

Research Report | XXVII Annual Session

Environment Commission

Enhancing Renewable Energy Incentives



MODEL UNITED NATIONS
THE INTERNATIONAL SCHOOL OF THE HAGUE

Marta Ceccarelli
Zachary Wakefield

Forum:	Environment Commission
Issue:	Enhancing Renewable Energy Incentives
Student Officer:	Marta Ceccarelli and Zachary Wakefield
Position:	President and Deputy President

Introduction

The world's population is projected to reach 8 billion by 2023 and 10 billion by 2056 (Worldometers), with the majority of population growth occurring in densely-populated urban centers and rapidly-developing economies outside the historical industrial powerhouse nations. As our world is continually stretched to accommodate more people, unforeseen dilemmas will necessarily arise in the quest to maximize of human happiness, protection, and prosperity. Perhaps the greatest of these logistical challenges is the production of energy for an increasingly-developed global populace with forever-changing quality-of-life expectations. From the Industrial Revolution until just recently, the vast majority of energy in Western Europe and North America was produced by fossil fuels, such as oil, coal, and methane. However, as of late, the need for *renewable energy resource technology*—harnessing energy from sun, wind, water currents, and geothermal reserves, among other natural sources—has become increasingly clear. This has occurred both as a result of increasing global demand for a finite quantity of fossil fuels (India, with a population of 1.3 billion individuals, has nearly tripled its energy consumption since 1971), but also out of greater awareness of the devastating effects of climate change, which are worsened with each passing year of greenhouse gas emissions from the burning of fossil fuels.

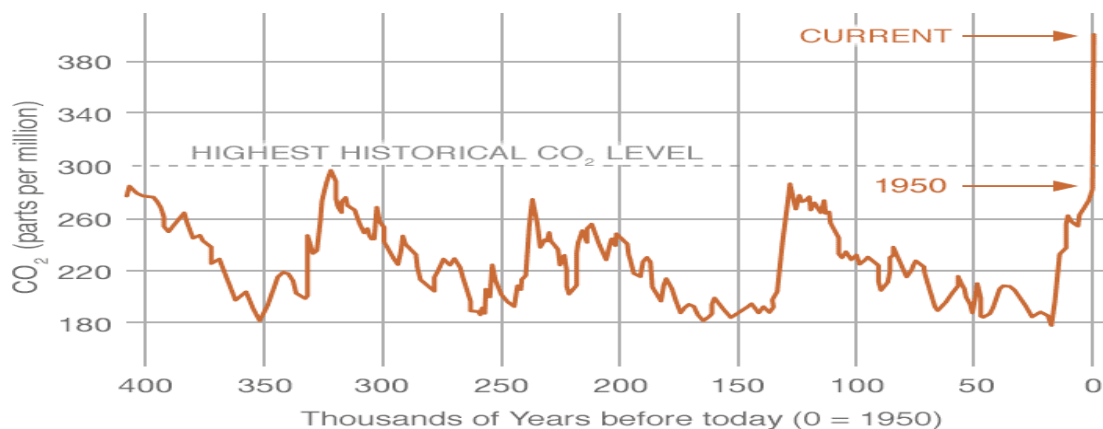


Photo Source: <https://climate.nasa.gov/vital-signs/carbon-dioxide/>

Carbon Dioxide levels in the earth's atmosphere have increased to a prehistorically unprecedented level; this causes great uncertainty regarding our planet's ecological future.

Although still a field in which rapid discoveries and advances are being made, renewable energy technology has the potential to supply the world's energy without



becoming scarce and ultimately inaccessible, or causing massive global warming and thereby also triggering extinction events, ecological disruption and disappearance, and an unprecedented global crisis of persons displaced due to rising sea levels, desertification, disease, and other climate-related catastrophes. Unfortunately, renewable energy initiatives currently face significant challenges in popularity, cost, and governmental support. Years of negative advertising campaigns from special interest groups have caused many to see renewable energy as unreliable, unnecessary, and expensive. Without proper backing, initiatives to establish solar- and wind-based energy grids in multiple countries have failed to gain sufficient traction. However, there are signs of hope: the United States Solar Industry currently reports an annual growth rate of 60%; Germany, Western Europe's largest country, produces so much power from wind, solar, and hydroelectric facilities that it now frequently deals with the consequences of an overabundance of such energy (Coren); Lesotho, a tiny developing country in Southern Africa, produces 100% of its electricity through the Lesotho Highlands Water Project (Williams). Throughout the course of this committee, we expect the stage to be set for several more renewable energy success stories.



Photo Source: <http://www.dailymail.co.uk/news/article-2948238/Apple-building-big-solar-energy-farm-California.html>

The global production and consumption of solar electricity seems to be increasing at an unforeseen rate.

Definition of Key Terms

Cap-and-Trade

A system in which the right to pollute is considered a commodity to be bought and traded; this has been widely successful since implementation in California (Cordiff).

Carbon Tax

A policy that considers carbon dioxide and carbon dioxide equivalent emission harmful to society and imposes a tax on this pollution (Porter).

Renewable Energy

The Encyclopedia Britannica defines renewable energy as "...usable energy derived from replenishable sources such as the Sun (solar energy), wind (wind power), rivers (hydroelectric power), hot springs (geothermal energy), tides (tidal power), and biomass (biofuels)." (Selin)

A major issue here is the inclusion or exclusion of nuclear fission technology as a “renewable energy resource” (Chitre). **As the chairs of this committee we have chosen not to take a stand on this point;** we will allow the discussion of nuclear fission and fusion developments in caucusing and resolution-writing, but these technologies will not be mentioned further in this guide.

Incentive

In the context of renewable energy technology, an “incentive” can be defined broadly as a benefit given to individuals or entities who show some sort of a commitment to renewable energy, or a penalty given to individuals or entities who do not show such a commitment.

Fossil Fuel

A Fossil Fuel is defined as a *non*-renewable, or finite energy source. The vast majority of today’s energy (particularly in developed nations, where biomass is rarely used as a power source), fossil fuels such as coal and gasoline comprise the vast majority of energy for daily use.

Greenhouse Effect

The *Greenhouse Effect* is a phenomenon that results from the entrapment of gases in the atmosphere of a planet, causing said planet to experience hotter-than-expected temperatures due to reflected solar radiation. Normal concentrations of water vapor, ozone, methane, carbon dioxide, and other atmospheric gases have long been party to the greenhouse effect in the context of our planet; until recently, this caused earth to maintain an average surface temperature of 14°C - ideal to support our abundance of liquid water, and also sufficiently stable and constant for organisms to have developed mechanisms that maximize our chemical efficiency in this approximate temperature range.

Within the past 200 years, however, atmospheric gas concentrations (specifically CO₂ and CH₄) have increased dramatically, with carbon dioxide levels reaching unprecedentedly high levels benchmarks and continuing to increase at a quickening pace. This overabundance of Greenhouse Gases (GHGs) in our atmosphere (as a result of the burning of non-renewable energy resources) has already begun to warm the earth’s surface, a trend that seems destined to continue for the foreseeable future (Smil).

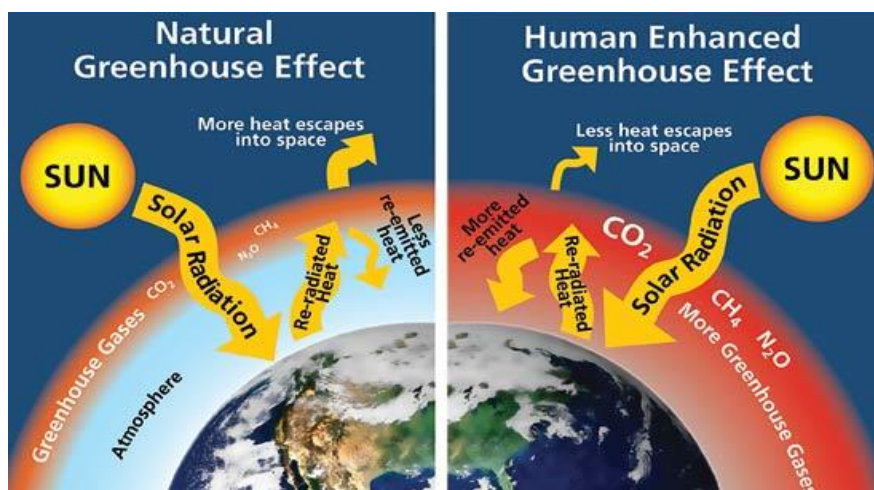


Photo Source: <http://climatechange.ita.org/get-started/learn/co2-methane-greenhouse-effect/>

General Overview

The Urgency of Combatting Climate Change

Though we may not realize, global warming is the issue of our time. If immediate action is not taken to dramatically reduce the parts of carbon-equivalent GHGs in our atmosphere, the greatest extinction in earth's history could potentially result, with each of our planet's biomes changed irreversibly. Some natural habitats, such as the biodiverse and ecologically vital tropical rainforest, may vanish entirely. For many scientists, climate change feedback loops present a significant concern: many experts theorize melting icecaps could cause the darker-colored liquid ocean water to absorb more heat from the sun that would have otherwise been reflected, causing *more* melting and ergo an escalating warming cycle. Another example of a climate change feedback loop is the potential for melting permafrost to release methane (a GHG common than CO₂, but more potent). At the Paris Climate Summit in 2015 (United), world leaders agreed to pollute under a certain threshold that would guarantee at least 66% certainty of less than 2°C warming from pre-industrial levels; if current pollution increase rates continue, we could potentially reach this threshold by 2030 (National).

Unfortunately, climate change is precisely the sort of an issue that humans tend to be terrible at combatting. We are notoriously slow to respond to a threat when it does not directly affect our lives; the same instincts that cause so many of our health problems today are an integral factor in limiting our effectiveness in responding to global warming. The emission of CO₂ and other GHGs when viable and economically pragmatic alternatives exist is the drug, the unhealthy food, the lazy habits. To stop polluting our earth will be difficult, but not impossible. Our ethical and practical duty, in this committee and beyond, is to find the least unpleasant and most successful method to solve this issue of paramount international significance (National).



Photo Source: <https://phys.org/news/2014-11-brazil-scientist-blames-extreme-drought.html>

Even former rainforest regions, including much of the Amazon, are experiencing rapid and potentially irreversible desertification.

How Incentives Can Help

British Columbia, a province in Southwestern Canada, implemented a carbon tax in 2008 that rose steadily over a four-year period to charge approximately \$22.50 in today's money per ton of carbon dioxide emitted by 2012. When the tax was first implemented, 47 percent of British Columbians disapproved, and many politicians were highly skeptical of the ruling Liberal Party's decision to pass a measure that seemed to be so radical. Several Canadian businesses ran attack ads on the tax, claiming it would damage worker productivity, employment, and satisfaction; nearly a decade later, however, the results have been more indicative of good decision-making than anyone could have predicted. According to British Columbian Environment Minister Mary Polak, the tax "performed better on all fronts" than even its most optimistic models had predicted, with carbon emissions dropping dramatically, the tax's disapproval rating falling to 32 percent, and even organizations like the Business Council of British Columbia now claiming support for carbon taxing policies (Porter).

The US state of California, meanwhile, has proven that a government can set up a working cap-and-trade system (Lazo). After voting in 2006 to establish measures for renewable energy incentives, the Californian legislature eventually decided to implement cap-and-trade in lieu of a Carbon Tax simply because the later would have required two-thirds majority approval, which could at the time not be senatorially assured; the chosen system has since generated \$2.27 billion from the auctioning of CO₂ allowances. In the case of California, this revenue has mostly been donated to the state's Greenhouse Gas Reduction Fund, which supports projects such as public transfer and infrastructure developments (including governor Jerry Brown's signature planned bullet-train from Los Angeles to San Francisco), carbon capture, and water conservation initiatives. This is an important question for member states to consider in this forum—should revenue generated from renewable energy initiatives be donated to environmental technology development, or used to lower taxes in other areas? Both options carry advantages and disadvantages.

In many developing nations, the most commonly-employed strategy by international parties to incentivize renewable energy is slightly different: while business conglomerates do not generally have the same influence as in countries like Australia and the United States (Valentine), governments often do not have the resources to support the systematic electricity-source shifts in sourced energy as have been seen in Germany, Spain, and the Netherlands. Perhaps the greatest opportunity for the incentivizing of renewable energy in the developing world, rather, is to establish completely new and off-the-grid renewable energy infrastructure in remote parts of developing countries. On Tac, an isolated Chilean island in the gulf of Ancud, 87 households did not have access to energy and could not be granted an attachment to mainland Chile's electricity grid. However, as part of a nationwide electrification effort, mechanical engineering firm Baring-Gould built a wind turbine that revolutionized education, communication, and entertainment for the entire island. In developing countries, businesses don't need incentives to use renewable energy—governments are so desperate for electrification that they are often able and willing to directly implement the appropriate infrastructure if given sufficient resources.





Photo Source: <http://www.southpolestation.com/trivia/00s/00s.html>

Windmills have proven very effective in bringing reliable green energy to remote parts of the world.

Resistance to Efforts at Incentivizing Green Energy

Finding agreement on the best steps to take for the implementation of renewable energy incentives has proven to be a surprisingly difficult task. A combination of targeted big-business propaganda and innate human distrust of technological development and change has caused the inevitable, fascinating, and necessary move toward renewable energy to face not only complex logistical challenges, but also significant human backlash.

Australia and the United States present two examples of countries where disputes between parties or coalitions cause there to be significant political opposition to renewable energy initiatives; both countries' global leadership in combatting climate change has been undermined as a result. In Australia, despite a trend of rampant desertification and its consequences that have ranged from unbelievably high temperatures to extended periods of extreme drought, the ruling Liberal/National coalition has long supported a position of climate change denialism, with former Prime Minister Tony Abbot famously stating in 2015 that he found the frequently-verified theory of global warming to be "absolute crap." Although Abbott left office last year, his elimination of the Carbon Tax and gutting of all activities executed by Australia's Climate Commission still have yet to be reversed. Australia's new prime minister, Malcom Turnbull, stated however that he would not lead a government that did not take climate change seriously; National party Deputy Leader Fiona Nash, meanwhile, has openly speculated that the science behind global warming may be incomplete (Valentine).

The most globally significant example of intra-national politics impacting a nation's climate change policy is the United States. In the US political system, large businesses can legally make contributions of any amount to parties and politicians; by far the largest of these donors have been oil companies such as Exxon-Mobil. The Republican Party, or GOP, which accepts the majority of monetary campaign donations from fossil fuel companies, has a long history of climate change skepticism. GOP lawmakers frequently expressed disgust with former president and Democratic Party member Barack Obama's actions to support renewable energy infrastructure, expand ecological reserves, and impose regulations on CO₂-emitting businesses. As a result, the American public became gradually more polarized on environmental issues, and when Donald Trump—a man who actually demonstrated few

direct ties to the dirty energy industry—was elected president, he felt obligated to fulfil his base's wishes for environmental deregulation, and pulled out of major international agreements on renewable energy technology development (most notably the agreement tirelessly negotiated and signed by Obama at the Paris Climate Summit in 2016), claiming these actions would help to preserve and restore blue-collar jobs in coal and other fossil fuels mining industries. Trump also appointed several cabinet members in strong opposition to the United States' Environmental Protection Agency and its renewable energy advocacy. The resistance blue-collar workers feel toward innovative clean energy technologies is worth taking into account, though it is a result of an underlying fear of further societal change felt by these groups and therefore perhaps an issue that can be solved only by increased diversity and exposure to the opportunities offered by green technologies in these regions of the world.

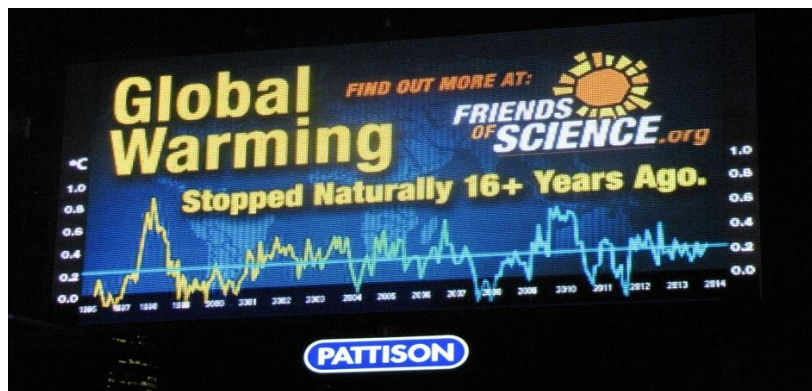


Photo Source: <http://www.prweb.com/releases/2014/12/prweb12367758.htm>

Part of a US advertising campaign meant to dissuade voters from believing Climate Change presents a real threat.

Major Parties Involved

UN-Energy

Created at the 2002 World Summit on Sustainable Development in Johannesburg, UN-Energy is an organization that establishes routes for cooperation between nations on sustainable energy technology and recognizes initiatives that indicate creative methods of producing sufficient energy for the future world.

UNEP

The United Nations Environment Program, or UNEP, is responsible for all UN activities on environmental issues, ranging from air and water pollution to biodiversity and ecological research to climate change and renewable energy infrastructure.

The EU and OSCE

For the past decades, the European Union as a country block has been one of the most aggressive actors in tackling climate change and furthering renewable energy development. The OSCE (Organization for Security and Cooperation in Europe) has signed several treaties to continue reducing its members' carbon dioxide emissions; goals set by these countries area generally approached, met, or superseded. Germany, the largest of

these nations, has emerged as a green superpower, in part because of its political system, on track to far exceed an already ambitious set of goals to shift rapidly toward a solar- and wind-based grid

NGO's

The start of environmental activism was with Non-Governmental Organizations, and these agencies remain active in the promotion of renewable energy initiatives. Many larger foundations—such as Greenpeace, the World Wildlife Fund (WWF), and The Nature Conservatory—perform various advocacy for renewable energy incentives, and some smaller NGO's (including the Solar Electric Light Fund) deal exclusively with increasing renewable energy production.

Greenpeace presents an example of an NGO that has gone so far as to establish projects in the United States—one of the most hostile nations to renewable energy infrastructure—most notably their recent project to fundraise for North Carolina schools to operate completely on a solar- or wind-based grid (Renewable). Making this transition posits a natural incentive as well: agencies not attached to a conventional dirty energy electricity grid can save money in the long term and sometimes even earn money from distributing excess energy.

Canada, Australia, and the USA

These UN member states stand out because of their leadership in other areas juxtaposed with conflicting internal politics on climate change issues. In contrast with the European Union, renewable energy development in these (and some other) countries is very inconsistent, with emission reduction goals sometimes being met and sometimes completely ignored.

China

Particularly in the realm of solar development, China has recently emerged as a global economic leader in this area (Solar). The Chinese model presents somewhat of a dilemma for international leaders hoping to emulate similar systems of strong centralized incentives given to companies that embrace renewable energy: although China has been successful in reducing the carbon emissions of itself and others, ethical issues with China's treatment of its workers (especially in vulnerable export-driven nations in Sub-Saharan Africa) cause the act of associating oneself with Xi Jinping and his motives to be somewhat questionable.

The Gulf States

Many oil-rich Persian Gulf countries—particularly Saudi Arabia, Qatar, and the United Arab Emirates—have a vested interest in preventing the expansion of renewable energy alternatives to the burning of fossil fuels. In general, expect oil exporters not to take a firm stance on this issue (although OPEC—Organization of Petroleum Exporting Countries—was party to the 2015 Paris Climate Agreement).

Timeline of Key Events



1865	Auguste Mouchout operates the first steam engine using a solar cell (Nonkululeko)
1885	French Engineer Charles Tellier installs a solar water heater on his roof (Smith).
1887	Professor James Blyth of Anderson College in Glasgow builds the first windmill for electricity production (Nixon).
1900	Aubrey Eneas forms the Solar Motor Co. in Boston.
1927	Jacobs Wind Factory is opened in Minneapolis, Minnesota, to manufacture wind turbines for use on farms in the Midwestern United States.
1958	Solar power was used commercially for the first time—as a means of generating energy in space.
1970s	NASA begins researching large commercial wind turbines in Ohio, United States.
1977	The US Federal Government launches the Solar Energy Research Institute.
1982	The first Solar-Powered cars are developed in Australia.
1991	The first offshore windfarm is completed in Denmark; it includes 11 450kW wind turbines.
2008	In a major blow to the renewable energy industry, the Spanish Government stops subsidizing solar power development and manufacture due to the financial crisis. In a legislative pattern similar to the United States, higher taxes are imposed upon families with past involvement in the solar energy sector.

Relevant UN Treaties

The United Nations has not done much to enhance renewable energy incentives in the world's largest economies. This is understandable: although international organizations have been able to catalyze significant discussion on climate change and renewable energy (see: COP 21), the economic aspects of environmental policy are often handled domestically. However, although the United Nations has not thus far to initiated renewable-energy-based sustainable development projects in large or highly-developed nations, those *most* concerned about Climate Change—the Sub-Saharan African, Caribbean Sea, and Small Island Developing States have been provided various models (such as The Mauritius



Strategy and Declaration of Barbados) of renewable energy infrastructure expansion. Below are some examples of past UN resolutions on this issue; delegates can feel free to further research UN actions on renewable energy infrastructure and development incentives, as this is a fairly broad-reaching topic.

- Follow-up to and implementation of the Mauritius Strategy for the Further Implementation of the Program of Action for the Sustainable Development of Small Island Developing States, 19 December 2008 (63/213)
- Implementation of Agenda 21, the Programme for the Further Implementation of Agenda 21 and the outcomes of the World Summit on Sustainable Development, 19 December 2008 (63/212)
- Reliable and stable transit of energy and its role in ensuring sustainable development and international cooperation, 19 December 2008 (63/210)
- The Responsibility to Protect, 19 December 2008 (63/308)
- Program for the Further Implementation of Agenda 21, 19 September 1997 (A/RES/S-19/2)
- UN Resolution 44/228, 22 December 1989 (A/RES/44/228)
- Ensuring access to affordable, reliable, sustainable and modern energy for all, 21 December 2016 (A/RES/71/233)
- Implementation of Agenda 21, the Program for the Further Implementation of Agenda 21 and the outcomes of the World Summit on Sustainable Development and of the United Nations Conference on Sustainable Development, 14 December 2015 (A/70/472/Add.1)
- Transforming our world: the 2030 Agenda for Sustainable Development, 25 September 2015 (A/RES/70/1)
- Addis Ababa Action Agenda of the Third International Conference on Financing for Development (Addis Ababa Action Agenda) (A/RES/69/313)
- Promotion of new and renewable sources of energy, 19 December 2014, (A/RES/69/225)

Previous Attempts to Resolve the Issue



The Paris Climate Summit was generally viewed as a triumph for renewable energy development, although no binding commitments were made by UN Member States.

Photo Source: <http://www.cop21paris.org>

Thus far, renewable energy incentives for business operation in the West has been implemented on a largely state-by-state basis. The United Nations, however, has tried to play

a role in urging the greater production of renewable energy across its member nations. Of the 17 sustainable development goals, SDG 7—ensure access to affordable, reliable, sustainable, and modern energy for all—relates most directly to this issue. And while the promotion of government incentives for renewable energy has not been a top UN priority, direct involvement in renewable energy development worldwide seemingly has. An example of this is the annual \$1 million “Powering the Future We Want” grant given by the United Nations Department of Economics and Social Affairs (UN-DESA) to one renewable energy initiative per year. In 2016, this grant was awarded to a partnership between the Norwegian and Tunisian governments to establish solar-powered boat transport across the Mediterranean Sea (Webmaster). UN-Energy has also held frequent seminars on the future of renewable energy resources.

Possible Solutions

As the United Nations, there are certain boundaries set upon the amount of involvement we are permitted to have with national governments on a particular issue. This is so with renewable energy incentives—although carbon taxing, cap-and-trade systems, and other frameworks to reduce CO₂ emissions have proven successful when implemented, there are some cases (such as the United States) where structural political forces unfortunately prevent these incentives from being an option nationwide in the foreseeable future.

It is therefore likely that much of this committee will focus on increasing the scope of projects to stimulate renewable energy programs in the developing world. This is where the concept of “leapfrogging” comes into play: if nations in Sub-Saharan Africa, South Asia, Southeast Asia, and Latin America can successfully transform their grids to 100% renewable energy, they could actually enjoy considerable advantages over states like the USA in the event of a fossil fuel energy shortage. Furthermore, if areas of rapid development (such as Brazil, India, and China) are able to use renewable energy resources so effectively that there is no need for increased carbon emission as a byproduct of development, the unwillingness to shift toward green technology in countries like Australia and the United States could perhaps be compensated for.

Indeed, close examination of global sun and wind maps indicates vast untapped resources across the developing world (Solar); with increased incentives both for domestic and international entrepreneurship in renewable energy, these resources could be distributed *most* effectively. The sunniest parts of our planet are on the Horn of Africa and in mid-western South America—ideal locations for solar farms that could power entire cities and transform millions of lives. An interesting trend to observe is the role of nations like China and India in this process—now a solar giant, China is likely to offer a great deal of resources and assistance in this process. The Organization for Economic Cooperation and Development (OECD) countries, however, may want to oppose Chinese dominance in this area, because China’s quests for influence in Southeast Asia and Sub-Saharan Africa in particular have not proven particularly benevolent.

Finally, certain initiatives on this topic may refer back to Western Europe, the United States, Canada, Australia, and New Zealand, where governments do have the capacity to independently launch or monetarily incentivize renewable energy; perhaps some of these member states will agree to increased business scrutiny in this area. The greatest challenge here will be to write a resolution that is sufficiently vague so as not so offend any of the



highest per-capita polluters, but also sufficiently targeted so as to have a tangible impact on carbon emissions in countries and regions where the opinion of the United Nations remains highly valued.

Appendices (Useful Links)

The UN General Assembly has passed a series of resolutions on renewable energy expansion; a full list of these reports can be found here: <http://www.un-energy.org/un-resolutions-and-reports/>

UN-Energy Page for Sustainable Development:
<http://www.un.org/sustainabledevelopment/energy/>

UN Foundation Page for Energy and Climate: <http://www.unfoundation.org/what-we-do/issues/energy-and-climate/>

UNEP—Energy Branch: <http://www.unep.org/energy/>

Short Introductory Video on Renewable Energy:
<https://www.youtube.com/watch?v=KEeH4EniM3E>

A series of links to useful documentaries on renewable energy:
<http://wowenergy.blogspot.com/2014/10/renewable-energy-documentaries.html>

COP 21 Paris Homepage: <http://www.cop21paris.org>

Recent affirmation of the Rio Principles (with many links to useful resolutions):
<https://sustainabledevelopment.un.org/content/documents/733FutureWeWant.pdf>

List of 2008 resolutions on sustainable development:
<http://www.un.org/en/ga/63/resolutions.shtml>

Solar Electric Light Fund—Homepage: <http://self.org>

The Original Agenda 21 from June 1992:
<https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf>

NREL (US-Based) Renewable Energy Map Database: <http://www.nrel.gov/gis/solar.html>

GENI (Global) Renewable Energy Map Database:
<http://geni.org/globalenergy/library/renewable-energy-resources/>

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