

CSTD

MITMUNC III, 2011



Committee Welcome Letter

Dear Delegates,

It is our pleasure to welcome to the 2011 MITMUNC! We are your co-chairs for the Committee on Science and Technology for Development. Although this is only our first year as chairs, we are extremely excited to have you here.

During this session of CSTD, we will be covering two topics. The first topic will be how to bridge the technology gap that exists between the various nations of the world. We will discuss the importance of science and technology in countries' progress, and how to give every country equal opportunity in progress by leveling out the knowledge distribution. The second topic that we will be discussing is the new and emerging energy technologies of the world.

Energy technologies from green and renewable sources such as hydro, solar, wind, biomass, marine, and geothermal power protect the environment and promote sustainable development. We will discuss how the committee can implement policies to utilize these new technologies and overcome problems related, but not limited, to affordability and economic viability, matching technology to appropriate resources in different countries, and maintaining reliability and sustainability after implementing new technology measures.

Your first co-chair is named Victoria Lu. She is a sophomore in Course 7, biology. Your second co-chair is Tanya Liu. She is also a sophomore but is majoring in Course 6, Electrical Engineering and Computer Science. Both of us are from Southern California. As stated before, this is our first year participating in MITMUNC, but we'll do our best making sure that this committee is both enjoyable and constructive. We look forward to meeting you all come February!

Victoria Lu

Tanya Liu

NOTE: Due to the late publishing of the background guide, position papers for CSTD will be accepted by the dais until February 2.

This year, our discussion topics are:

Bridging the Technology Gap Between and Within Nations

New and Emerging Energy Technologies

Bridging the Technology Gap Between and Within Nations

The Problem:

To the nations of the world today, technology and technical knowledge is essential to keep up with the ever-changing times. With technology comes progress, and progress is something that all nations require. With the knowledge of today's technology, nations can do amazing things for their people and greatly increase their standard of living. Unfortunately, not all nations are on equal grounds when it comes to technological prowess. There exists between and within the various nations of the world a wide and substantial technology gap that gives some nations a very definite advantage over others. The technology gap is the difference in accessibility of scientific and technical knowledge that exists between various nations and communities. While some nations are completely up-to-date in their usage and knowledge of science and technology, there are other nations that are almost completely primitive in that respect. This limits them in their abilities to develop and achieve their development goals and is also one of the primary causes of the ever-expanding socio-economic gap between rich and poor nations. For example, as much as 60% of the differences in income levels between poorer countries, like those in Africa, and industrialized countries are due to the differences in the abilities of the countries to harness technology and technical knowledge.

Science and technology knowledge is not equally available to all nations. On the contrary, the developed countries of today have much greater access to such knowledge than the developing nations do. A lot of the knowledge is created in the developed countries, giving these countries an even larger head start in the accumulation of and ability to use such knowledge to achieve progress. By having such a grasp on the knowledge that, at times, is created in their very country, these more developed nations naturally also have a better capability to translate this science and technology knowledge into goods and services. Developing countries, who, for the most part, are struggling even to gain such technologies, are pushed even farther behind in the advancement of progress.

Thus, it is considerably harder for them to be able to create effective goods and services based off of their science and technological knowledge. It is perhaps because of this that these nations also do not appreciate the importance of science and technology to development as much as they should. Since their knowledge is less than that of developed countries, it only makes sense that it would seemingly not be useful for these nations to focus on science and technology. However, for these countries to progress, it is essential that they have the science and technology knowledge to rely on.

Past Actions:

There are several things that have been done by various countries that have helped narrow the technology gap between nations. A number of East Asian countries have successfully been able to develop certain strategies to climb up higher in the technological world. Some of the nations, like the Republic of Korea and the Taiwan Province of China, have implemented autonomous strategies, which call for industrial policies and interventions in various markets and institutions. They have also adopted FDI-depending strategies, which calls for increasing policy intervention to target FDI itself and to deepen the local skill and supplier base. Some of these strategies resulted in a very large development of skills and technological capabilities, thus enabling these countries to keep on top of new technologies. This allows for domestic enterprises to become global players, thus giving them more hold in the world when it comes to science and technology knowledge.

While some countries can lessen their problematic gap slightly by simply opening up to free trade and investment flows, this is not an adequate solution for countries that are on the lower end of the technology spectrum. In order to bridge the gap between skills, technologies, and capabilities that are needed for international competitiveness, it is essential that these nations have strategic support from their respective governments.

Country Blocs:

Africa

These countries are generally a lot lower on the technology spectrum. They have the fewest hold in the market of science and technology knowledge, and would

like to focus on how to better the situation within their own countries before helping with others.

- o Burkina Faso
- o Democratic Republic of Congo
- o Equatorial Guinea
- o Eritrea
- o Ghana
- o Lesotho
- o Mali
- o South Africa
- o Sudan
- o Tunisia
- o Uganda

Asia

While these countries are not necessarily at the top of the technology ladder, they are certainly not the worst. They have made a lot of progress in regards to their accessibility of science and technology knowledge, and want to further that progress along.

- o China
- o India
- o Islamic Republic of Iran
- o Jordan
- o Malaysia
- o Oman
- o Pakistan
- o Phillipines
- o Sri Lanka

Eastern Europe

Like the countries of Asia, these nations are also rapidly progressing. They should be focusing on helping to create ways that nations like them can narrow the technology gap, as well as concentrating on the progression of science and technology in their own countries.

- o Belarus
- o Bulgaria
- o Latvia
- o Russian Federation
- o Slovakia

Latin America and Caribbean

The primary goals of these countries are to increase their possession of science and technology knowledge. While these nations can survive at their place in between the technology gap, it would definitely benefit them if they were to be able to acquire and use more science and technology knowledge.

- o Argentina
- o Brazil
- o Chile
- o Costa Rica
- o Cuba
- o Dominican Republic
- o El Salvador

- o Jamaica

Western Europe and others

In the technological sense, these countries are the superior ones. They are the leaders in the possession of science and technology knowledge, and are the reasons as to why the technology gap is so large. While these countries also want to develop science and technology wise, their priority should first be to narrow the technology gap that exists between them and other nations. However, it would be preferable to them if they could also continuously develop at the same time.

- o Austria
- o Belgium
- o Finland
- o France
- o Germany
- o Israel
- o Portugal
- o Switzerland
- o Turkey
- o United States of America

Resources and further reading:

<http://www.unctad.org/templates/Page.asp?intlItemID=3796&lang=1>

<http://www.unctad.org/Templates/Meeting.asp?intlItemID=3572&lang=1>

http://www.unctad.org/en/docs/ecn162006d2_en.pdf

http://www.unctad.org/en/docs/ecn162006d4_en.pdf

<http://www.unctad.org/Templates/Page.asp?intlItemID=2698&lang=1>

http://www.unctad.org/en/docs/ecn162006inf1_enfrsp.pdf

http://www.unctad.org/en/docs/ecn162006d1_en.pdf

http://www.unctad.org/sections/wcmu/docs/ecn162006p13_en.pdf

New and Emerging Energy Technologies

What's the problem? What needs to be fixed?

Implementing green and renewable energy policies is the first step to stopping harmful greenhouse gas emissions that lead to climate change in our environment. Approximately 61.5 percent of total global greenhouse has emissions result from the energy sector as a whole. The need for changing towards green and renewable energy technologies in all nations has been increasingly recognized in order to ameliorate the negative effects of climate change. Hydro, solar, wind, biomass, marine, and geothermal power are derived from clean, renewable sources unlike fossil fuels and

nuclear power.

Energy technologies from green and renewable sources protect the environment by reducing greenhouse gas emissions and promote energy conservation and efficiency, yet also can promote sustainable development within nations. The Millennium Development Goals of ending poverty, providing universal education, gender equality, improving the health of children and pregnant women, countering HIV/AIDs, and environmental sustainability do not openly include the importance of access to energy, yet are heavily dependent upon them. Sustainable access to energy can improve standards of living in many developing nations, lead to higher agricultural production, increased access to information technology, and improved healthcare and education. New efficient energy technologies can boost the economy by creating new employment opportunities and reducing costs.

According to a report from the Secretary-General, “Low levels of access to modern energy services – in particular, access to electricity – are common in many developing countries, particularly in sub-Saharan Africa and parts of Asia. Today, around 2.5 billion people, especially in rural areas of sub-Saharan Africa and South Asia, still lack access to modern energy services, and an estimated 1.6 billion people do not have access to electricity. These people rely on biomass fuels such as firewood, charcoal, manure, and crop residues for cooking and heating –practices that have severe adverse effects on health, the environment, and social and economic conditions, and which particularly disadvantage women and girls. Even in developing countries with relatively high rates of electrification, the urban and rural poor often lack access to energy services, largely due to the high costs associated with connection and distribution and with infrastructure extension. In some cases, heavy reliance on imports of fossil fuels, which are subject to price volatility and price increases, has resulted in higher energy costs for many households. If the Millennium Development Goals are to be achieved in developing countries, then significant efforts are needed to increase access to modern energy services.”

Developed and developing countries that already have strong, established energy sectors need to transition towards cleaner green and renewable technology power sources. Undeveloped nations that need to expand their energy sectors should “leapfrog” over the heavy carbon-emitting energy sources and go directly to low-carbon emitting sources of energy. This difficult task requires support from the international community to help establish the infrastructure and means needed to avoid fossil fuel dependence. Support in technology

transfer and establishing institutions for developing renewable energy sources is key. Promoting energy conservation and decarbonization will rapidly require distribution and development of low-carbon energy technologies on a system-wide basis, using renewable energy technologies for everything from generating electricity to using LED lights and electric cars.

Unfortunately, there are several barriers to overcome in order to achieve these goals. The first is affordability and economic viability of technology transfer. Development of renewable energy technologies is expensive and requires financial resources that often only developed and developing nations can afford. Transferring this technology to poorer underdeveloped nations while maintaining affordability and financial returns is a great challenge. The second is matching technology to appropriate resources in different countries. Renewable energy technologies introduced into financially, technically, or institutionally inefficient existing systems that do not have the correct resources may further ensconce high-carbon infrastructure and systems. This leads to the third obstacle, maintaining reliability and sustainability after implementing new technology measures. Renewable energy technologies are economically, socially, and environmentally unsustainable in countries that do not have the capacities to establish, maintain, repair, and efficiently adapt them.

What past action has been taken? How effective was it?

Policies, mandates, and negotiations to address the issue of greenhouse gas emissions have been introduced into the past. For example, the Climate Change Convention and the Kyoto Protocol have been important steppingstones towards environmental preservation goals. At an international level, the 2002 World Summit on Sustainable Development and 2005 World Summit established commitments from various governments to improve access to reliable and affordable energy services and to foster renewable sources of energy in the global energy supply. The 2002 Johannesburg Plan of Action highlights the importance of access to energy in the eradication of poverty, and asks government to establish policies to support energy in their efforts to abolish poverty. It was one of the first documents to call “with a sense of urgency” for a substantial increase in the global share of renewable energy sources and encourages countries to “improve access to reliable, affordable, economically viable, socially acceptable and environmentally sound energy services, as an integral part of poverty reduction programmes, by facilitating the creation of enabling environments and addressing capacity- building needs, with special attention to rural and isolated areas.”

It also “calls for international support in helping developing countries create a level playing field for the development of, *inter alia*, renewable energy and decentralized energy systems.” The 2005 World Summit Outcome document reiterates the urgent need for “clean energy, meeting energy needs and achieving sustainable development”, and “calls for practical international cooperation to promote the development and deployment of clean energy; and highlights the importance of innovation, investment, technology transfer and capacity building.” According to a report from the secretary-general, “73 countries have set policy targets for renewable energy sources and at least 64 countries introduced promotion mechanisms, including at least 23 developing or emerging countries. A number of large developing countries such as India, China and Brazil, have managed to catch up fairly rapidly with technological leaders in certain renewable energy sectors such as wind and solar. A number of factors have been key to their success, including a strong commitment of national governments, policies to encourage and facilitate technology development and deployment, and to support the innovative capabilities of local firms and research institutes. Also important are bilateral and multilateral collaborative initiatives along the entire spectrum of research and development, demonstration and deployment.” While actions have previously been taken, new policies to maintain what has already been accomplished and expand progress need to be implemented.

Country Blocs

Africa

Limited human resources and knowledge about carbon capture technologies are the main constraint for undeveloped African countries. Carbon capture is a relatively new idea in Africa, and there is little baseline knowledge. There have already been great investments in power infrastructure, making it difficult to allocate adequate research funding. There are also technical restraints due to distances and topography of the continent. African countries lack the resources and knowledge needed to implement renewable energy technologies on a wide-scale basis, but policies to educate and are being negotiated to address issues like access to affordable energy, control the energy-related impact on the environment, promote research and development of renewable energy technologies, and stimulate economic development.

Asia

Developing countries in Asia have high demand for energy resources. Countries like India and China have been investing in renewable energy technologies and establishing renewable energy technologies in certain places. Still, some countries, like those in Africa, are

still emerging. Green and renewable energy technologies have been recognized as particularly appropriate for developing countries like those of Asia. In rural areas where infrastructure is insufficient, locally producing renewable energy may be a good option. The expansion of energy and fuel sources can improve national energy security and reduce the amount of imports. Also, expansion of the national renewable energy sector can create much needed local employment opportunities. In turn, this may provide economic opportunities for developing countries to commercialize produce and export these technologies to other nations as well.

Eastern Europe

Developing countries in Eastern Europe lack the manufacturing power and wealth shared by other countries, especially in Asia. Green and renewable energy technologies are appropriate for developing countries in Eastern Europe and may help stimulate the flat economy. In rural areas where infrastructure is insufficient, locally producing renewable energy may be a good option. The expansion of energy and fuel sources can improve national energy security and reduce the amount of imports. Also, expansion of the national renewable energy sector can create much needed local employment opportunities. In turn, this may provide economic opportunities for developing countries to commercialize produce and export these technologies to other nations as well.

Latin America and Caribbean

Developing countries in Latin America and the Caribbean have made great progress already. In Brazil, academic institutions have benefited from renewable energy capacity-building activities, strengthened through international cooperation. Funding for hydro, wind and ethanol projects come from various sources, nationally and internationally. Brazil has invested in projects related to renewable energy, and have begun to reap financial awards from their expertise in solar technology. Green and renewable energy technologies are very appropriate for other developing nations in Latin America and the Caribbean. In rural areas where infrastructure is insufficient, locally producing renewable energy may be a good option. The expansion of energy and fuel sources can improve national energy security and reduce the amount of imports. Also, expansion of the national renewable energy sector can create much needed local employment opportunities. In turn, this may provide economic opportunities for developing countries to commercialize produce and export these technologies to other nations as well.

Western Europe and other

Developed nations of Western Europe and Northern America benefit from advanced technology, more

education and knowledge related to renewable energy, and skilled engineers. While these nations have invested much in renewable energy technology, goals of developing feasible renewable & clean energy technologies that will be competitive with the price of coal and fuel oil and using these innovations for national security need to be further developed on a wide-scale basis. These countries need to fight their addiction to fossil fuels and move towards sustainable development.

What can and needs to be done to fix the problem?

According to a report from the Secretary-General, "The issue of transfer of technology is at the heart of the global renewable energy and low-carbon economy debate. The economic reality is that many developing nations are unlikely to "leapfrog" the pollution-intensive stages of industrial development without a commitment by developed nations to assist in providing access to the technologies needed. Fortunately, many of these technologies already exist in the public domain and can be made available where they are needed. New and emerging RETs (in particular, their key components) are mostly developed and produced in industrialized or middle-income countries. The increase in the overall use of renewable energy in developing countries means an increased need for international transfer of technologies to developing countries." A significant challenge in effective transfer of technology is the staggering investments in infrastructure, research, and development. Initiatives and policies for adopting, transferring, and locally developing these technologies are important for overcoming this challenge. These policies must address issues related but not limited to long-term financial commitments, matching technology to local resources, and the energy needs and capabilities of the country. The three most important issues to pay attention to are: "1) indigenous local capabilities, 2) appropriate financial mechanisms, and 3) an integrated, systemic approach." The international community is key in promoting the deployment of renewable energy technologies. "International organizations should continue to provide technical assistance in training, capacity-building, and strategic planning to promote new and renewable energy sources and technologies. International financial institutions should make concessionary finance a priority, in order to mobilize large-scale resources to finance the development and deployment of renewable energy technologies." The progress and experience of the international community can serve as good resource for governments in need of advice in building local innovative capabilities and in the technology transfer process.

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