not cease." (Genesis 8:21-22)

With Noah and the inhabitants of the ark — all living beings — God made an eternal covenant:

"And God spoke unto Noah, and to his sons with him, saying: 'As for Me, behold, I establish My covenant with you, and with your seed after you; and with every living creature that is with you, the fowl, the cattle, and every beast of the Earth with you; of all that go out of the ark, even every beast of the earth. And I will establish My covenant with you; neither shall all flesh be cut off any more by the waters of the flood; neither shall there any more be a flood to destroy the Earth.' And God said: 'This is the token of the covenant which I make between Me and you and every living creature that is with you, for perpetual generations: I have set My bow in the cloud, and it shall be for a token of a covenant between Me and the Earth. And it shall come to pass, when I bring clouds over the Earth, and the bow is seen in the cloud, that I will remember My covenant, which is between Me and you and every living creature of all flesh; and the waters shall no more become a flood to de-

stroy all flesh. And the bow shall be in the cloud; and I will look upon it, that I may remember the everlasting covenant between God and every living creature of all flesh that is upon the Earth.' And God said unto Noah: 'This is the token of the covenant which I have established between Me and all flesh that is upon the Earth.'"
— Genesis 9:8-17

Today, we are experiencing an ecological crisis that is characterized by phenomena such as glacial melting, extended drought, accelerated species migration and widespread disease. Most of these problems originate from the unchecked utilization of natural resources by humans and the creation of excess waste and pollution. In many cases, it may be argued that the entire ecological crisis is a direct result of the very societal ills found in the generation of Noah — "and the land was filled with violence."

This story does not need to repeat itself. We are all children of Noah, but we are also children of Abraham. From Noah, we received the ability to exercise responsibility for nature and the biodiversity of species, and the willingness to work hard to retain and repair our world. Unfortunately, we also resemble Noah in our ability to separate ourselves from others so that our righteousness should not be blemished. It is easy to stay secluded at home, ignoring the problems of the world. A bigger challenge is to face the world and embrace its needs as our own.

In this, we should see ourselves as children of Abraham, who calls upon us to be an integral part of the world — to sit at the opening of our tent and invite everyone to join in a life of faith in the good, love of our fellow people and the willingness to fight for justice.

Shabbat Brit Olam

In 2009, Jewish environmental leaders invited the Jewish community at large to observe Shabbat Noah — the Shabbat on which the portion of

Noah is read — as a “Global Climate-Healing Shabbat.” We mobilized Jewish communities across North America and Israel to teach, celebrate and act in honor of Shabbat Noah. Observance has included prayers, sermons, study sessions and community-action projects designed to encourage sustainability in the Jewish community.

Since then, Shabbat Brit Olam — Covenant of the World — has become an annual tradition. More than

200 communities from all denominations of Judaism have observed Shabbat Noah as a day to learn about Jewish environmentalism, with study groups, lectures, endorsements from public figures and grassroots action projects. This year, join Jewish environmentalists around the world in celebrating Shabbat Noah, recalling Jewish values of protection of our environment and of all of the animals with which we live here on Earth.

May we all be as children of the devoted Noah and children of the faithful Abraham. May we all uphold the covenant of the world’s perpetual existence and act for our sakes and the sake of the world around us. And let us not forget — in today’s reality, we are all in the same ark. ☀️

Follow-up online

Shabbat Noah resources:
tinyurl.com/coejlnoah2010

THE RAINBOW CONNECTION: RAINBOW DAY AND CREATION

BY DAVID SEIDENBERG

“I have set My rainbow in the cloud, and it shall be a sign of the covenant between Me and the Earth.”
— Genesis 9:13

Millennia before Kermit the Frog sang about the Rainbow Connection, the very first Rainbow Day marked the connection between God and all animals. The biblical flood began on the 17th of the second month, exactly one lunar year and 10 days — or one complete solar year — before Noah, his family, and all the animals that were with them left the ark, on the 27th day of the second month. But just before they left, God made a covenant with them that there would never again be a flood of water to destroy life on Earth. And just as today we sign contracts with our signatures, God signed our covenant with a rainbow.

Rainbow Day, which falls on the 42nd day of the counting of the *omer*, and the day after *Yom Yerushalayim* — Jerusalem Day — is a time to celebrate the diversity of life on Earth, and to remember our role in God’s covenant. It is a time to remember that the first covenant was not with human beings but with all living things, and it’s a chance to

reflect on the deep spiritual and religious meaning of diversity, creation and our role as part of Creation and partners with God. This is a special time in human civilization when we need to reflect on the rainbow covenant and our place in sustaining a world where sowing and reaping, cold and hot, summer and winter will not stop.

The Torah teaches that God has promised never to flood the Earth again. But that doesn’t mean humanity can’t “flood the Earth” and harm life. We live in a time when many species have gone extinct or are threatened with extinction. Our civilization is using so much of the world’s land and resources that we don’t always leave room for the other creatures. Global climate change is already putting so many species and ecosystems at risk. As the African-American spiritual goes, “God gave Noah the rainbow sign, no more water, the fire next time!”

The story of Noah and the flood teaches us that we have a responsibility to care for all Creation and all creatures, and that caring for all species is a mark of righteousness.

There’s so much we can do to remember our responsibility and reflect on how we use our power to change the world, for good and for bad. Rainbow Day is pregnant with possibilities for activities for all ages, from learning the rainbow blessing to planting a rainbow garden. It’s a great occasion for fun art and science projects about rainbows, for prayer and action. Anything related to protecting species and ecosystems is connected to Rainbow Day. For example, our dependence on fossil fuels is connected to so many environmental issues. A thin film of petroleum on water is enough to poison it, but it also makes beautiful twisty rainbow colors. Is it possible to twist, bend or destroy the rainbow?

There’s no single way to celebrate Rainbow Day — add your own celebration so that we can pass on something better to the next generation. ☀️

Follow-up online

Rainbow Day curriculum:
jewcology.com/resource/Rainbow-Day

HOLIDAY PROGRAMMING ON ONE FOOT

BY EVONNE MARZOUK

Our synagogues are places of worship, community and social action — but, unfortunately, they also often waste significant amounts of energy and other resources. Implementing energy-saving campaigns in our synagogues is an important step we can take in helping to protect the environment. We also can work to change attitudes and behaviors within our Jewish community.

You can use Jewish holidays, and Chanukah in particular, to teach your fellow congregants about the connections between energy use and Jewish tradition. Many Jewish holidays present themes that can allow us to explore our responsibility to protect the environment. During these times of the year, Jewish communities can organize programs and learning opportunities to help participants connect more deeply to the environmental themes within our tradition. For example, the holiday of Sukkot includes a strong water theme, and the time period of counting the Omer, between Passover and Shavuot, includes connections to the land of Israel. Of course, the holiday of Tu B'Shvat is filled with meaning about trees, their fruit, and the abundance of blessing in the world for which we can be grateful.

The holiday of Chanukah is another opportunity to reflect upon Jewish wisdom as it relates to our natural resources, energy in particular. Chanukah revolves in large part around a miracle related to olive oil. In biblical and Talmudic times, olive oil — used for light, heat, fuel and food — was a very important renewable resource for energy. The limitations on this resource often posed problems in ancient times, just as modern limits on availability of energy resources pose a problem today.

The traditional Jewish relationship to olive oil can teach us much about how we can relate to energy. For example, it's interesting to reflect that the reason Chanukah lasts eight days was because that was how long it took to create a pure batch of renewable olive oil. One of the miracles of Chanukah — the energy that lasted longer than expected — can remind us of the need to conserve our own energy resources.

Synagogues and schools can use the opportunity of Chanukah to organize programs that highlight the precious nature of energy, the importance of protecting it, the environmental consequences of our energy use, and the Jewish mitzvah of baal tashchit — not wasting.

For example, this topic can be playfully but meaningfully introduced at a children's Chanukah party with a song. Judy Sheer of the Riverdale Jewish Center has developed a delightful children's song about energy to the tune of "The Wheels on the Bus": When we go into the room, we turn the light on, turn the light on, turn the light on. When we leave the room, we turn the light off, that's how we save the lights.


Children also can be encouraged to make homemade signs to hang on light switches to remind us all to turn off the lights.

For adults, synagogues can organize learning opportunities on Jewish teachings about energy, panel sessions including energy-conservation experts, or action opportunities,

such as a joint purchase of compact-fluorescent light bulbs, or an energy audit of the community building. Saving energy is a great opportunity for every community, because it is good for the environment and also saves money.

Chanukah is a resource-intensive time in our society, and we can also take this opportunity to reduce the consumption during the holiday season. Jewish environmental leader Jessica Haller has developed an idea called "Fresh Exchange," in

which adults of the community participate in a swap of gently used toys. Children use these toys instead of parents buying new ones. Chanukah is also a great time to speak with children about charity and to arrange to give old toys and clothing to children in need.

Jewish teachings expound upon the need to avoid waste and an appreciation for all of our resources — an appreciation we must reclaim if we are to live sustainably in the land once again. You can use Chanukah and other holidays to help your community learn Jewish wisdom and act to protect the environment. 

JEWISH HOLIDAYS PRESENT THEMES TO EXPLORE OUR RESPONSIBILITY TO PROTECT THE ENVIRONMENT.

Follow-up online

Jewcology:
jewcology.com

Canfei Nesharim:
canfeinesharim.org

Greening the holidays:
tinyurl.com/coejlgreenholidays

SO MANY WAYS TO SAVE ENERGY

BY DOV PERETZ ELKINS

"Remember that it is God who gives you the power." — Deuteronomy 8:18

"They who trust in God shall renew their energy." — Isaiah 40:31

If you're like most people, you get your energy from the grid. Electricity generation from fossil fuel-fired power plants is responsible for 67 percent of the nation's sulfur-dioxide emissions, 23 percent of nitrogen-oxide emissions, and 40 percent of manmade carbon-dioxide emissions, according to the U. S. Environmental Protection Agency. These emissions can lead to smog, acid rain and haze. Additionally, the EPA says that greenhouse-gas emissions from power plants are one of the primary causes of climate change.

Coal is one of the most common energy sources for power plants, but it's also the dirtiest. Coal pollutes when it is mined, transported to the power plant, stored and burned. There are about 600 U.S. coal plants. A typical (500-megawatt) coal plant burns 1.4 million tons of coal each year, so in an average year, according to the EPA and the Union of Concerned Scientists, a typical coal plant generates:

- 3,700,000 tons of carbon dioxide, the primary human cause of climate change;
- 10,200 tons of nitrogen oxide, as much as would be emitted by half a million late-model cars. Nitrogen

Excerpt from: "Simple Actions for Jews to Help Green the Planet: Jews, Judaism and the Environment," a book by and copyright Dov Peretz Elkins. Reprinted with permission.

oxide leads to formation of smog, which inflames the lungs, making people more susceptible to respiratory illness;

- 10,000 tons of sulfur dioxide, which causes acid rain that damages forests, lakes and buildings, and forms small airborne particles that can penetrate deep into lungs;

- 720 tons of carbon monoxide, which causes headaches and place

SAVING ENERGY SHOULD BE LOOKED UPON AS DOING OUR SHARE TO PRESERVE THE RESOURCES WE WERE GIVEN AS GIFTS FROM GOD.

additional stress on people with heart disease;

- 500 tons of small airborne particles, which can cause chronic bronchitis, aggravated asthma and premature death;

- 225 pounds of arsenic, which causes cancer in one out of 100 people who drink water containing 50 parts of arsenic per billion parts of water;

- 220 tons of hydrocarbons — a kind of volatile organic compounds — that form smog when mixed with nitrogen oxide;

- 170 pounds of mercury — even just 1/70th of a teaspoon deposited on a 25-acre lake can make all of the lake's fish unsafe to eat;

- 114 pounds of lead, four pounds of cadmium, other toxic heavy metals and trace amounts of uranium.

When you think of it that way, flicking the switch doesn't seem quite so innocent anymore.

In the following sections, you will find information about how to reduce energy use in your home, and your environmental impact on the road.

Home Energy Use

In Jewish tradition, the home is referred to as a *mikdash m'at* — small sanctuary. We should behave in our home the way we would in any holy place. Being wasteful in our home might be one of the failures we recite on Yom Kippur as we list in the *al het* litany the ways in which we did not do our best. Saving energy should be looked upon as doing our share to preserve the resources we were given as gifts by God.

There are so many ways we can save energy at home. Here are some for you to try. You'll save money and also protect the environment.

It bothers me to no end when, on so many evenings, I pass empty office buildings in big cities with all the lights glowing — probably for the cleaning staff who will spend a few minutes in each room. Yet so many people just leave lights on in the home or office all day, not giving any consideration to the cost or negative effect on the environment.



It's so easy just to flick the switch as you exit a room. Children need to be trained to turn off lights when leaving a room; and parents need to model this behavior.

Turn off and unplug appliances, like computers, televisions and other electronic devices when not in use — especially overnight. Even if your appliances are turned off, they are still drawing energy out of the wall, and are a part of the “phantom load” which accounts for more than 27 million tons of annual carbon-dioxide emissions in the United States alone. Phantom loads can add up to 15 percent of your monthly energy bill. Lawrence Berkeley National Laboratory estimates that Americans spend \$3 billion a year on electricity for appliances we are not using.

When you buy a new appliance, make sure that it has the Energy Star label. This certification insures that the products you purchase are as energy efficient as modern technology permits.

In selecting a new computer, keep in mind that desktops use about twice as much power as laptops, according to the University of Pennsylvania.

A simple, yet important, way to save energy is to replace your light bulbs. Compact fluorescent light bulbs are four times more efficient than standard incandescent ones. They also last longer, both saving money in the long run and helping to reduce your energy use.

Keep your freezer full. Freezers work more efficiently with frozen food in them helping to keep everything cold.

Water-efficient appliances — often referred to as low-flow fixtures — include faucets, showers and toilets, and can save water. The processing

and treatment of water takes a tremendous amount of energy, so when you save water, you save energy too.

Doing only full loads of laundry, with cold water, also helps.

You can also reduce your energy use in heating and cooling:

- In the winter, turn down your thermostat. Turning it down two degrees can save up to eight percent of a monthly energy bill. Use ceiling fans to circulate cool air in summer and keep warm air closer to the floor.

- In the summer, on cool days open the windows and let in cool air, and when it is hot, close the windows and drapes or blinds on the sunny side of the house to keep the cool air in. Turn up your thermostat.

- When away from home, adjust thermostats to 50 degrees during cold months and to 85 degrees in hot months.

Conduct an Energy Audit

“Woe for the creatures who see but do not know what they see, who stand but do not know upon what they stand.” — Babylonian Talmud: Hagigah 12b

A home energy audit helps you assess how much energy your home consumes, and identify opportunities to make your home more energy efficient. Beyond simple activities like turning off the lights, there are usually good opportunities to make your home more efficient, which are cost-effective as well. Actions such as increasing insulation in

your home, sealing air leaks or getting new windows can often reduce your home energy use.

The audit can identify problems that may, when corrected, save you significant money over time. Experts suggest that doing an energy audit and implementing the suggested changes can save you as much as 30 percent of your monthly utility bill. That can add up to hundreds of dollars. It's nice to save money while you're doing good for the world.

During the High Holidays, it is traditional to do a *heshbon hanefesh* — a

self-evaluation. You may consider doing another kind of evaluation at this time as well — an evaluation of the energy you expend in your home. If the High Holidays are too busy a time, consider

doing it in the month that precedes the holidays, Elul, or in the month after, Heshvan. Of course, any time is good to conduct an energy audit, but it may be easy to remember at a time that Judaism designates for personal introspection.

An energy audit can be done by yourself or with a professional. In some states, energy audits are available for free from your energy supplier; in others, professionals can cost a few hundred dollars, but their recommendations may save you far more money over time.

Some localities offer free energy audits. Check with your utility company and your state and county departments of energy to see what is available in your area.

AMERICANS SPEND \$3 BILLION A YEAR ON ELECTRICITY FOR APPLIANCES WE ARE NOT USING.



A professional will want to see your past utility bills, and will go through every room in the house to check heating and cooling equipment, major appliances, windows, doors, attic and the basement. The professional will use equipment to which you may not have access otherwise, such as infrared cameras and blower-door fans. The professional will give you a full report, with an estimate of the upgrade costs and potential energy savings.

Green Energy

"God made the two great lights, the greater light to dominate the day and the lesser light to dominate the night." — Genesis 1:16

It is customary in Jewish tradition to make a *bracha* — a blessing — before eating, or before utilizing one of the gifts we are given by God. We make a blessing before putting on a *tallit* — a prayer shawl — or before washing our hands. Perhaps we should have a blessing for the fuel we consume that gives energy to our homes, just as we recite a blessing for the fuel which we eat.

The energy that fuels our technological world comes mostly from coal, natural gas and oil. Use of these fuels increases carbon dioxide in our atmosphere. Fossil fuels also emit a range of other pollutants that dirty our air and water, and that are making people sick.

Most homes in North America are heated and lit by the U.S. power grid, which is connected to our homes. However, the power grid also can supply energy to our homes with resources other than fossil fuels. These include nonpolluting energy sources such as wind and solar energy. In many situations, these green energy solutions are achieved by a simple click of the mouse.

In the United States, more than

600 power utilities in 36 states offer green-energy options to residential clients, according to the National Renewable Energy Laboratory. In some cases, you need only go to the utility company's website to choose a clean-energy option. Clean energy may cost a bit more than fossil fuels but not much more, and as time goes on the rates will become more and more competitive. Sometimes my friends or neighbors balk at a slightly increased price for renewable energy, but think nothing of spending thousands of dollars for new bells and whistles

BY BEING MORE CONSCIOUS OF OUR USE OF FOSSIL FUELS IN OUR HOMES, WE CAN BECOME PART OF THE SOLUTION TO ENVIRONMENTAL DEGRADATION INSTEAD OF BEING PART OF THE PROBLEM.

for their car or stereo. Given all the money we spend on luxuries that we don't need, it's worth considering whether a slightly increased cost really is beyond our means, or if we just need to reassess our priorities. Perhaps it is time to start recognizing the hidden costs for which we are billing our children because of our cheap

non-renewable energy.

More solar energy falls on the Earth in one hour than the entire world population uses in one year. God has blessed us with a sun that provides so much energy — how grateful we need to be.

The added cost for switching to renewable energy is minimal. In New York City, for example, an apartment dweller can switch for as little as \$4 more per month. And folks who live in sunny climates can buy their own solar-power systems at their local Home Depot. There is a free in-home consultation, and Home Depot does all the paperwork, including permits, tax credits and coordination with the power utility.

Americans are less than five percent of the world's population, yet represent about 23 percent of the world's petroleum use and about 19 percent of the world's coal use, according to the Department of Energy. Since we are using more than our share, we ought to think carefully about ways that will enable us to reduce our fossil-fuel use in heating, cooling and lighting our homes.

By being more conscious of our use of fossil fuels in our homes, we can become part of the solution to environmental degradation instead of being part of the problem — and at the same time, we can fulfill our Jewish responsibility to protect resources for future generations.

Green Your Transportation

In the period before the Industrial Revolution, Jews lived in tight-knit communities where one could walk almost everywhere. Walking to the grocery store, school, synagogue and community center was the norm. We may not be able to go back to those days, but even if we can't walk everywhere, there are many things we can do to



lessen our use of oil.

Reducing oil consumption has important environmental benefits and also reduces our dependence on foreign oil. Scientists continue to develop low-carbon alternative fuels. We need to continue to work on finding ways to increase the efficiency of cars, trains, buses and airplanes. But the best way is to reduce the amount of motorized travel in which we engage.

The Department of Labor reported that in 2009 Americans spent 17.6 percent of their annual income on transportation, the highest percentage of our income aside from housing. Long commutes leaves less time to spend with the family, to participate in fulfilling community activities, to exercise, read and engage in other leisure activities.

Physical exercise, such as walking instead of driving, is strongly promoted in Jewish tradition. The rabbi pointed out that the biblical verse "and you shall be very watchful of yourselves," found twice in Deuteronomy, in 4:9 and 4:15, refers to taking care of your physical health as well as your spiritual well being. It is a great mitzvah to care for both your soul and your body.

How many of us hop into the car for a short ride to the supermarket, when we can just as easily take a healthy walk to purchase our groceries? Some prefer to ride bikes to the store, to a meeting or just to get some good exercise. Some can choose to live in a small community close to shops, synagogues and schools.

There are times when walking and biking are simply not a good option for us. But there is still much we can do to reduce the impact of

our car usage.

Buy a car with good gasoline mileage, and consider a hybrid car, which can get up to 50 miles per gallon, as opposed to SUVs and other "gas guzzlers," which at present get from 10 to 20 miles per gallon. Some synagogue parking lots are now posting signs to reserve spots near the door for hybrid cars to create role models of those who drive such fuel-efficient vehicles.

The American Jewish Committee, which subsidizes staff members who purchase hybrid automobiles, also launched an initiative to reserve parking places in churches and synagogues for fuel-efficient cars. This initiative, says Allyson Gall, former executive director of the American Jewish Committee's Metro New Jersey Area, says that the program "educates people about the issue of our dependence on foreign oil, which affects national security, Israel, human rights and the environment. Someone might come to a church event or a synagogue event and see that not just the handicapped get a good parking spot."

While a hybrid car may cost more in the beginning, it may pay for itself after a few years. Some states give financial incentives for those who purchase hybrids.

If you can't buy a hybrid, consider buying a smaller car and driving it

less. Many families can switch from two cars to one. Others can arrange carpools to work, school or shopping.

If you're going to be in a particular neighborhood, see if you can do all your errands there at once, and offer to pick something up for friends if you'll be in a store where they may need something. In addition, call the store in advance to see if they have what you need, so that you won't have to go from store to store looking for something.

No matter what kind of car you drive, by taking better care of it you

HOW MANY OF US HOP INTO THE CAR FOR A SHORT RIDE TO THE SUPERMARKET, WHEN WE CAN JUST AS EASILY TAKE A HEALTHY WALK TO PURCHASE OUR GROCERIES?

will save money, and burn less gas. Good maintenance includes regular tune-ups and properly inflated tires. Emptying the trunk of heavy items that cause the car to burn more gas also can help reduce gas usage.

It also saves gas to drive at a steady speed, and avoid sudden braking or

accelerating. Drive under 65 miles an hour if you can.

In more and more cities, people are signing up for time-share car rentals, in which each person reserves a car for a fixed number of hours, as needed. It's like a large number of people buying one car and using it when they need it, instead of each person owning a car. In the United States, car-sharing membership rose by almost 120 percent between 2007 and 2009, thus achieving two



major social benefits by reducing the number of vehicles on our nation's roads and the amount of emissions being produced.

Research by Frost & Sullivan — professional consultants whose goal is to accelerate growth and develop best-practice levels in growth, innovation and leadership — demonstrated that each shared vehicle replaced 15 personally owned vehicles in 2009, and car-sharing members drove 31 percent less than when they owned personal vehicles. These two factors translate into an estimated 482,170 fewer tons of carbon-dioxide emissions.

Take public transportation. Many cities have excellent public-transportation systems that enable commuters to get around easily without battling traffic, and some employers even provide financial incentives to their employees to use them.

For intercity travel, consider a bus or train instead of driving or flying. Try to find vacation sites that are closer rather than farther. Better yet, save time, money and gas by having a meeting by telephone instead of in person.

Begin to think green when it comes to transportation and you will help the planet become a healthier and safer place to live.

Use Carbon Offsets

Our torah teaches us in many ways that we must give as well as receive. The agricultural laws of *peah* — leaving the corner of the field for the poor — and similar biblical edicts remind us of our responsibility to share our blessings with others, and to give back to society in return for all the gifts we receive. In the same way, as we use energy products such as gas and oil, we must think about how to give some-

thing back to the planet in return.

These days, it's not easy to live a lifestyle based only on renewable energy. To get to work, to travel to visit family, for the food we buy in the supermarket (trucked thousands of miles to us), even to heat our homes, most of us will need to use some non-renewable energy resources. We can, however, offset the impact of the carbon-dioxide pollution emitted when we take these actions.

By purchasing a carbon offset, we are paying to reduce some of the impact of carbon emissions that we cannot easily avoid. These offsets are used for projects that support renewable energy, save or plant trees, or otherwise reduce carbon emissions elsewhere.

In Israel, the Good Energy Initiative works to reduce Israel's greenhouse-gas emissions, and to support Israeli energy independence by means of energy efficiency and alternative technologies. The Good Energy Initiative invests its revenues in non-profit social-environmental activities. Its carbon-mitigation proj-

Recommended actions

- Turn off the lights.
- Buy energy efficient appliances.
- Unplug electronics when you travel.
- Adjust your thermostat.
- Conduct an energy audit.
- Buy green power.
- Use a bike or your two feet for short trips.
- Use public transportation.
- Consider a car-share.
- If you need a car, buy one with good fuel economy and keep it well maintained.
- Offset your carbon emissions.

ects include solar water heaters for public housing, solar air conditioning for schools, and solar-powered medical equipment for children in need. Many Jewish organizations are now offsetting their carbon emissions with the Good Energy Initiative. ☀️

Follow-up online

Energy Star:
energystar.com

Alliance to Save Energy:
ase.org

Computer energy usage:
tinyurl.com/pcenergyusage

Department of Energy's Consumer's Guide to Energy Efficiency and Renewable Energy:
tinyurl.com/doeconsumerenergy

Lawrence Berkeley Laboratory's Home Energy Saver:
hes.lbl.gov/consumer

Department of Energy's Green Power Network:
tinyurl.com/greenpowernetwork

Hybrid Center of the Union of Concerned Scientists:
tinyurl.com/hybridcenter

EPA's Green Vehicle Guide:
epa.gov/greenvehicles

Carpool World:
carpoolworld.com

CarSharing Association:
carsharing.org

National Alliance of Public Transportation Advocates:
publictransportation.org

Carbon Fund's carbon-offset calculator:
carbonfund.org/individuals

Good Energy Initiative carbon-offset calculator:
greenzionism.org/take-action/goodenergy

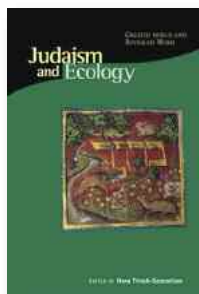


SUGGESTED READING

BY THE GREEN ZIONIST ALLIANCE

JEWISH ENVIRONMENTALISM

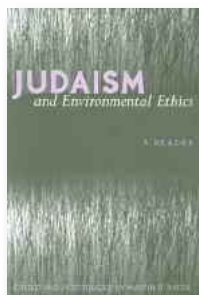
Judaism and Ecology: Created World and Revealed Word



Edited by Hava Tirosch-Samuelsan

The director of Jewish Studies at Arizona State University presents the ways nature and ecology are viewed in Jewish thought and sacred texts.

Judaism and Environmental Ethics



Edited by Martin D. Yaffe

This compilation offers an analysis of the ways in which Jewish tradition teaches environmental responsibility via a series of interdisciplinary essays.

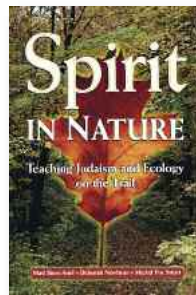
Simple Actions for Jews to Help Green the Planet: Jews, Judaism and the Environment



By Dov Peretz Elkins

The best-selling author presents Judaism's ancient traditions as a comprehensive how-to guide to modern environmentalism.

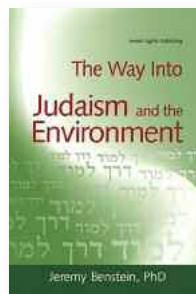
Spirit in Nature: Teaching Judaism and Ecology on the Trail



By Matt Biers-Ariel, Deborah Newbrun and Michal Fox Smart

A must-read for outdoor Jewish educators, this book includes activities for hikers of all ages to reconnect with key Jewish values and the wonder of nature.

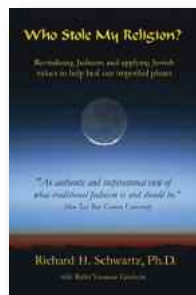
The Way into Judaism and the Environment



By Jeremy Benstein

The deputy director of Israel's Heschel Sustainability Center offers both an environmental interpretation of Judaism and a Jewish approach to environmentalism.

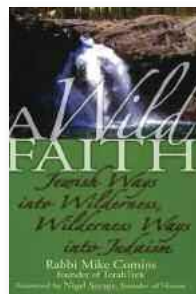
Who Stole My Religion? Revitalizing Judaism & Applying Jewish Values to Help Heal our Imperiled Planet



By Richard Schwartz with Yonassan Gershom

Schwartz and Gershom examines the ways Judaism has been overtaken by partisan politics, and offer a guide to return the faith to one ruled by peace and compassion.

A Wild Faith: Jewish Ways into Wilderness, Wilderness Ways into Judaism



By Mike Comins

The TorahTrek founder presents a how-to guide to the theory and practice of Jewish wilderness spirituality.

TORAH ENVIRONMENTALISM

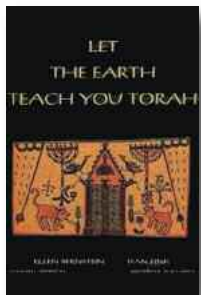
The Ecological Message of the Torah



By Aloys Hüttermann

See the world through Hüttermann's lens: The natural laws in the Torah were very modern, practical ways of working with nature to enable the world to be preserved for future generations.

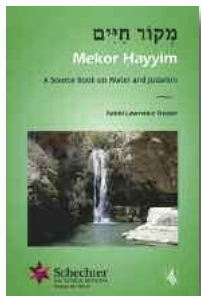
Let the Earth Teach You Torah



By Ellen Bernstein and Dan Fink

Environmental stewardship is Tikkun Olam: The disconnect between humans and the Earth can be repaired through the lessons of the Torah.

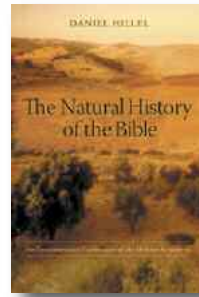
Mekor Hayyim: A Source Book on Water and Judaism



By Lawrence Troster

Focusing on water and its relationship to Judaism, this book is useful for Jewish educators and others seeking to learn more about the Jewish connection to the world's most vital natural resource.

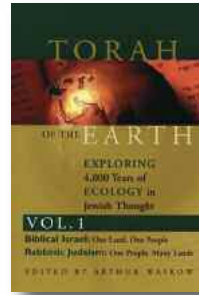
The Natural History of the Bible: An Environmental Exploration of the Hebrew Scriptures



By Daniel Hillel

Hillel examines the interplay between the ancient nomadic Israelites and the region's ecology that shaped their views of Creation, environmental ethics and God.

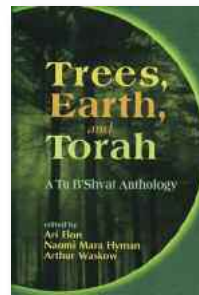
Torah of the Earth: Exploring 4,000 Years of Ecology in Jewish Thought



Edited by Arthur Waskow

The Shalom Center founder presents a diverse anthology offering a key to understanding the intersection of ecology and Judaism.

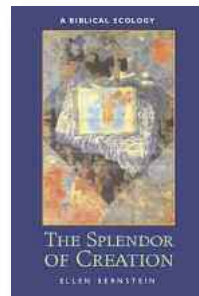
Trees, Earth and Torah: A Tu B'Shvat Anthology



Edited by Ari Elon, Naomi Mara Hyman and Arthur Waskow

The ultimate Tu B'Shvat primer: An anthology drawn from a wide variety of sources pointing to the importance of Tu B'Shvat, the Jewish New Year of Trees.

Splendor of Creation: A Biblical Ecology



By Ellen Bernstein

The founder of Shomrei Adamah and mother of modern Jewish environmentalism brings to light the interconnectedness between the Torah and the environmental movement.

JEWISH FOOD

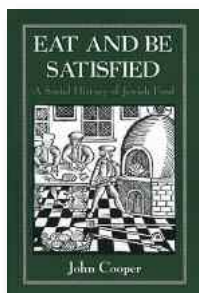
The Book of Jewish Food: An Odyssey from Samarkand to New York



By *Claudia Roden*

The story of the Jewish people told through Jewish cooking, including recipes from Jewish communities around the world.

Eat and Be Satisfied: A Social History of Jewish Food



By *John Cooper*

Possibly the most comprehensive and critical history of Jewish food from biblical times until the present.

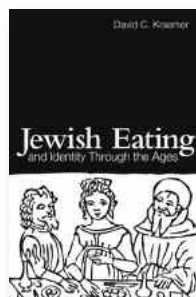
Food and Judaism



Edited by *Leonard Greenspoon, Ronald Simkins and Gerald Shapiro*

This compilation offers a wide range of perspectives on the interpretation of Jewish food practices and meanings, including the religious meaning behind a vegetarian diet.

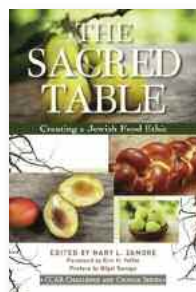
Jewish Eating Through the Ages



By *David Kraemer*

From Torah times to modern times, Kraemer follows the history of eating and its connection to Judaism.

The Sacred Table: Creating a Jewish Food Ethic



Edited by *Mary Zamore*

Kosher laws are discussed, explored and challenged in this treatise on the intersection between Judaism and food.

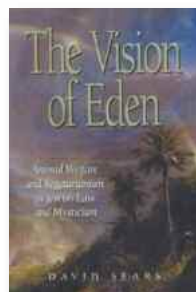
Vegetarian Judaism: A Guide for Everyone



By *Roberta Kalechofsky*

Vegetarianism, not omnivorism, best fulfills the true spirit of kosher laws, Kalechofsky says in this volume that also discusses environmental concerns behind diet choices.

The Vision of Eden: Animal Welfare and Vegetarianism in Jewish Law and Mysticism

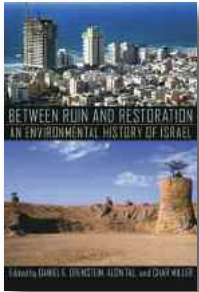


By *David Sears*

The director of the Breslov Center for Spirituality and Inner Growth explores Jewish teachings on compassion for animals in addressing the moral problems of eating meat.

ISRAELI ENVIRONMENTALISM

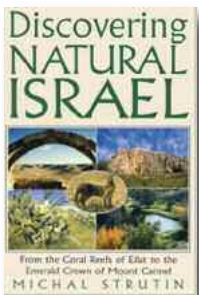
Between Ruin and Restoration: Chapters in Israeli Environmental History



Edited by Daniel Orenstein, Char Miller and Alon Tal

A new and comprehensive exploration of Israel's environmental history.

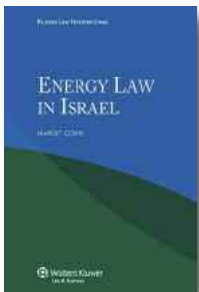
Discovering Natural Israel: From the Coral Reefs of Eilat to the Emerald Crown of Mount Carmel



By Michal Strutin

An award-winning nature writer takes a journey through the incredible diversity of Israel's environment. Perfect for planning hikes across the country.

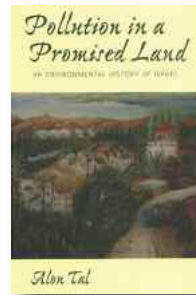
Energy Law in Israel



By Margit Cohn

A new detailed guide to legislation and legal practice relating to energy in Israel.

Pollution in a Promised Land: An Environmental History of Israel



By Alon Tal

Israel's leading environmentalist pens the defining book on Israel's environment, embarking on a history of environmentalism in Israel through interviews with hundreds of activists and experts.

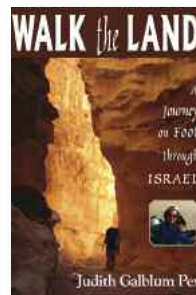
Sakhnin: Portrait of an Environmental Peace Project in Israel



By Jan Martin Bang

Profiles a group of Arabs and Jews who come together to teach environmental awareness through a pioneering wastewater-treatment program that irrigates farmland.

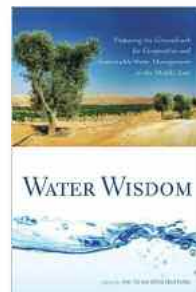
Walk the Land: A Journey on Foot through Israel



By Judith Galblum Pex

Pex's account of hiking the 600-mile Israel National Trail, from the Egyptian to the Lebanese borders.

Water Wisdom: Preparing the Groundwork for Cooperative and Sustainable Water Management in the Middle East

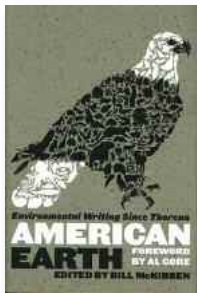


Edited by Alon Tal and Alfred Abed Rabbo

Thirty leading Israeli and Palestinian environmental activists join their voices to develop a future vision for sustainable and shared management of water resources.

SECULAR ENVIRONMENTALISM

American Earth: Environmental Writing Since Thoreau



Edited by Bill McKibben

The world's most-influential green journalist presents some of the world's best environmental writing, spanning the last two centuries.

The Big Thirst: The Secret Life and Turbulent Future of Water



By Charles Fishman

Think you know about water? Think again. We may take it for granted, but water runs our world in a number of awe-inspiring ways.

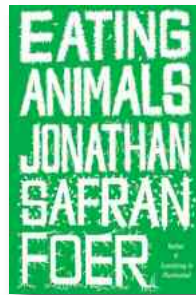
Cradle to Cradle: Remaking the Way We Make Things



By William McDonough and Michael Braungart

Human industry doesn't have to damage the world — products could be designed to be useful after their initial use has been achieved.

Eating Animals



By Jonathan Safran Foer

The best-selling author of "Everything is Illuminated" explores the morality and ethical questions behind eating meat.

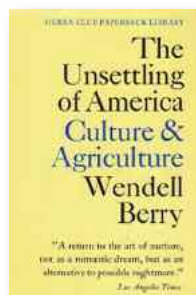
Silent Spring



By Rachel Carson

The renowned scientist's seminal book, first serialized in the *New Yorker* in 1962, led to the ban on DDT and helped to launch the modern environmental movement.

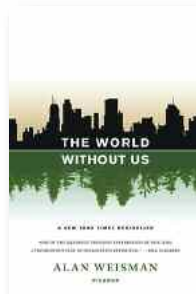
The Unsettling of America: Culture & Agriculture



By Wendell Berry

America's preeminent environmentalist poet and scribe bemoans the current agribusiness that has disconnected farming from its roots, and ourselves from the Earth.

The World Without Us

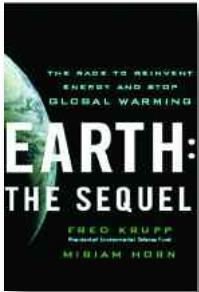


By Alan Weisman

Every wonder what life would be like without people? Weisman offers a vision of what the Earth would be like without a human presence.

ENERGY

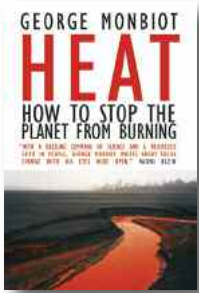
Earth: The Sequel: The Race to Reinvent Energy and Stop Global Warming



By Fred Krupp and Miriam Horn

It's possible to harness the power of capitalism to create bold innovations to reduce energy consumption.

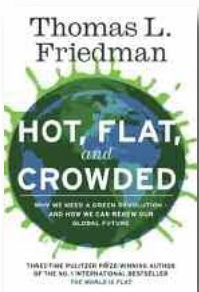
Heat: How to Stop the Planet from Burning



By George Monbiot

The British journalist and environmental activist offers a wide-reaching plan to combat climate change, arguing that only a 90-percent reduction in greenhouse-gas emissions from developed nations by 2030 will stem the tide.

Hot, Flat, and Crowded: Why We Need a Green Revolution and How it Can Renew America



By Thomas Friedman

The Pulitzer Prize-winning columnist outlines Geo-Greenism, an ambitious national strategy to make America healthier, richer, more innovative, more productive and more secure.

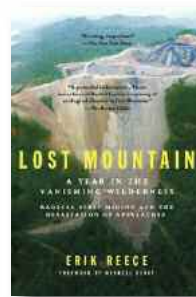
An Inconvenient Truth: The Planetary Emergency of Global Warming and What We Can Do About It



By Al Gore

The Nobel Peace Prize-winner's call to action correlates research, photographs and anecdotes to illustrate the fast pace and wide scope of climate change.

Lost Mountain: A Year in the Vanishing Wilderness — Radical Strip Mining and the Devastation of Appalachia



By Erik Reece

The Kentucky journalist explores how radical strip mining is destroying one of America's most precious natural resources and the communities that depend on it.

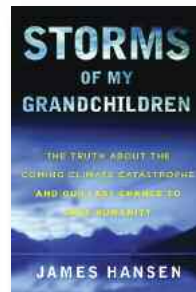
The Post Carbon Reader: Managing the 21st Century's Sustainability Crises



Edited by Richard Heinberg and Daniel Lerch

A compilation of work from some of the world's most-provocative thinkers on renewable energy, urban agriculture, social justice and systems resilience — how to work toward a sustainable world.

Storms of My Grandchildren: The Truth About the Coming Climate Catastrophe & Our Last Chance to Save Humanity



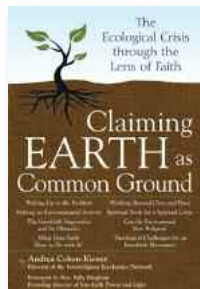
By James Hansen

The NASA scientist and leading climatologist presents an urgent manifesto on climate change.



INTERFAITH ENVIRONMENTALISM

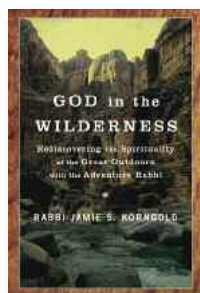
Claiming Earth as Common Ground: The Ecological Crisis Through the Lens of Faith



By *Andrea Cohen-Kiener*

The director of the Interreligious Eco-Justice Network gathers insights from interfaith thinkers on shifting to a sustainable way of living.

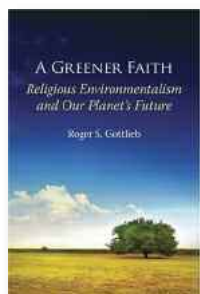
God in the Wilderness: Rediscovering the Spirituality of the Great Outdoors with the Adventure Rabbi



By *Jamie Korngold*

The Adventure Rabbi writes on lessons from the Torah that people of all faiths can use to awaken their spirituality and find meaning and purpose.

A Greener Faith: Religious Environmentalism and Our Planet's Future



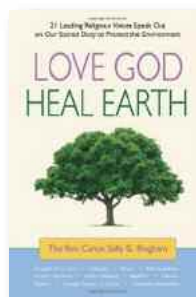
By *Roger Gottlieb*

The widely published author chronicles the rise of religious environmentalism across many faith traditions.

Follow-up online

Books on Jewish environmentalism and food, and books on the environment of Israel and the Middle East: grenzionism.org/resources/books

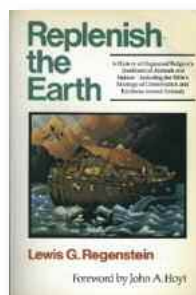
Love God, Heal Earth: 21 Leading Religious Voices Speak Out on Our Sacred Duty to Protect the Environment



By *Sally Bingham*

Diverse religious voices converge to answer the question: Can we save the Earth?

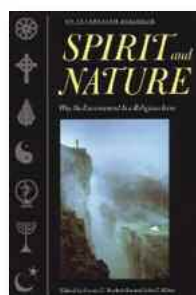
Replenish the Earth: A History of Organized Religions' Treatment of Animals and Nature



By *Lewis Regenstein*

An overview of different religions' attitudes toward the treatment of animals.

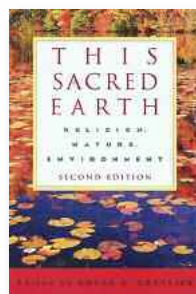
Spirit and Nature: Why the Environment is a Religious Issue — An Interfaith Dialogue



Edited by *Steven Rockefeller and John Elder*

Leaders from faith traditions around the world speak about what spiritual resources we can utilize in our age of unprecedented danger to the planet.

This Sacred Earth: Religion, Nature, Environment



Edited by *Roger Gottlieb*

Gottlieb has assembled a powerful compilation of texts from a variety of religious and spiritual backgrounds that focus on the role of religion in an environmental crisis. ☀️

CONTRIBUTORS

Matthew Anderson is the executive director of Audubon Minnesota and the former executive director of the National Religious Partnership for the Environment. Anderson previously directed the Creation Care Fund, which provides financial and technical support to Christian environmental grassroots initiatives, and Faith in the City, a Twin Cities faith-based coalition. He also has served as the director of environmental and rural advocacy and education for the Evangelical Lutheran Church in America, and he has worked on climate and energy campaigns on for the National Council of Churches.

Kenneth Bandler is director of media relations for the American Jewish Committee. A *Jerusalem Post* columnist and regular contributor to FOXNews.com, Bandler previously worked as managing editor of the Jewish Telegraphic Agency and as director of public information at the National Jewish Community Relations Advisory Council, which became the Jewish Council for Public Affairs.

Rabbi Nina Beth Cardin is the founder of the Baltimore Jewish Environmental Network, which works to green synagogues and educate the wider Jewish community on environmental issues. Cardin was editor and chair of the editorial committee of *Sh'ma: A Journal of Jewish Responsibility*, and formerly served as director of Jewish life at the Jewish Community Center of Greater Baltimore. She is the author of several books, including "Rediscovering the Jewish Holidays: Tradition in a Modern Voice."

Rabbi Howard Cohen is the founder and director of Burning Bush Adventures — a Jewish outdoor-adventure program — and a former firefighter, chaplain and pulpit rabbi. A graduate of the Reconstructionist Rabbinical

College, Cohen is a former member of the board of directors of the Green Zionist Alliance.

Rabbi Fred Scherlinder Dobb serves as the rabbi of Adat Shalom Reconstructionist Congregation in Bethesda, Md., since 1997, during which time the synagogue built its U.S. Environmental Protection Agency Energy Star Award-winning building, installed a 43-kilowatt solar array and planted an organic garden. In addition to serving on the governance committee of the Coalition on the Environment and Jewish Life, Dobb serves as the chairperson of Greater Washington Interfaith Power and Light and as co-chair of Religious Witness for the Earth. A co-founder of the Green Zionist Alliance and a past president of the Washington Board of Rabbis, Dobb received his doctorate from Wesley Theological Seminary.

David Ezer, a Certified Meeting Professional, is the director of programs at Jewish Funders Network. Previously, he worked as the conference manager at Chamber Music America and as a talent agent for classical musicians. Ezer also produced two seasons of the Bard Music Festival at Bard College in Annandale, N.Y. He earned his master's of business administration at Baruch College.

Dr. Mirele Goldsmith is the director of the Jewish Greening Fellowship, an initiative of the Isabella Freedman Jewish Retreat Center, and principal of Green Strides Consulting. Her clients have included UJA-Federation of New York, BBYO International, the Foundation for Jewish Camp and the Supportive Housing Network of New York's Green Housing Initiative. She is a Strategic Sustainability Consulting-certified Green Auditor, and she serves on the boards of Hazon and the American Friends of the Heschel Sustainability Center. Goldsmith is also the lead organizer of Jews

Against Hydrofracking. She completed her doctorate in environmental psychology at the City University of New York.

Al Gore served as a U.S. vice president, senator and congressman for 24 years. Winner of the Nobel Peace Prize for his work advocating for action on climate change, Gore founded and serves as the chairman of the Climate Reality Project. He worked as a reporter at *The Tennessean* and he is the author of numerous books, including the bestsellers "Earth in the Balance," "An Inconvenient Truth," "The Assault on Reason," and "Our Choice: A Plan to Solve the Climate Crisis." A co-founder and chairman of Generation Investment Management, a partnership that is focused on a new approach to sustainable investing, Gore also serves on the board of directors of Apple and as a senior adviser to Google.

Green Zionist Alliance: The Grassroots Campaign for a Sustainable Israel, a New York-based 501(c)3 nonprofit, works to educate about Israel's environment, support Israel's environmental movement, write and implement Israeli environmental policy and advocate for smart Israeli environmental policy. Founded in 2001 by Dr. Alon Tal, Dr. Eilon Schwartz and Rabbi Michael Cohen, along with a team of other volunteers including David Krantz and Rabbi Fred Scherlinder Dobb, the Green Zionist Alliance is the first and only environmental organization to participate in the World Zionist Congress, the governing body of the World Zionist Organization and its constituent agencies, including the Jewish Agency for Israel and the Jewish National Fund in Israel.

Rabbi Steve Gutow is the president and CEO of the Jewish Council for Public Affairs and the co-chair of the Coalition on the Environment and

Jewish Life. He has advocated that the government end the genocide in Darfur, reform immigration policy, support Israel, protect individual rights, maintain and enhance anti-poverty programs, and create a sustainable environment. Named by *Newsweek* as one of the country's 20 most-influential rabbis, Gutow founded the National Jewish Democratic Council and has served in leadership positions at the American Jewish Congress and Texas Civil Liberties Union. He served as rabbi of the Reconstructionist Minyan of St. Louis and he taught law at St. Louis University.

Rabbi Jill Jacobs is the executive director of T'ruah (formerly Rabbis for Human Rights-North America). She has been named to *The Forward's* list of 50 influential American Jews and to *Newsweek's* list of the 50 most influential rabbis in America. Jacobs is the author of two books: "Where Justice Dwells: A Hands-On Guide to Doing Social Justice in Your Jewish Community," and "There Shall Be No Needy: Pursuing Social Justice through Jewish Law and Tradition."

Rachel Jacoby Rosenfield is associate director of community engagement at American Jewish World Service. She is also the co-founder and former director of the Jewish Greening Fellowship, an initiative of the Isabella Freedman Jewish Retreat Center. Jacoby Rosenfield formerly served as director for program development and Jewish life at the Riverdale YM-YWHA, where she started an agency and community-wide greening initiative. She is a graduate of the Muehlstein Fellowship for Jewish Professional Leadership, a mentor for GreenFaith's Certification Program for Houses of Worship, chair of the GreenFaith Initiative at Adath Israel of Riverdale, and a governance-committee member of the Coalition on the Environment and Jewish Life.

Benjamin Kahane is a utility-scale project engineer at SunEdison,

where he designs photovoltaic solar-energy systems. He has provided engineering support for the development of more than 100 megawatts of ground-mounted photovoltaic projects across North America. Kahane previously worked as a project engineer developing photovoltaic installations at Conergy. He earned his master's degree in sustainable-energy engineering at the University of Maryland, College Park.

Rabbi Jamie Korngold is the founder, executive director, senior rabbi and lead guide of Adventure Rabbi, a Colorado-based Jewish-adventure program. She is the author of numerous books, including *The God Upgrade: Finding Your 21st-Century Spirituality in Judaism's 5,000-Year-Old Tradition* and *God in the Wilderness*. Korngold has been featured in *USA Today*, *The New York Times* and the *Wall Street Journal* and on *Good Morning America*, *CBS*, *CNN* and *NPR*. A graduate of Cornell University's natural-resources program, she received her ordination from Hebrew Union College.

Einat Kramer is the founder and executive director of Teva Ivri. Previously she served as an environmental fellow at the Heschel Center for Environmental Learning and Leadership. She is a graduate of the Tehuda professional Jewish leadership program and she completed her master's degree in Bible and Jewish thought at the Schechter Institute of Jewish Studies. A founding member of *Jewology.com*, Einat lectures widely on Judaism and environmental and social issues.

David Krantz is the president and chairperson of the Green Zionist Alliance, and a leadership fellow at the Coalition on the Environment and Jewish Life. A founding member of *Jewology.com*, Krantz is also a journalist whose work has been published around the world by media outlets including *The Associated*

Press, *espn.com* and the *Jerusalem Post*. He serves on the cabinet of the board of directors of the American Zionist Movement, and he earned his master's degrees at the University of California, Berkeley, Graduate School of Journalism and at New York University's Robert F. Wagner Graduate School of Public Service, where he studied environmental policy.

Rabbi Natan Levy is the minister of Shenley United Jewish Community and the interfaith and social-action consultant to the Board of Deputies of British Jews. He served as the consultant for social action at the London School of Jewish Studies, and was involved in the shaping of the school's emerging Centre for Faith, Citizenship and Community. Levy also acted as the liaison on environmental issues to the chief rabbi of the United Hebrew Congregations of the Commonwealth. He has been involved with a number of environmental-education projects in Israel, working with organizations such as the Society for the Protection of Nature in Israel. Levy is one of the co-founders of Radio SalaamShalom, the United Kingdom's only Jewish-Muslim radio station.

Naomi Lipstein recently completed her master's degree in environmental studies at the Albert Katz International School for Desert Studies at Ben-Gurion University of the Negev, where she wrote her thesis on energy security and renewable energy policy in Israel. Previously she worked as director of marketing and communications at the Jewish Federation of Central New Jersey and as a producer, editor and writer for television outlets, including *ABC News* and *Fox News Channel*.

Jakir Manela is the founder of Kayam Farm and the executive director of Pearlstone Center, part of The Associated: Jewish Community Federation of Baltimore. Welcoming more than 4,000 visitors annually, Kayam is the most active Jewish community farm in the country.

Manela also serves as president of Future Harvest: A Chesapeake Alliance for Sustainable Agriculture, and as an advisory-committee member of the Center for a Livable Future at Johns Hopkins University. He previously worked at the Coalition on the Environment and Jewish Life and at the Teva Learning Alliance.

Evonne Marzouk is the founder and executive director of Canfei Nesharim. She has spoken worldwide on the Torah-environment connection, and also leads Maayan Olam, a Torah-environment committee serving three synagogues in Silver Spring, Md. Marzouk also works for the U.S. Environmental Protection Agency, where she has served on its policy-coordination team for the U.N.'s World Summit on Sustainable Development. She previously worked as a legislative assistant for the Coalition on the Environment and Jewish Life and she also has served on the executive board of Shomrei Adamah. A co-founder of Jewcology.com, Marzouk was selected as one of *The Jewish Week's* "36 under 36" young Jewish leaders.

Bill McKibben is the author of numerous books about the environment, beginning with *The End of Nature* in 1989, which is regarded as the first book for a general audience on climate change. He is a founder of the grassroots climate campaign 350.org, which has coordinated 15,000 rallies in 189 countries since 2009. *Time* magazine called him "the planet's best green journalist" and the *Boston Globe* said in 2010 that he was "probably the country's most important environmentalist." Schumann Distinguished Scholar at Middlebury College, McKibben holds honorary degrees from a dozen colleges. In 2011 he was elected a fellow of the American Academy of Arts and Sciences.

Joelle Novey is the director of Maryland & Greater Washington Interfaith Power & Light. She is the

co-author of "Green and Just Celebrations: A Purchasing Guide for Washington's Jewish Families." She prays with four communities in Washington: Tikkun Leil Shabbat, Minyan Segulah, Tifereth Israel and Fabrangen.

Rabbi Dov Peretz Elkins is rabbi emeritus of the Jewish Center of Princeton, N.J., and a former member of the Committee on Jewish Law and Standards of the Rabbinical Assembly and the Council for Jewish Education. A winner of the National Jewish Book Award, he has written widely for the Jewish and general press and is the author of several books, including "Simple Actions for Jews to Help Green the Planet: Jews, Judaism and the Environment."

Rabbi Joshua Ratner is the rabbi of Congregation Kol Ami in Cheshire, Conn., and the managing editor of the shmita-focused Sova Project. In rabbinical school, he served as a public-policy fellow at the Rabbinical Assembly. Previously, Ratner worked as an attorney.

Sybil Sanchez is the director of the Coalition on the Environment and Jewish Life. She previously served as executive director of the Jewish Labor Committee and as director of United Nations affairs at B'nai B'rith International. An advisory-committee member of the Jewish Greening Fellowship, Jewcology.com and Camp Ramah in the Rockies, and a former board member of the Green Zionist Alliance, Sanchez also chairs the Green Hevra, a network of Jewish environmental organizations. She earned her master's degree in international affairs at Columbia University.

Rabbi Julie Schonfeld is the executive vice president of the Rabbinical Assembly. She has advanced numerous landmark projects of the Conservative rabbinate, including a study of women rabbis that was released in 2004, and follow-up programs to further the career advancement of female clergy. In

2008 Schonfeld was named as the Rabbinical Assembly's liaison to the Hekhsher Tzedek ethical-certification initiative. She was named one of the 50 most influential rabbis by *Newsweek* and one of the 50 most-influential American Jews by *The Forward*.

Rabbi Barry Schwartz is the CEO of the Jewish Publication Society. He has served on the grassroots-advisory committee of the Coalition on the Environment and Jewish Life, and he helps lead the environment committee of the Central Conference of American Rabbis. He was a founding member of the Washington chapter of Shomrei Adamah, the first national Jewish environmental organization. Schwartz is also the author of several books, including "Judaism's Great Debates: Timeless Controversies from Abraham to Herzl."

Rabbi David Seidenberg is a theologian, dancer, and activist who teaches eco-Torah and Jewish spiritual songs through his website, Neohasid.org. He was ordained both by Rabbi Zalman Schachter-Shalomi and by the Jewish Theological Seminary, where he wrote his doctorate thesis on ecology and Kabbalah.

Rabbi Shmuel Simenowitz is the executive director of Project Y'aleh V'Yavo, which offers environmental programs for youth on his maple farm in southern Vermont. Simenowitz, who is also a lawyer and a musician, has spoken widely on Judaism and the environment. He lives in the Baltimore area, where he serves as an advisory-board member of ACHARAI: The Shoshana S. Cardin Leadership Development Institute.

Jen Singer is founder and chair of the Green Committee at Washington's Ohev Sholom: The National Synagogue. She works as an environmental consultant and she completed her master's in urban and environmental policy and planning at Tufts University.

Dr. Alon Tal co-founded the Green Zionist Alliance, the Arava Institute for Environmental Studies, the Israel Union for Environmental Defense, EcoPeace / Friends of the Earth Middle East, and Israel's Green Movement party, which he currently chairs. A winner of the Charles Bronfman Prize and the Henry Ford European Conservation Award, Tal also serves as one of the Green Zionist Alliance representatives on the board of directors of the Jewish National Fund in Israel. He served as chairman of Life and Environment and as a consultant to the U.S. Environmental Protection Agency. A faculty member at Ben-Gurion University of the Negev, Tal also has taught at Harvard, Stanford, Tel Aviv University and University of Otago in New Zealand.

Cynthia Thomashow is the education manager for the Association for the Advancement of Sustainability in Higher Education. She previously directed the master's program in environmental education at Antioch University New England Graduate School, and directed the Center for Environmental Education, an online teacher-resource center in environmental and sustainability education. Thomashow also developed and managed the educational program for National Public Radio's "Living on Earth" radio show.

Rabbi Lawrence Troster has been an eco-theologian and environmental activist for more than 25 years. The rabbinic scholar-in-residence at GreenFaith, he previously has worked at Hazon, J Street and the Coalition on the Environment and Jewish Life. Author of the book, "Mekor Hayyim: A Source Book on Water and Judaism," Troster also co-chaired the U.N. Environment Programme's Interfaith Partnership for the Environment. He serves on the board of the Green Zionist Alliance.

Naomi Tsur is the former deputy mayor of Jerusalem, where she

headed the city's environment, urban-planning and historic-conservation committees. In her tenure, she launched Jerusalem's light-rail system, developed a citywide bike-path circuit, limited private-car use in the Old City and initiated a dialogue with Palestinians about how best to handle waste. Tsur previously directed the Jerusalem branch of the Society for the Protection of Nature in Israel and founded the Sustainable Jerusalem Coalition, which successfully campaigned to protect the Jerusalem Hills. She speaks about Israel's environment around the world. Tsur also serves on the advisory board of the Green Zionist Alliance.

Dr. Christopher Vaughan is a scholar, activist and award-winning journalist. As a Pulitzer Prize finalist, foreign correspondent, editor, professor and MoveOn.org organizer, he has written about energy and the environment in the context of political and economic struggle. Vaughan previously served as an associate professor and director of the journalism program at Santa Clara University and as an assistant professor of journalism and mass media at Rutgers University. A former reporter for The Associated Press, Gannett News Service and the *Miami Herald*, he has reported internationally from Asia, Central America and the Caribbean. Vaughan holds a doctorate in history from the University of California, Berkeley.

Rabbi Arthur Waskow is director of The Shalom Center. He is also the author of numerous books, including "Torah of the Earth: Exploring 4,000 Years of Ecology in Jewish Thought." A co-founder of ALEPH: Alliance for Jewish Renewal, Waskow was named by *Newsweek* as one of the country's 50 most-influential rabbis. In 1969, on the first anniversary of the death of Martin Luther King Jr., Waskow convened the first Freedom Seder in Washington.

Gail Wechsler is director of domestic issues and social justice at the Jewish Community Relations Council of St. Louis, and a staffer of the council's St. Louis Jewish Environmental Initiative. She also staffs the interfaith Community Against Poverty Coalition and the Jewish Fund for Human Needs, which provides grants to non-Jewish agencies that help at-risk populations. Wechsler has a bachelor's degree from Cornell University, a law degree from New York University and a master's of library science degree from the University of Missouri-Columbia.

Dr. Daniel Ziskin is the founder and president of Jews of the Earth in Boulder, Colo., and is a transportation specialist at Boulder Climate Action Network. Previously he worked at the National Oceanic and Atmospheric Administration's National Geophysical Data Center, the National Center for Atmospheric Research, and the NASA Goddard Space Flight Center's Distributed Active Archive Center. A former member of the board of directors of the Green Zionist Alliance, Ziskin earned his doctorate in physics at Johns Hopkins University, where he wrote his dissertation on climate change.

Manuela Zoninsein is a Brazilian-American environmental journalist and entrepreneur based in Beijing. She is the founder and CEO of Smart Agriculture Analytics, a business-intelligence resource that evaluates the Chinese market for sustainable agritech. Zoninsein earned a bachelor's degree at Harvard and a master's in modern Chinese studies with a focus on Chinese environmental policy and sustainable agriculture at Oxford University. Fluent in Portuguese and Spanish, she has completed advanced Mandarin studies at Tsinghua University with the support of a Blakemore Freeman Fellowship. Zoninsein has written regularly for *Newsweek* and worked as a food editor at *Time Out Beijing*. ☀️

THE NEXT JUBILEE: A VISION FOR 2050

BY DAVID KRANTZ

"You shall count for yourself seven cycles of sabbatical (shmita) years — seven years, seven times: The years of the seven cycles of sabbatical years shall be for you 49 years. ... You shall sanctify the 50th year and proclaim freedom throughout the land for all its inhabitants. It shall be the yovel (jubilee) year for you. ... It shall be holy to you." — Leviticus 25:8-12

Theodor Herzl said that if you will it, it is no dream. What our Earth looks like in the next yovel year will not happen by accident. Whether our Earth continues to heat up or whether we stem the tide isn't predetermined — it's actually up to us. While our present is what we make of it, our future, as Herzl taught us, will be what we make it to be. By our next yovel, if we choose, we can let climate change become the biggest problem ever faced in human history, or we can deal with it and assign it to the dustbin of history. The choice is ours.

Of course, before we can observe yovel we have to calculate when it will be. Although shmita has been observed in varying degrees, yovel has been largely ignored, in part because there are different opinions for when it occurs. The Torah seems to stipulate that it's the 50th year following seven shmita cycles, but there's still no consensus among rabbis. In post-Temple times the most-widely accepted opinion has been Rabbi Yehuda's: Yovel is both the 50th year of the yovel cycle as well as the first year of the next yovel and shmita cycles (Arachin 12b).

There's also the question of when we start counting cycles. Some say we count from the first yovel after Joshua led us to the Promised Land; others hold we count from when Ezra and Nehemiah led us from Babylonia back to Jerusalem. If we count according to Rabbi Yehuda and begin with the first seven complete shmita cycles after the founding of the modern state of Israel, then the last yovel — after shmitas that began in 1958, 1965, 1972, 1979, 1986, 1993 and 2000 — began in 2001, or the same year that yovel would have been if we counted from the time of Ezra and Nehemiah. Then the next yovel would begin in 2050.

There are many paths that we could take to a sustainable Earth in 2050 — here is one way that we can get there using shmita years as benchmarks. If we will it ...

2014: We take personal responsibility for our deteriorating planet. We cut our energy consumption by 14 percent. We eat less meat and more locally grown food. We take shorter showers. We start our own gardens. We drive less and bike, walk and take public transit more. We plant trees. And we tell our politicians that we want our governments to take action on climate change.

2021: Countries initiate cap-and-trade systems to limit greenhouse gases and incentivize emissions reductions by reducing carbon licenses in subsequent years. Municipal composting becomes as popular as recycling, which in turn becomes as common as trash programs. Meatless Mondays are adopted globally. All U.N. members agree to take action to thwart the worst of climate change, with wealthy countries helping developing nations transition to environmental sustainability. Environmental education becomes part of the curriculum for all schools. And a billion new trees are planted in the past shmita cycle.


2028: Sales of new cars with internal-combustion engines are prohibited; all new cars are electric. With government incentives, algae-based fuel replaces oil-based jet fuel. Large-scale power plants are phased out and small on-site power generation becomes common. Organic food-yielding gardens replace fertilizer-intensive grass yards. Labeling laws require disclosing the amount of carbon emissions released through the production and transportation of products. Governments hold manufacturers responsible for their products' lifecycles. Product prices start reflecting their true costs, including their costs to the environment. In cities, taking public transit becomes quicker and cheaper than driving. Compact-fluorescent bulbs are phased out in favor of LEDs, which can last 30 years and are four times more energy efficient than compact fluorescents. Fish trawling is prohibited. Fifty percent of our wastewater is recycled. And 100 billion new trees are planted in the past shmita cycle.

2035: The world's last coal power plant shuts down. Cities embrace car-free neighborhoods and the most cars are carbon neutral. Urban air quality improves and asthma, cancer and pedestrian-death rates decline. Micro-electric generators convert movement and temperature differences into electricity. Meatless Mondays become Meatless Weekdays. Most food consumed is grown locally. Drip irrigation replaces sprinklers and we stop growing water-intensive crops in arid and semi-arid areas. Old-growth forests are preserved as national and international parks. And a trillion new trees are planted in the past shmita cycle.

2042: The last country bans internal-combustion engines from the road, relegating the remainder of carbon-spewing vehicles to be retrofitted or scrapped. High-speed rail lines are popular means of travel in countries around the world. Food-waste programs provide for the hungry. Most packaging is edible. Recycling, construction-reuse centers and landfill mining combine to nearly eliminate the need to harvest new raw materials. The repeal of religious birth-control prohibitions combines with increased wealth to tamp down global population growth, since higher-income families have fewer children. And 10 trillion new trees are planted in the past shmita cycle.

2049: We've reached the tipping point: global carbon neutrality. All of our energy production comes from renewable sources, such as the sun and the wind of the heavens and the rush of the waters. We recycle 99 percent of our non-agricultural fresh-water usage and 99 percent of our waste is reused, recycled or composted. Fish repopulate the oceans. And 100 trillion new trees are planted in the past shmita cycle.

2050: We have entered into a carbon-negative era. Our afforestation efforts, combined with our transition to renewable-energy production and greater energy-use efficiency, means that we are removing more greenhouse gases from the atmosphere than we are emitting. Being green is normal. It's time to celebrate the jubilee: We have saved the Earth, creating a new Eden for all humanity, in sync with each other, God and nature.

It need not be just a dream. 

*Teens participate in a native-plant sale
as part of the Jewish Environmental
Initiative, run by JCRC of St. Louis.*





COALITION ON THE ENVIRONMENT AND JEWISH LIFE
Protecting Creation, Generation to Generation

