



UNITED NATIONS
DEVELOPMENT
PROGRAMME
TOPIC BULLETIN

CHRISTINA KADDOUH, CHAIR
EMILIO ALEMAN, CHAIR
NOAH SONG, MODERATOR

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JUNIOR ACADEMY MODEL UNITED NATIONS

- Sixth Annual Conference -

JAMUN IV SECRETARIAT

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CHRISTINA KADDOUH (Co-Chair)

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Welcome to JAMUN 2020! My name is Christina Kaddouh and I am excited to be co-chairing UNDP this year with Emilio. I am a sophomore in the Academy of Technology and Computer Science, but I also love debate and public speaking, both major assets of Model UN! I love this club because it allows students with a variety of interests to come together and work towards a plan of action regarding issues they are passionate about. Model UN is perfect for anyone who enjoys debate, research, public speaking, or wants to make a difference in our society. Although this year's JAMUN conference will be my first experience chairing, I have been a Model UN delegate myself in conferences such as Academy MUN and FairMUNC. Besides Model UN, my interests include spending time with family and friends, reading, swimming, and listening to music.

I cannot wait to see the ideas and solutions you all develop and debate in our UNDP conference this year regarding one of the most influential topics in our world today-- green energy. Green energy is a topic that can be taken in a variety of directions, and I hope you all consider its many nuances during our conference. In approaching the committee, I hope you utilize this topic guide as a basis for your research, but remember that this is a complex topic that is highly specialized to your individual nation. I hope you are all excited as I am to have an effective debate and discuss views on green energy. Please do not hesitate to contact me and Emilio with any questions or concerns regarding the conference, or even to introduce yourself.

Best of luck, Christina Kaddouh

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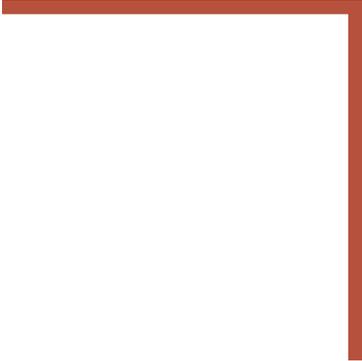
emiale23@bergen.org

Dear delegates,

I'm so glad to welcome you to JAMUN 2020! My name is Emilio Aleman and I am excited to be your co-chair, along with Christina, for this UNDP committee. I am a current sophomore in ATCS (Academy of Technology and Computer Science) and have participated in a number of Model UN conferences, both online and in-person! Before chairing for this year's JAMUN, I have chaired for numerous conferences that I hosted called NYAMUN, as well as for an international conference called MYMUN. I love Model UN, not only because it allows you to further educate yourself on impactful topics around the world, but also because it forces you to come out of your comfort zone and advocate for what's right. Besides Model UN, I like to spend time with my family and friends, code, and play the trumpet. Additionally, I also watch shows like Patriot Act on Netflix, as well as learning more about economics, politics, and international relations.

I am looking forward to hearing the debate on the engaging and influential topic of green energy! Although green energy is a dense topic, I hope that delegates are able to address many points and come to a well-drafted resolution. This topic is definitely not as simple as it sounds. Nevertheless, I'm very excited to see what occurs during the committee session! Should you have any questions, comments, concerns, or just want to introduce yourself, feel free to reach out to me or Christina!

Good luck!
Emilio Aleman



**TOPIC:
GREEN ENERGY**

INTRODUCTION

Many nations have contradicting views on the multi-faceted concept of green energy, though it is a topic that is majorly discussed and considered when making important decisions. While some country leaders reject the significance of green energy, others make an effort to implement it into their nations' systems. Green energy is defined as "energy that can be produced in a way that protects the natural environment," (Cambridge Dictionary). This can include harnessing energy from the sun, water, wind, the Earth's heat, or biomass. Some argue that green energy is vital in today's situation of climate change and global warming, in an effort to combat the level of damage that humans have inflicted on our globe. Others suggest its weak energy output hinders urbanization and innovation. Delegates of the United Nations Development Programme will explore the effects of and needs for implementing green energy in our world this session of JAMUN.

HISTORY OF THE ISSUE



From the late 1800s to the current day, fossil fuels have been the primary source of energy across the world. Coal, petroleum, and natural gas are the three fossil fuels that provide the most utilized form of energy today, but these are nonrenewable resources and will eventually run out. Before the revolutionary point in time when people realized how badly the environment was being affected, wood was the main source of energy for heating, cooking, and lighting.

Efforts to implement green energy with hydropower and solid biomass were highly effective before the 1990s, when they were surpassed by biofuel, solar, and wind energy. This increased use of renewable resources was due to the correlation discovered between the implementation of green energy and the reduction of greenhouse gas emissions, which are primarily caused by the use of fossil fuels.

The lack of access to suitable, green, and high-energy yielding resources has caused many to resort to utilizing alternative energy sources, such as the burning of charcoal, wood, animal waste, or coal. This leads to a myriad of detrimental health effects, both to humans and to the environment.

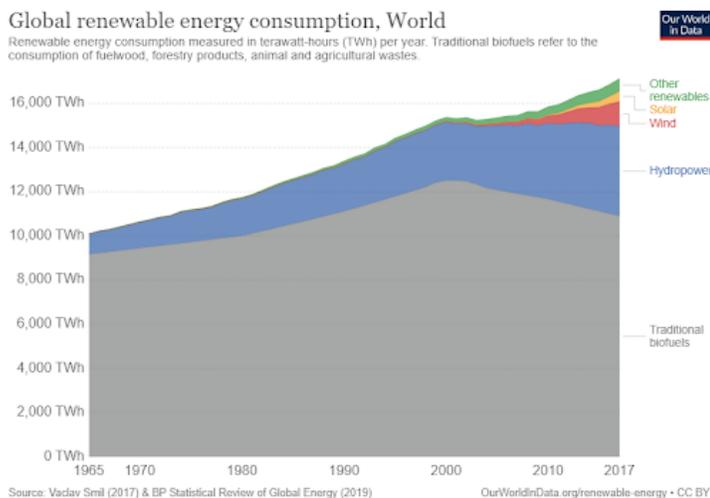
Furthermore, the nonrenewable resources currently used around the world are not sustainable, as access to them is dependent on external factors such as political affairs and natural availability. Awareness of the environmental and social damage caused by non-renewable energy, as well as the correlation between increased fossil fuel consumption and global warming, has led a massive surge in efforts to implement green energy.

The Industrial Revolution

The Industrial Revolution in the early 1800s drastically improved living standards and made the production of goods more efficient; however, it also carried a new demand for power and energy as fuel for a growing economy and population. Fossil fuels provided a high energy density which charged the new technological advancements being made, but carbon dioxide emissions from the burning of oil, coal, and other carbon rich fuel sources rose to new heights. Global warming, climate change, sea-level rise, and ocean acidification are only a few of the detrimental effects that these resources have on our planet.

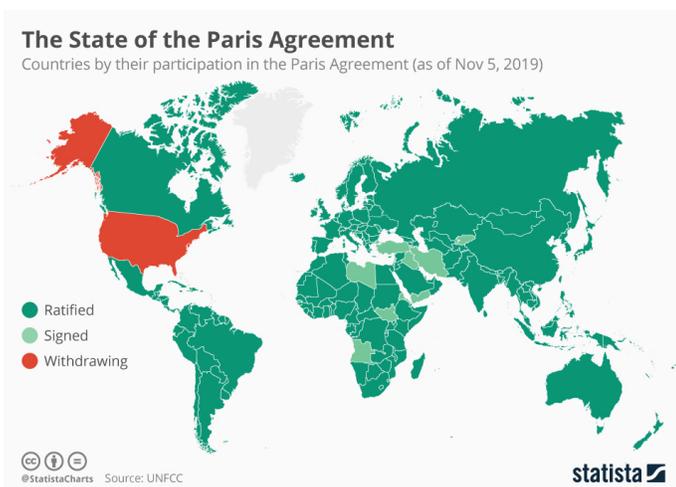
UN Agreements

The transition to renewable energy sources also supports concepts formed in the Paris Agreement on climate change, supported by 196 states and the European Union. This entails balancing nations' adaptation to innovation and new technology in addition to the mitigation of climate change and global warming, similar to goal 13 of the Sustainable Development Goals (SDGs; these Goals were agreed upon by a myriad of nations, demonstrating that green energy is and should be an international affair. However, improved infrastructure, funds, and increased political support are necessary to bring about the shift from nonrenewable resources to renewable and sustainable ones. Germany, Denmark, the US, and Spain have been global leaders in establishing innovative policies that have driven much of the change in the perspectives and use of renewables over the years.



Germany's "Energiewende", the plan to transition to a sustainable economy based on renewable and efficient energy, in addition to Denmark's goal to be 100% renewable energy dependent by 2050, has inspired other countries to aim for a renewable energy future. Policy targets expanded beyond electricity to include heating, cooling, and transport. For instance, REN21, the Renewable Energy Policy Network for the 21st Century, was created as a result of the renewables2004 conference in Germany. Organizations like these are established to connect key actors from both private and public sectors to facilitate a global transition to renewable energy.

As a result, further into that decade, advancements were made in creating nuclear power reactors and solar cells that were able to generate a measurable electric current. In 1962, the first commercial-scale geothermal electric plant was established which harnessed energy from the Earth's internal heat. In the 1970s, the research into wind, solar, and other environmental changes created awareness of the extremity of the environmental crisis occurring at the time. In fact, the International Energy Agency (IEA) was formed with 30 member countries and seven associates, and promotes energy security, economic development, and environmental protection. Despite these efforts towards alternative energy production, many civilians of various nations still utilized cheap non-environmentally friendly power to run homes in the postwar era because of its accessibility. Movements to require green innovators to make the data public arose, and only after this did the implementation of green energy truly become prominent. Beginning in the 1970s, various energy crises around the globe and the consequent economic hardships that followed emphasized the role of energy for national and economic security. As a result, many pioneering countries, such as Germany, Denmark, Spain, and the United States created critical markets for renewable sources of energy, which led to early technological innovations in the field. This step sparked the growth of the renewable market, which led to an emphasis on mitigating climate change and adapting to its impacts.



Rise of Nonrenewable Energy

Around the 1920s, the Middle East became one of the world's leading sources for fossil fuels. In 1950, petroleum became the most used fuel in the US, with natural gas at a close second only a few years later. Many people began to grow concerned, yet again, with the abundance of fossil fuels in our environment as illness and deaths were blamed on the increasingly polluted globe

CURRENT SITUATION

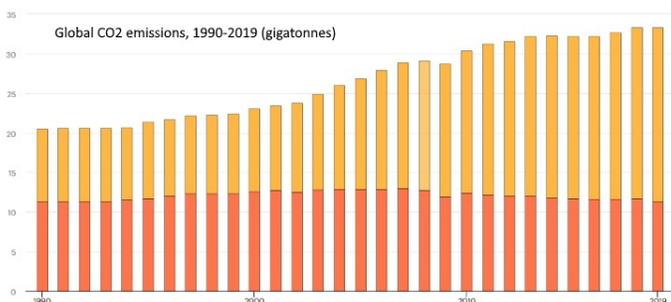
Background Information

Ten years ago, people globally acknowledged the potential of renewable energy as a cleaner source of fuel that could have a significant impact on global warming and climate change. The technology developed in the past twenty years has allowed the world to rapidly implement renewables as an efficient source of power. Today, these technologies have allowed us to move towards a few major objectives: improving energy security, mitigating the effects of climate change, providing economic advantages by reducing dependence on imported fuels, improving air quality and safety, and creating new jobs. Europe, the United States, and Japan previously held these major advancements in renewable energy, however, new markets, manufacturing, and increased investment have helped these advancements spread to other nations over time. China has become a global leader in renewables manufacturing and installing the latest technologies, while the renewables economy in developing countries across Africa, Asia, Latin American, and the Middle East is also expanding.

Despite all of these developments, nonrenewable energy still accounts for about 80% of all energy consumption across Earth. The UNDP has reported that of the \$1 trillion per year in energy sales worldwide, fossil fuel subsidies makeup \$150 billion per year, while new renewables sales account for only \$20 billion per year. However, many actions have been taken worldwide to attempt to encourage the spread of green energy. Efforts have led to the total renewable energy consumption increasing by 3.2% between 1994 and 2008, as reported by The RES (renewable energy sources)-electricity. Worldwide, the amount of solar energy production has grown by 50% in the past couple of years. In 2018, 11.5 quadrillion British thermal units (Btu) of the world's energy consumption came from renewable resources. Many of these green choices were made in response to state and federal government requirements and incentives put into place.

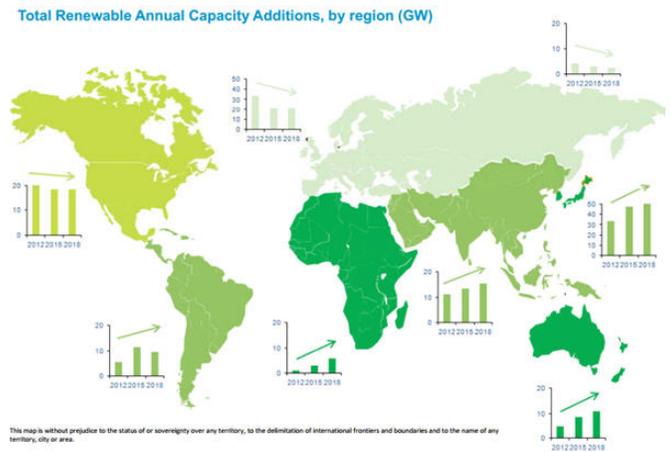
Current Legislation and International Agreements

Legislatures worldwide are exploring a wide range of energy policies. The European Union's energy policy seeks to reach a balance between sustainable development, competitiveness, and secure supply. Article 122, 194, and 170-172 of the Treaty on the Functioning of the European Union (TFEU) revolves around ensuring energy security, maintaining the functioning of internal energy markets and the relations between foreign ones, promoting energy efficiency, moving towards a low-carbon economy in line with the Paris Agreement, and to promote research and innovation according to the Energy Union (2015).



From electric vehicle fees and incentives to energy storage, workforce development and modernizing the grid, state lawmakers took action to encourage energy innovation and increase efficiency. Many country's actions around fossil fuels differ; some with clean energy goals tighten regulations and restrict development, while others support and expand the use of oil, natural gas, and coal. Motions to protect public health and the environment were taken, however the profit that the oil and gas brings nations is sufficient enough to challenge the economy. Orders have been passed to regulate oil and gas to protect public health and wildlife.

In 1997, the Kyoto Protocol, which focused on mitigating the effects of climate change in various commitment periods, was adopted. The first period covered reducing emissions of the six main greenhouse gases by establishing a maximum that a Party may emit. The EU at the time, the US, Canada, Hungary, Japan, Poland, Croatia, Norway, Australia, Iceland, New Zealand, the Russian Federation, and Ukraine were all given target emissions of carbon dioxide, methane, nitrous oxide, and so on. While this was effective initially, countries began expressing the desire to withdraw from the agreement. The US indicated its intention not to ratify the Kyoto Protocol in the first commitment period, and Canada officially withdrew in December of 2012. This policy was effective for developing countries because it required Annex I Parties to provide information on ways to meet emissions targets while supporting developing countries and recognizing needs. This transparency and communication, in addition to an Adaptation Fund that was established to finance projects in developing countries that are Parties to the Kyoto



Protocol, made it favorable. However, with transparency comes dishonesty, evident in major, developed countries without as much of an incentive to reduce emissions.

UN Efforts

Furthermore, the increasing use of biomass has helped to diversify the world's energy supply, create jobs, and boost the economy. In the United States, the consumption of biofuels and other non-hydroelectric renewable energy sources increased by twofold between 2000 and 2018. The United States' 17% renewable energy usage was further made possible by the EERE Vision, created in hopes of developing a strong and prosperous America. Countries should be powered by clean, affordable, and secure energy that allows them to stay in a global clean energy economy. Other organizations, like the International Renewable Energy Agency (IRENA), work with many countries to help bring awareness to the necessity of clean energy and the conflicts regarding its implementation. In 2010, the UN launched the Sustainable Energy For All (SE4ALL) initiative, which ensures access to modern energy sources for people around the globe and improves energy efficiency overall. The UN also created the 2030 Agenda for Sustainable Development in September of

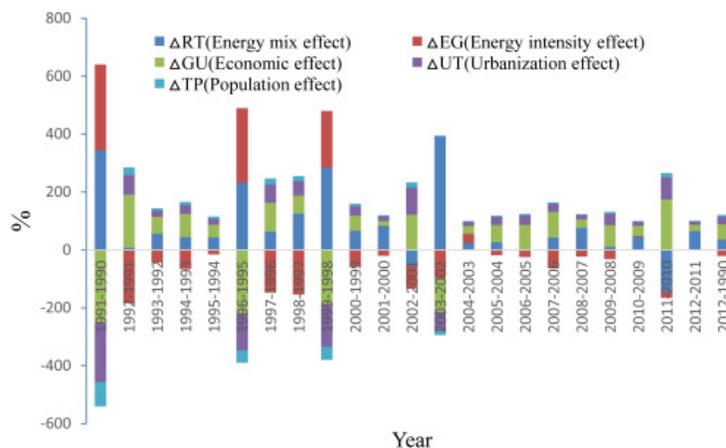
2015, which was a collective plan containing 17 concrete goals that member nations were hoping to see reached by the year 2030. A major facet of this plan was to create a noticeable increase in the share of energy around the world derived from solar, wind, hydropower, geothermal, and biomass sources.

The Multilateral Investment Guarantee Agency (MIGA) is now supporting 182 nations, of which 25 agreed to help with projects: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States. The MIGA helps developing countries with humanitarian needs, policies and objectives, and green energy.

Political Support for Green Energy and Challenges

However, many countries are struggling. Nations who historically depend on fossil fuels as a major source of energy production and as a major economic sector, as well as nations that are majorly influenced by the political benefits of the oil and gas industry have more difficulty switching to green energy. These countries that profit off of fossil fuels must spend billions of dollars to invest in new technologies and build the infrastructure to connect renewable power producers to consumers, which they often may not have or may not be willing to spend. Energy efficiency holds a parallel to increased usage and accessibility of green energy and is planned to play a major role in limiting the growth of world energy demand to one third by 2040.

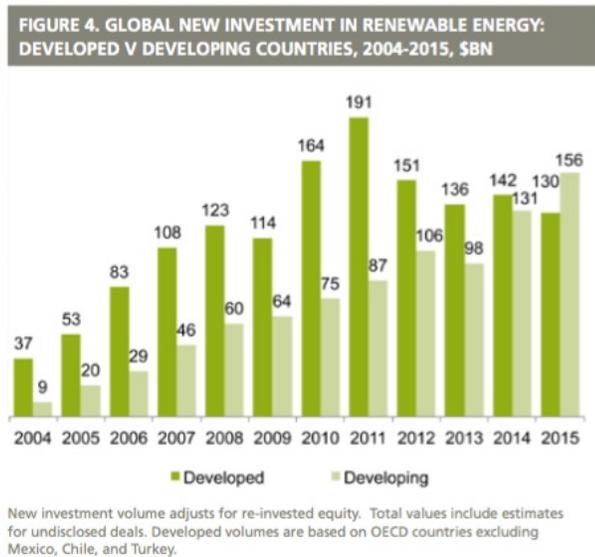
It can aid in reducing energy expenditure, thus lowering the per-unit cost of lighting, heating, and other services. In addition, improving energy efficiency has and can further aid in reducing pollution and greenhouse gas emissions. The UN is working to include policy and programme support to encourage residential energy efficiency in addition to financial support for national and local governments. These efforts go towards adopting efficient policies and legislation to aid governments in finding solutions for energy efficiency in reducing the risk of disaster and introducing effective recovery processes.



POSSIBLE SOLUTIONS

In developing solutions, delegates should consider the unique circumstances of each nation and ensure their solutions are feasible for implementation in nations that currently face roadblocks to green energy. There are many factors to consider when determining the types of green energy that will best fuel a nation. RES encourages countries to follow certain instructions to ensure that changes made in energy sources are beneficial environmentally and economically. Instituting legislation to monitor certain regions after a new green energy source has been implemented may be beneficial.

In addition, conducting research and analyzing data received from other nations can make the transition to renewables possible. Any plans or protocols created should have greater incentives to aid in maintaining its longevity and nations' commitments. In addition, individual nations should receive penalties for dishonesty regarding data on the share of energy consumption that comes from renewable sources. Plans for verifying numbers should be enacted and enforced globally.



The development of large wind, biomass, and solar projects is suggested for any country with the correct climate. These renewable sources of energy have lower energy yields, so nations must consider the effects of the implementation of green energy on urbanization and innovation.

Developing countries not situated in a green energy capturing environment should look into partnering with other nations. Sharing energy between areas and creating a grid to follow could allow areas with excess renewable energy to give away energy to places with a lack of energy.

Efficient electricity grids would lead to improved federal sustainability and allow multiple countries to implement clean energy solutions. In addition, developing-country governments need to centralize resources mobilized for large-scale investments into new production sectors and technologies. Individual nations should determine whether policies should be based on active industrial policies and combine this with large scale investments, or if they should focus on making renewable energy services more affordable to the major part of the population. Solar energy is the most effective renewable source for developing nations. Photovoltaic systems, solar hot water systems, and geothermal energy are all options for areas with higher temperatures. Developed as well as developing nations could capture green energy using these three methods.

The media should understand the complications of not using green energy. Renewable energy could become cheap, safe, and accessible to everyone. Organizations should be created to educate and raise money to help achieve the global goals established by a respective nation. Organizations not using green energy should be informed of the risks and complications that fossil fuels will cause in the future. A tax could be placed on those organizations putting the environment and people at risk. Further incentives to increase the shares of renewables in an organization's energy consumption, likely imposing financial penalties, can aid in accelerating this shift. Research in technological advancements is encouraged. The better equipment we create to capture energy, the more efficient and cheaper green energy will become.

Teaching and studying new methods to generate green energy faster will greatly advance green energy and also spread awareness. In addition, analyzing research from previous years could be a lesson to learn for the future, as well as goals to set and achieve. Nations should be encouraged to contribute data collected from research and results from experiments globally in an effort to accelerate the transition to renewable energy resources and spread awareness regarding the effects of implementation of green energy.

BLOC POSITIONS

Since efforts to implement green energy are closely tied to efforts in mitigating climate change and global warming, many country policies regarding this specific issue are similar to those concerning climate change as a whole.

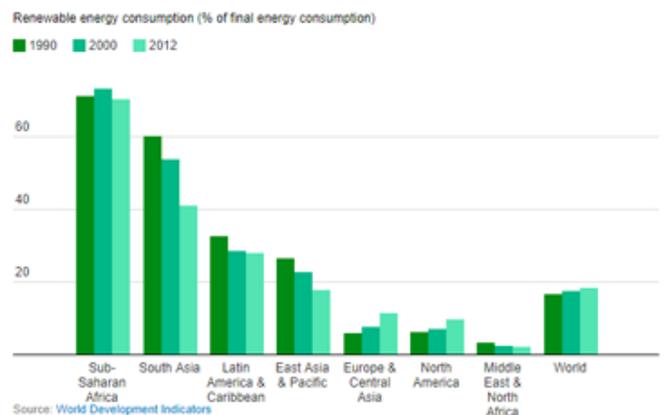
North and South Americas

Many organizations throughout the Americas have been created to help bring awareness and fund using green energy sources. Programs such as the US Environmental Protection Agency (EPA), Brazilian Electric Energy Agency (ANEEL), and the Leadership in Energy and Environmental Design program have brought awareness to the damage that fossil fuels do to our environment. Congress created the Nuclear Regulatory Commission in an effort to protect public health and safety, and the National Science Foundation along with the Department of Energy (DOE) aided in funding the advancement of wind energy technology. Also, having the best energy-efficient appliances in homes was the first great step to a green energy contribution.

Brazil created a ten year plan of energy expansion. Many countries globally have looked into this plan and made promises to use more renewable energy by 2030. Furthermore, plans to educate about Solar Photovoltaic (PV) technology have been looked into. The Institute for the Development of Alternative Energies in Latin America (IDEAL) launched a project to encourage the widespread adoption of PV source from Brazil; this project was developed with the help of Germany and many more European nations.

Globally, Canada was the eighth largest producer of wind power in 2016; wind power is a fast growing sector of the energy market in many countries, not just Canada. In order to make this happen, Canada has built many photovoltaic power stations throughout the nation just as Brazil continues to educate the world about the importance of PV technology. With the help of countries throughout all of the Americas working together to implement classes and programs on green energy, building technologies, and creating organizations and agencies the Americas are off to a great start.

The share of renewable energy consumption is uneven across regions

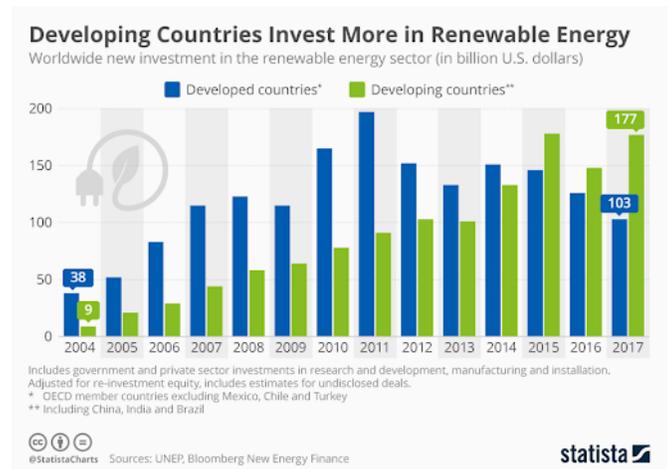


Developing Nations

Most developing countries utilize various energy resources, including solar, wind, geothermal, and biomass and have the ability to manufacture the labor-intensive systems which harness these. In reducing dependence on fossil fuels, such as oil and gas, developing countries can create energy portfolios less vulnerable to price changes. Over time, an increasing number of developing countries are instituting public policies necessary for the widespread development of renewable energy technologies and markets. Developed countries are able to aid underdeveloped nations through programs like the Clean Development Mechanism, which allows for industrialized nations to invest in projects that reduce emissions in developing countries rather than investing in more expensive emission reductions in developed countries.

Many developing countries in the Caribbean are ideally suited for solar and wind energy, however the cost of installing the technologies do not allow these third world countries to rely on green energy. Many of these countries have to get expensive fossil fuels imported. However, governments are changing due to the agreement of using 50% renewable energy by 2030. Many projects to advance sustainable energy efforts in third world countries have been carried out, with some significant examples taking place in Nigeria and South Africa. In addition, Kenya, the world leader in the number of solar power systems installed per capita, focuses on solar, wind, and power backup systems that provide homes with renewable energy. Green Energy Africa works with providing daily light to use minimum resources and create a sustainable community. Green Energy Africa has many ongoing projects one of which include the

Women Entrepreneurship in Renewable Energy that focus on informing about climate change, renewable energy (solar power), and economic improvement channeled towards improvement of energy.



The European Union (EU) and United Kingdom

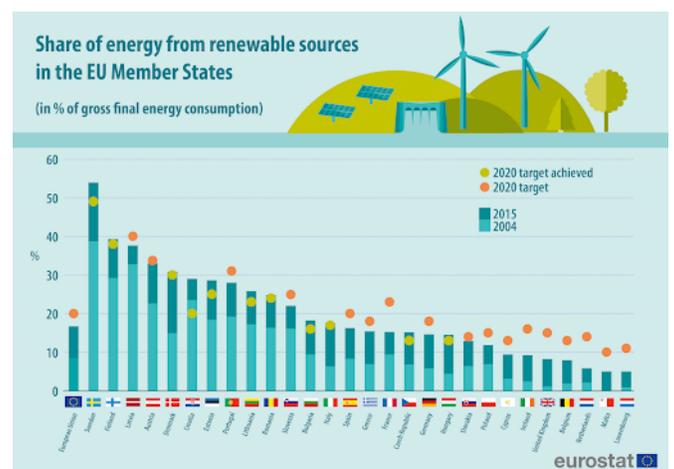
As a whole, the EU has taken large steps towards the eventual switch to green energy, with several member nations taking comparably great measures to improve renewable energy usage and generation in their regions. The EU's energy policy has five main objectives: to ensure the functioning of the internal energy market and the interconnection of energy networks, to ensure the security of its energy supply, to promote energy efficiency and reduce the total energy consumption, to decarbonize the economy and shift towards an economy in line with the Paris Agreement, to promote the development of new and renewable forms of energy to better integrate climate change goals into the new market design, and to promote research, innovation, and competitiveness. While each member state maintains its right to determine its own use of renewable energy sources, the European Union has been moving towards a common energy policy.

Germany's renewable energy market revolves around wind, solar, and biomass efforts. The German government is focusing on increasing renewable energy commercialization, with a focus on offshore wind farms, however, there are difficulties in transmitting power to industrial consumers in southern parts of the country. The Energiewend was one of Germany's most major changes in energy policy, which took effect in 2011. This shifted its policy from a demand to a supply focus and shifted from centralized to distributed generation. Other countries also benefited from Germany's improvement in energy efficiency regarding each of the nations' transparency and reduced emissions. The current German energy policy is framed within the European Union and supports the goal of raising the consumption of renewable energies to 20% of total EU consumption by 2020. Germany also supports global scientific research initiatives to explore cleaner technology for more efficient energy sources.

Denmark is a major advocate of green energy and has contributed a great deal to renewables technology since the oil crisis in the 70s. Today, 44% of Denmark's electricity is supplied by wind and solar power and this figure is expected to rise to 50% this year. The Danish parliament plans to be completely independent of fossil fuels by 2030, by also incorporating larger biomass shares in the electricity sector. Energinet is the independent state-owned enterprise which operates the majority of the transmission systems for electricity and natural gas in Denmark. Its goal is to accelerate the process of globally reducing carbon dioxide emissions by sharing research and results with other nations.

Sweden combines high energy consumption with low carbon emissions because more than half of its energy used is derived from renewable energy sources. The rich supply of moving water and biomass in Sweden makes hydropower, for electricity production, and bioenergy, for heating, the top renewable sources there. Green electricity certification is a process that verifies the origin of electricity enacted by the government, which is building towards Sweden's goal of having 100% of its electrical energy consumption be from renewable sources. Other energy policies also promote renewable energy usage in the form of solar energy, wave power, heat pumps, ethanol, hydrogen, and body heat, all new developments shared with the globe and proven to work.

Finland is a global leader in renewable energy sources, its clean energy market led by biofuels, which account for 29% of its energy consumption. A prominent member of the IEA, Finland leads in research, funding, and demonstration of the implementation of green energy. Finnish policy is based on the National Climate Strategy of 2001, updated in 2005 and 2008, which details policy preparation and decision-making regarding green energy, within the EU and on national levels.



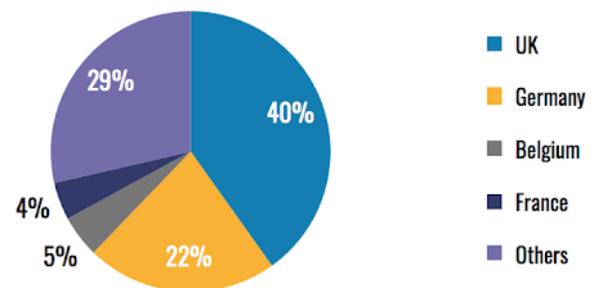
Finland's goal with this national plan is to fulfill the Kyoto Protocol and its obligations, eventually resulting in the national reduction of energy consumption and the increase of the share of renewables. Recently, Finland has also joined Malta and Slovenia in using tax incentives to promote wind energy and other renewable electricity. France has a target of producing 23% of its total energy needs from renewable sources by 2020 according to its commitment to the EU renewable energy directive of 2009.

France had previously been dominated by its reliance on nuclear power, however, the old reactors in the country signifies that new energy resources are necessary. This nation's renewable target revolves around increasing energy efficiency and reducing waste, according to the PPE, which aims for the reduction of the consumption of primary fossil energy by 22% in 2023. Latvia's 2020 National Renewable Actions Plan targets a 40% share of energy generated from renewable sources in its final energy consumption.

Latvia has one of the lowest emissions per capita and waste per capita in Europe, as approximately 39% of its inland annual energy consumption is from renewable energy. In the Draft National Energy and Climate Plan (NECP), Latvia is proposed to set a 45% RES target for 2030, which has been finalized by the Regulation on Energy Union. Its researchers plan to investigate new renewables technologies to better accomplish this goal and communicate with other nations for more effective implementation.

Spain is a European leader in renewable energy use and implementation, mainly focusing on wind and solar power. Spain had previously expanded its renewable base rapidly and helped to establish a global industry in both wind turbine and solar energy. However, the global financial crisis meant that support for renewables was cut back, so new installations in Spain were hindered between 2012 and 2015. Recently, progress has been made towards Spain's target of 20% renewable energy for 2020. Spain's legislation aligns with the Paris agreement, as it has the long term goal of mitigating the effects of climate change with short term incentives for improving emissions technologies. The controversial "sun tax" has also been eradicated, which had previously hindered Spain's renewables sector. The electricity share for green energy is mandated to be 35% by 2030.

New investments in Renewable Energy in Europe 2016 (%)



The United Kingdom has many suppliers offering green energy. Regulations about using only renewable electricity energy have been in place for the past couple years. Due to the high prices of the suppliers, the UK turned to look at the environmental effects of the energy that the suppliers were giving. Suppliers were asked to put money forth to make installations of energy efficient technology, renewable heat installations.

Most of the renewable energy from the UK is wind power, bioenergy, and solar energy respectively. Furthermore, 79% of the British citizens support using renewable energy. The United Kingdom is doing a great job on ensuring the use of renewable sources as well as educating the citizens.

Asian Countries

In 1960, the Organization of Petroleum Exporting Countries (OPEC) formed in Baghdad, Iraq, and consisted of Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela. Nine other members later joined to aid in the mission of providing security in oil as a resource, however, national attention was brought to the hazards of oil as an energy provider after the Santa Barbara oil spill in 1969.

The Philippines can be considered a world leader in renewable energy with its use of green energy accounting for 30% of its power generation. It is the second largest generator of geothermal energy and the first Southeast Asian nation to invest in large-scale solar and wind technologies. The Philippine government views the growth of the renewable energy sector as closely tied to national energy security, as its fossil fuel sector is unsustainable. The Philippines' Renewable Energy Act of 2008 created a feed-in-tariff and a renewable portfolio standard and developed an aim to triple renewable energy supply by 2030.

China has been exporting goods of solar panels, wind turbines, batteries, and electric vehicles. China also has a clear lead in terms of the underlying technology, with well over 150,000 renewable energy patents as of 2016, 29% of the global total.

However, the immense pollution due to the manufacturing of goods has caused irreversible damage to the environment. China views renewables as a source of energy security in addition to mitigating emissions and harmful climate change effects. Its Action Plan for the Prevention and Control of Air Pollution issued by the State Council in September 2013 furthered China's progress towards the goal of broadening their energy sources. However, despite China's massive production of renewable energy and technology, its demands are increasingly high. Even though this causes a higher level of pollution production, the costs of renewable energy technologies have dropped dramatically. The Chinese government has implemented many other policies to promote renewable energy, such as the Renewable Energy Law passed in 2005 and its various Five-Year Plans. The Golden Sun program provides financial subsidies as incentives to support the technology and market for renewables, specifically solar energy. The Suggestions on Promoting Wind Electricity Industry in 2006 offers preferential policies of wind power development, while the Safety Regulations of Hydropower Dams and the National Standard of Solar Water Heaters concern safety measures and standardization involving renewable energy products.

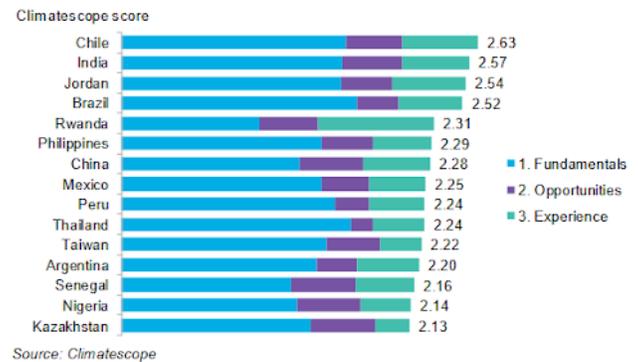
Russia's use of renewables, at 3.6% of total energy consumption, is hindering the global mission to use green technology. However, Russia is contributing immense amounts of effort to help the situation. This accounts for 18.3% of the world's energy supply in 2014, according to the International Energy Agency. Furthermore, the nations China and Brazil boast usage of more than 25 and 45 percent respectively.

India is yet another nation progressing towards an energy portfolio largely consisting of renewable sources. India initiated the International Solar Alliance (ISA) on the sidelines of the Paris Climate Conference, which has developed into a credible platform for ensuring universal energy access and energy equity. As such, India has been a major player in shifting the geopolitical balance towards tropical countries with rich solar energy potential, presenting the idea of the specialization of renewable energy sources. India was one of the first countries to set up a Ministry of Non-Conventional Energy Sources in 1992, demonstrating their goal of implementing clean energy sources early on. The National Democratic Alliance came into power in 2014, strengthening India's renewable energy sector to satisfy the country's energy demand. Other policy reforms aided in addressing the most prominent challenge of meeting the growing demand for energy, driven by rapid economic and population growth.

Japan uses water as its main source for renewable energy. Short term solar projects as well as long term wind power and geothermal projects have been implemented in the past couple years. Although electricity generation from renewable resources have dropped in the last decade, fast decisions from the government have taken place to reverse this. Japan focused heavily on building hydro power technologies. A Feed-in-Tariffs (FIT) program was started and improved the renewable electric generation capacity. Japan has taken a big step forward, along with many other countries they have turned off almost all nuclear power plants. Japan plans to implement wind lenses in the future with benefits including:

more efficient than many other sources, smaller than wind turbines and reduce construction costs, improve safety, make technology more accessible in urban environments.

Figure 29: Climatescope score of top 15 countries



KEY QUESTIONS:

1. Are the benefits of renewable energy comparable to the proposed negative effects it may have on urbanization?
2. How will first world countries encourage third world countries to use green energy sources?
3. How will third world countries drive away from using non-renewable sources?
4. Should energy efficiency be sacrificed for cleaner resources?
5. How can green energy sources be moved from country to country or within countries? How will countries bring awareness about the current situation to others?
6. How should nations support communication regarding innovations in renewables technologies?

7. How does using more green energy affect citizens positively and/or negatively?
8. How will changing government policy affect the future usage/adoption of renewables?
10. What are the best policy options for promoting consumption/production of renewables? How should a policymaker determine which policy instrument is best for a specific nation?

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