WORLD BANK

BACKGROUND GUIDE

NHSMUN 2010

NATIONAL HIGH SCHOOL MODEL UNITED NATIONS • MARCH 17-20, 2010

October 2009

Dear Delegates,

It is my distinct pleasure to welcome all of you to 2010 National High School Model United Nations Conference! My name is Jenny Gai and I am the Under-Secretary General for the ECOSOC Special committees. I have been participating in NHSMUN for five years as both a delegate and a staffer and I still can't get enough. While NHSMUN is well known for being a challenging and rigorous conference, I firmly believe that what you put into it is what you get out. Having participated in a number of MUN conferences in high school, including NHSMUN, I was always amazed at the breadth of knowledge I gained after every conference, regardless of whether or not that knowledge was paired with an award. Because NHSMUN deemphasizes awards, the research that you do is for *you,* and in turn will only better facilitate your participation during debate and open your eyes to some of the world's most relevant and current issues.

Outside of NHSMUN, I am a junior at the University of Pennsylvania where I study biochemistry and environmental studies. I have yet to decide which path to follow—medicine or law/policy making. I am inclined to say that I can do both, but I'd like to have accomplished something by the time I'm 35 other than getting up to attend morning classes. For the moment, I am quite content with the idea of being a student for a little while longer. In the fall, I spent the semester studying at the University of Melbourne. I absolutely fell in love with the city's vibrant and diverse atmosphere, and the rest of Australia was pretty fabulous as well. Interestingly, I had to fly back to the States twice for NHSMUN related activities and racked up over 35,000 frequent flyer miles. It's a good thing I love to fly!

Besides jet-setting and schoolwork, I play ultimate frisbee for Penn's women's team, Venus. For those of you looking for a sport, I highly suggest ultimate. It is the perfect balance of athleticism, competition, and team cohesion. This past year, Venus made a fantastic showing at Nationals, tying for 5th overall. I also played for Melbourne while I was abroad and made it just in time for the Australian University Games in the Gold Coast. It was basically a five day tournament for all university sports teams within Australia and New Zealand to converge and compete in one venue—crazy good fun!

Hopefully, this letter has given you a glimpse into my life inside and outside of NHSMUN and it hopefully has not deterred you from getting to know me better. I have had the distinct privilege of working closely with your Directors and Assistant Directors—each of whom is not only a phenomenal person, but also an immense resource of information on the topics.

I absolutely cannot wait for the conference and I look forward to getting to know all of you. If you have any questions about NHSMUN or studying abroad (or really anything at all), please don't hesitate to shoot me an email at jygai34@gmail.com. Once again, welcome to NHSMUN 2010!

Sincerely,

Jenny Gai

October 2009

Dear Delegates,

My name is George Zhang, and I will be your director on the World Bank this year. Make no mistake—public opinion of our organization is generally not positive. In the light of the worst financial crisis of our lives, many people often refer to the World Bank and its sister organization, the International Monetary Fund (IMF), as relics of a past age of capitalistic excess. These people think of the bank's leaders as greedy and corrupt, its initiatives as lofty and wasteful, and its goals as unattainable and irrelevant. It is your job to prove them wrong.

There is perhaps no other organization with as much financial leverage as the World Bank in our current time of crisis. While the IMF arguably is more relevant to the immediate needs of failing economies, the World Bank has the power to effect long-term development and stable growth that not only holds up the economies of developing countries but lifts them out of that category entirely. On that note, I have chosen two topics that may not immediately seem relevant to the financial crisis but at their essence are solutions for it. Through the course of your research, I would like you to consider how we can leverage the solutions to these topics to act as steps towards ending this recession and preventing anything like it from happening again.

Now that we have the serious stuff out of the way, let me introduce myself – I'm a sophomore at New York University's Stern School of Business, double majoring in Marketing and Management. I work professionally as a graphic and web designer, and in my free time I enjoy playing piano and guitar, following the NBA, and surfing the Internet for funny things. Although I am a native of the beautiful city of Shanghai, China, I grew up in a rustic town in New Jersey, where strip malls outnumber people two to one. This is my fifth year at NHSMUN – I went to three conferences as a delegate and was Assistant Director of this committee last year.

If you ever run into any problems over the course of your research, have any questions about the rules of our committee (which are likely different from those of past committees you have been on), or just want to discuss the meaning of life (and by "life" I mean NHSMUN), feel free to contact me. I am heading to London in January to spend the semester abroad so it may be more difficult to reach me then, but feel free to shoot me an email and I will do my best to get back to you as soon as possible.

Remember – you may be high school students out in the real world, but as soon as you step into that conference room at the Hilton, you are world-class economists. The state of the international community may stay the same, but over the course of those brief four days in March, you will change the world.

Best regards,

George Zhang
gzhang@nyu.edu
(732)492-9240

29 Jernee Dr.
East Brunswick, NJ 08816

A NOTE ON RESEARCH AND PREPARATION

Delegate preparation is paramount to a successful and exciting National High School Model United Nations 2010 Conference. We have provided this Background Guide to introduce the topics that will be discussed in your committee; these papers are designed to give you a description of the topics and the committee. They will not give you a complete description of the topic areas and they will not contain the most up-to-date information, particularly in regards to rapidly evolving issues. We encourage and expect each delegate to fully explore the topics and be able to identify and analyze the intricacies of the issues. Delegates must be prepared to intelligently utilize their newly acquired knowledge and apply it to their own countries' policy. You will find that your state has a unique position on the topics that cannot be substituted for or with the opinions of another state.

The task of preparing and researching for the conference is challenging, but it can be interesting and rewarding. We have provided each school with a copy of the **Delegation Preparation Guide**. The Guide contains detailed instructions on how to write a position paper and how to effectively participate in committee sessions. **The World Bank has a special format for position papers that will be explained later in this background guide.** The Guide also gives a synopsis of the types of research materials and resources available to you and where they can be found. A brief history of the United Nations and the NHSMUN conference are also included. The annotated rules of procedure complete the Delegate Preparation Guide.

An essential part of representing a nation in an international body is the ability to articulate that state's views in writing. Accordingly, it is the policy of NHSMUN to require each delegate (or double-delegation team) to write position papers. The position papers should clearly outline the country's policies on the topic areas to be discussed and what factors contribute to these policies. In addition, each paper *must* address the Research and Preparation questions at the end of the committee Background Guide. Most importantly, **the paper must be written from the point of view of the country you are representing at NHSMUN 2010** and should articulate the policies you will espouse at the conference. All papers should be typed and double-spaced. The papers will be read by the Director of each committee and returned at the start of the conference with brief comments and constructive advice.

You are responsible for sending a copy of your paper to the Director of your committee. Additionally, your delegation is responsible for bringing a bound copy of all of the position papers—one for each committee to which your school has been assigned—**to the conference** (to be submitted during registration). Specific requirements of the bound copy have been sent to the faculty advisor/club president. In addition to position papers, each delegation must prepare one brief summary statement on the basic economic, political, and social structures of its country, as well as on its foreign policy. Please mail country summary statements to the Director-General of NHSMUN 2010 at the address below. All copies should be **postmarked** no later than **February 16th** and mailed to:

Jerry Guo, Director-General
Hinman Box 658
Dartmouth College
Hanover, NH 03755

(Country Summaries)

George Zhang, Director
29 Jernee Dr.
East Brunswick, NJ 08816

(Individual papers)

Delegations are required to mail **hard copies** of papers to the Director-General and Directors.
NHSMUN Staff will not consider e-mail submissions as an adequate substitution.

Delegations that do not submit position papers to Directors or Summary Statements to the Director-General will be ineligible for awards.

COMMITTEE HISTORY

From 1 July to 22 July 1944, delegates from 44 states met in a quiet town in New Hampshire called Bretton Woods ("The Bretton Woods"). The group convened for the purpose of establishing an international financial organization—one that would ensure both the efficacy of the financial markets following the turmoil of World War II, and allow a new, better-built world to emerge from the rubble of Dresden and the ashes of Hiroshima. The Bretton Woods conference, as it is now known, spawned the two most influential global economic institutions of the next half-century: the International Monetary Fund (IMF), and the International Bank for Reconstruction and Development (IBRD), which would later evolve to become the World Bank ("World Bank History").

The World Bank, the first-ever "Multilateral Development Bank," initially did not receive as much attention as its sister organization, but it soon rose in importance as a unique public sector institution poised to address a problem traditionally considered the responsibility of the private sector (Kapur 2). Its inaugural loan of US$250 million to France would be the first of many that would help states build and rebuild, increasing the quality of life for millions around the world and providing a service—public financing of development—for which demand constantly outpaced supply ("World Bank History").

In the next few decades, the World Bank expanded and evolved. The International Finance Corporation (IFC) was created in 1956, as an agency devoted especially to promoting private sector growth in developing states ("What We Do"). The International Development Association was added in 1960, as a branch devoted to providing grants and low-interest loans to the poorest states of the developing world ("What is IDA?"). Then, in 1966, demand for its services led to the creation of the International Centre for the Settlement of Investment Disputes (ICSID), an arbitrator for investor-state disputes ("About ICSID"). The final piece of the puzzle fell into place in 1988 with the establishment of the Multilateral Investment Guarantee Agency (MIGA), an association designed to promote foreign direct investment (FDI) by insuring the loans of investors ("About MIGA"). By the 1990s, the World Bank had become a comprehensive organization, poised perfectly to tackle the needs of developing states and build a better-developed world.

Despite its ascension to the vanguard of the global development economy, the World Bank's storybook progression was not meant to last. In 2000, one year after the infamous "fair trade" protests at the World Trade Organization (WTO) meeting in Seattle, protestors swarmed the World Bank's annual meeting in Washington, D.C., lashing out against what they perceived to be the placement of an overt debt burden on developing states and a lack of attention to the environment (Tully). Several years later, an explosive corruption scandal involving the Bank's president, Paul Wolfowitz, led to his resignation and a further corrosion of public trust in the Bank (Goodman). It appeared as if the World Bank, an organization that existed to build the foundation for a better world, was itself on the verge of collapse.

Then, in mid-2008, the world's financial markets imploded, and the World Bank's Keynesian public sector approach to investment suddenly became relevant again. Since then, the World Bank has put an increased emphasis on implementing environmentally and socially-conscious solutions to the world's economic problems, and with proper reform, it appears as if it could be one of the leaders in pulling the world out of its economic crisis and once again helping it rebuild. As stated on its website, the World Bank's mission "is not yet complete, nor can it ever be, while the challenges of development continue to grow" ("World Bank History").

SIMULATION

The World Bank is a specialized agency and operates independently of the United Nations (UN); therefore, this committee will function differently from many of the standard UN committees that you may be used to, although most standard National High School Model United Nations (NHSMUN) Rules of Procedure still apply. Please read the rules of procedure below carefully so as to facilitate debate when the conference begins.

This year, the World Bank committee will simulate a hybrid of the International Bank for Reconstruction and Development (IBRD), which provides loans to middle-income states, and the International Development Association (IDA), which provides interest-free credits and grants to low-income states. We will not be simulating the other branches of the World Bank Group.
Article 10, Section 10 of the World Bank Articles of Agreement states that political activity by World Bank delegates is "prohibited" and "only economic considerations shall be relevant to their decisions." Delegates of the World Bank committee, unlike those of other committees, do not serve as political representatives of their nation. Instead, delegates represent economists from their respective countries. As such, political considerations may not be taken into account during debate. For example, while the United States may disapprove of an Iranian loan proposal based on its lack of effectiveness or a perceived inability of the Iranian government to repay the loan, it may not do so on grounds of ideological differences with the Iranian government or nation.

Research and Preparation

During committee, World Bank delegates will be evaluating and amending loan proposals rather than writing resolutions. The research process, therefore, differs greatly from that of traditional UN committees.

Part I Countries
Part I countries (see Appendix for list) are developed countries that are not in need of World Bank funds. Their primary role in committee will be to evaluate and improve upon loans proposed by Part II (developing) countries. As such, Part I countries' position papers should be comprised of three to four sections:
I. General evaluation of the country's standing with the World Bank (only necessary for one paper)
II. Brief background of the issue and an explanation of its relevance
III. The country's prior (and current, if any) experiences with the issue
IV. Potential strategies and solutions to be added to loan proposals
One position paper should be submitted for each topic. Note that the evaluation must only be included in one paper. Delegates should also answer the questions located at the end of each topic paper to the best of their abilities.

Part II Countries
Part II countries (see Appendix for list) will be the recipients of World Bank funds. Delegates representing Part II countries should submit two proposals for loans from the World Bank, one addressing each topic. Loan proposals apply only to the country submitting them, and should only contain projects within that country.

Loan proposals should aim to solve a specific issue within the topic, rather than attempting to act as a panacea for the topic as a whole within the country. For the sake of organization, please follow the following outline for loan proposals:
I. Credibility
II. Background
III. Proposed Project
IV. Details of Project
    a. Initiative A: Amount of Funding, in USD (explanation of fund usage)
        i. Sub-initiative: Amount of Funding, in USD (more specific details)
        ii. Sub-initiative: Amount of Funding, in USD

b. Initiative B: Amount of Funding, in USD
c. Etc.

V. Total Amount of Loan
VI. Repayment Schedule
a. Type of Funding
b. Maturation Period (in years)
c. Grace Period (in years)
d. Interest Rate (in percent)

Please refer to the Appendix for a complete sample loan proposal. A complete loan proposal should be between four and eight pages.

The first section, Credibility, should contain an evaluation of the country's ability to repay the loan and ensure that funds are used properly. One of the most important criteria for the approval of a loan is the ability of the nation in question to repay it. Lenders are unlikely to approve a loan to a country with a poor credit history. In addition, there may be significant concern in committee over the country's ability to avoid corruption and ensure that funds reach their intended destinations, so this should be addressed as well. The Credibility section should comprise about two paragraphs.

The second section, Background, should contain a brief evaluation of the importance of the topic in general, as well as a longer overview of the specific country's experiences with the topic and an explanation of why World Bank funding is necessary. This section is critical because it must serve as a convincing argument to the committee that the loan should be granted. Therefore, it will generally be the largest section of the paper, comprising about two pages.

The third section, Proposed Project, should contain an explanation of the nature of the project, how it will operate, and how it will positively affect the country. This section should consist of two to three paragraphs.

The fourth section, Details of Project, should list how exactly funds should be allocated, with amounts listed in United States Dollars (USD). Delegates should aim to be as specific as possible, since doing so will help alleviate fears of corruption or mismanagement of funds. For example, allocating $100 million for the construction of a wind power plant in Country X is not sufficient; instead, $100 million should be allocated for the construction of an offshore wind farm located 20 miles from the coast of Port/City Y and consisting of 50 turbines, each with a capacity of 6MW, for a total capacity of 300MW.

The fifth section, Total Amount of Funding, will add up all the points listed in the Details and list the final sum. It will also detail the sources of the funding. Although World Bank projects are primarily funded by the World Bank, other institutions such as national governments, non-governmental organizations, and regional development banks may also provide assistance. Supplementary sources of funding increase the likelihood that loans will pass, although it should be noted that they may not be included without the approval of their source (the delegate in the committee will speak for their national government, and the representatives of non-governmental organizations present at NHSMUN must agree to cooperate. Special representatives from regional development banks will also be available if their presence is necessary).

The sixth section, Repayment Schedule, will include logistical information about the loan itself. Four points must be addressed. There are three options for funding: IBRD loan, IDA credit, or IDA grant. IBRD loans, intended for middle-income states, function as standard loans, and typically have maturation periods of about 20 years, with grace periods of about 5 years and interest rates from 1-10% depending on risk. IDA credits, intended for low-income states, are interest-free loans that typically have maturation periods of up to 40 years with grace periods of 10 years or more. IDA grants, intended for the lowest-income states, do not need to be repaid at all and are issued sparingly. The maturation period of the loan is the full time that it will take for the debtor to repay the loan. The grace period is the time immediately following issuance of the loan in which no repayments have to be made. The interest rate is the percentage of the total amount that must be paid on top of repayment of the original loan amount. Keep in mind that, although it may be tempting to feature low

interest rates or long maturation periods in loan proposals, these are all subject to the scrutiny of the committee.

Committee Procedure

The following is a step-by-step walkthrough of committee procedure. For your convenience, a flowchart illustrating this process has been included in the Appendix.

Before the Conference

Prior to the start of the conference, the Director of the committee will select five loan proposals to be discussed throughout the course of the conference. Selection will be based on two main criteria: the writing quality of the loan proposal and its potential for expansion and amendment.

Setting the Agenda

When committee first begins, the Dais will suspend the formal rules. At this time, two of the five selected loan proposals will be presented to the committee, and each of the two delegations will be asked to give a five-minute presentation on the proposal, followed by five minutes of question-and-answer. The purpose of this period is to ensure that delegates understand the technicalities of each loan proposal, but debate on the proposals will not be permitted.

Following these two presentations, the speaker's list will be opened and formal debate will begin. Delegates will debate the importance of each proposal and after enough time has elapsed, will set the agenda to either proposal. Formal debate will resume once the agenda is set.

Debate

During debate, standard NHSMUN rules of procedure will be enforced. There will be a speaker's list, and delegates may motion to caucus as well. Delegates will begin to formulate ideas as to how to amend the loan proposal—specifically, the "Details", "Total Amount", and "Repayment Schedule" sections. Amendments may strike, modify, or add clauses to the original proposal.

Once an amendment receives the necessary number of signatories and is submitted, the Dais will review it. Upon approval, formal rules of debate will be suspended and the sponsors of the amendment will receive three minutes to present the amendment and three minutes to answer questions.

Voting Procedure

Since the World Bank is an organization in which different investors provide different shares of financing for loans, substantive voting in the World Bank is based on a proportional system rather than a "one country, one vote" system as set by Rule 40 of the NHSMUN Rules of Procedure.

Once the committee chooses to move into voting procedure and the order of the amendments is determined, each amendment will be voted on individually. The first step in voting on the amendment is for the country receiving the loan to approve it, as the World Bank cannot force countries to accept loans. If the country does not approve the amendment, it fails. The second step in voting is a simple majority vote in which each country receives one vote. If the amendment does not receive a simple majority, the amendment fails. The third step in voting is a roll-call vote in which each country receives a proportional share of the vote based on their shares in the World Bank (proportions will be based on IBRD voting shares at the beginning of the conference). If the amendment receives a majority of the voting power of the committee, it is approved.

This process is repeated for all amendments and the final loan proposal, as amended.

Continuation of Debate

Once the loan proposal passes or fails, delegates will be asked to set the agenda again. This time, the agenda will be set between the loan proposal that failed to be set as the agenda originally and a new loan proposal, chosen by the chair. The delegation that wrote the new loan proposal may have five minutes to present it and five minutes to answer questions, and the committee will once again set the agenda between these two proposals. If a loan proposal fails to be chosen after being up for consideration twice, it will be removed from the consideration of the committee.

Other Changes to NHSMUN Rules of Procedure

Rule 19: Quorum remains the same, but the Dais may choose to exercise discretion before entering voting procedures if over 15% of the weighted voting power is absent.
Rule 27: Rights of reply are out of order since political considerations will not be discussed.
Rule 45: Motions to divide the question will generally not be approved, since all divisions must be voted on separately and as such, dividing the question would greatly and inconveniently lengthen voting procedure. This is at the discretion of the Dais.
Rule 48: Important questions are out of order because the World Bank is not a member of the UN General Assembly.

The World Bank committee operates significantly differently from other committees you may be familiar with. Feel free to contact me before the conference if you are at all confused about the way the committee will function.

Something that will aid in delegate preparation is a new program NHSMUN is starting this year: blogs. Each Director and Assistant Director will maintain a committee blog covering new developments and critical analysis of issues related to the topic. Delegates are encouraged to comment on the staff's posts and ask questions; starting a dialogue before the conference will lead to more comprehensive and effective solutions. View the committee blog at:

http://nhsmun2010wb.wordpress.com

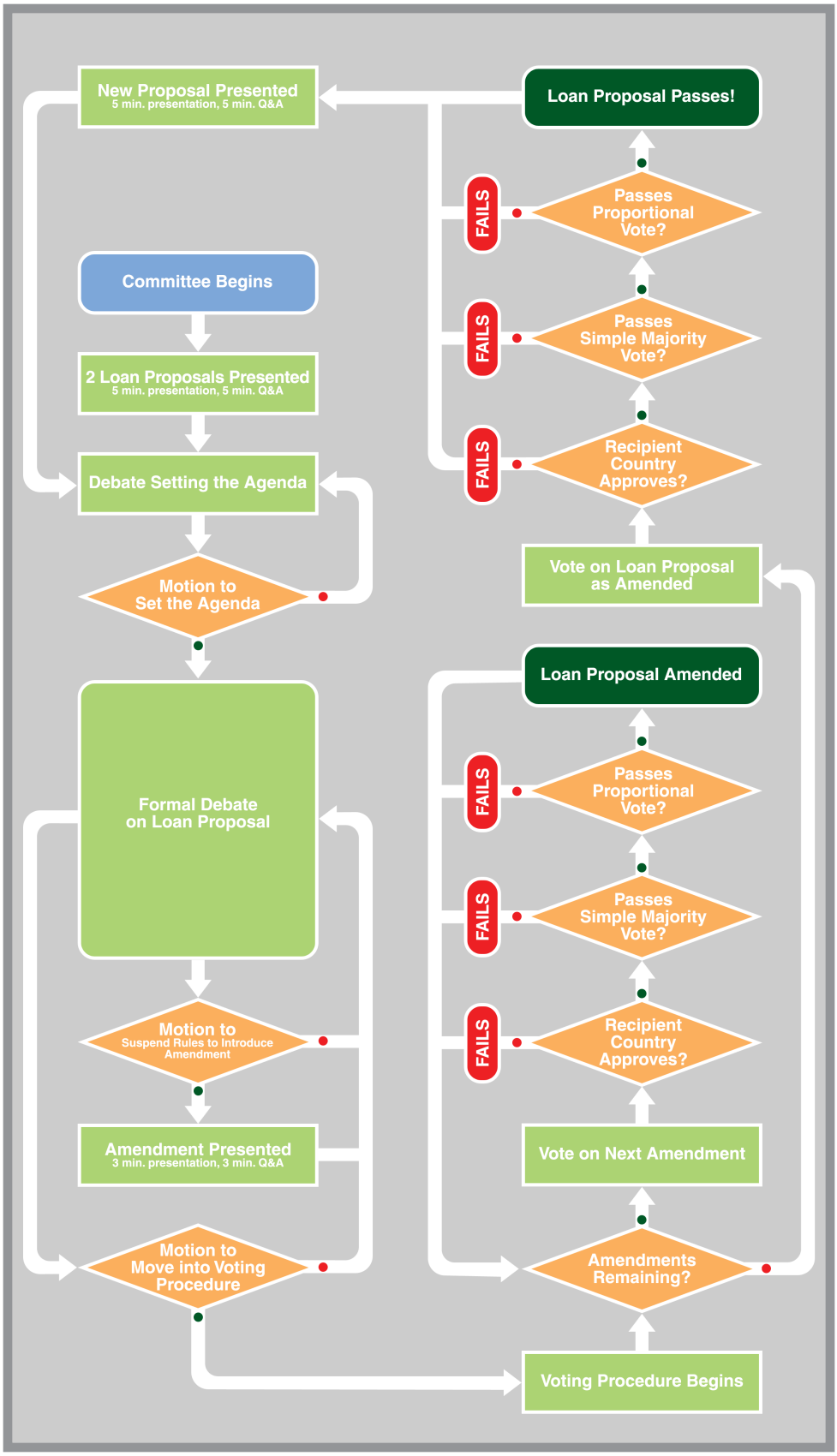
The staff will update the blog at least three times a month. **Delegates are highly encouraged to stay updated on new posts and whatever information the dais provides.**

Figure 1: List of Countries Represented

Part I
Australia
Canada
France
Germany
Italy
Japan
The Netherlands
Russian Federation
Saudi Arabia
Spain
Sweden
United Kingdom
United States of America

Part II
Afghanistan
Algeria
Argentina
Bangladesh
Brazil
China
Colombia
Democratic Republic of the Congo
Egypt
Ethiopia
Fiji
Ghana
Guatemala
Haiti
India
Indonesia
Iran
Iraq
Kenya
Nepal
Niger
Nigeria
Mexico
Mozambique
Pakistan
Philippines
Poland
Republic of Korea
South Africa
Sudan
Tanzania
Thailand
Turkey
Ukraine
Uzbekistan
Venezuela
Vietnam

Figure 2: Flowchart of Committee Procedure



ENERGY USE FOR SUSTAINABLE DEVELOPMENT

TOPIC A

INTRODUCTION

In a speech at the United Nations (UN) Climate Change Conference in Bali, Indonesia on 12 December 2007, UN Secretary-General Ban Ki-moon called climate change the "moral challenge of our generation." He went on to explain that "the costs of inaction—in ecological, human, and financial terms, far exceed the costs of action now" (Ban). This point resonates strongly today, as environmental awareness and clean energy become ever more important in the political and economic world.

Ban's words reflected the events of August 2005, when Hurricane Katrina plowed into the American city of New Orleans, claiming the lives of thousands and causing US$81 billion in property damage, rendering it the most costly Atlantic hurricane in history ("The Deadliest"). All in all, when the record-smashing 2005 hurricane season ended, more than 15 hurricanes had been formed, seven of which were Category Three strength or higher; so many tropical storms were spawned that the United States National Oceanic and Atmospheric Administration (NOAA) exhausted its list of names and began to christen them with Greek letters ("NOAA Reports").

Predictive simulations run by over half a dozen educational institutions around the world painted a clear picture of the perpetrator: an increase in tropical ocean temperatures, which provided the perfect incubator for stronger, wetter hurricanes (Knutson 1). Dr. Kerry Emanuel of the Massachusetts Institute of Technology claimed that the study "clinch[ed] the issue" of the link between warming ocean waters and the increased intensity of weather events such as hurricanes (Revkin). A separate group at the Georgia Institute of Technology found that, between 1975 and 2004, an increase of just one degree in tropical sea-surface temperatures had accompanied a doubling in the number of Category Four and Five hurricanes (Kolbert 193).

Global Warming: The Challenge of a Generation

In 1984, famed anti-apartheid activist Desmond Tutu expressed the need for all humanity to protect the Earth, describing it as a "beautiful, fragile planet" (Mjøs). A 2007 study shows that currently, humans are releasing nine billion tons of carbon into the atmosphere annually, along with millions of tons of methane and nitrous oxide (Canadell 1). These gases, collectively known as greenhouse gases, are changing the fundamental composition of the Earth's atmosphere, causing it to trap more heat and increase the surface temperature of the Earth. This heating, in turn, causes myriad problems for the Earth's natural biosphere, including putting 30% of all plant and animal species at risk of extinction with an increase of just one to three degrees Celsius (Abeku 8).

As seen with the now infamous 2005 Atlantic hurricane season, climate change has the potential to drastically and adversely affect human activity. A 2007 assessment report by the Intergovernmental Panel on Climate Change (IPCC) warned of "increased deaths, disease and injury due to heat waves, floods, storms, fires and droughts," the flooding of populated coastal regions due to rising sea levels, the redistribution of infectious disease vectors such as those that cause malaria, and countless other potentially disastrous effects on human life (Abeku 12). The report predicted that 250 million people in Africa alone would be subject to increased water stress by the year 2020 (13). It has become increasingly evident that drastic action against anthropogenic global warming is necessary now to prevent a massive environmental, economic, and humanitarian crisis in the future.

Energy: Disease and Cure

About 83% of current manmade carbon emissions come from the burning of fossil fuels (Canadell 1). These fuels—coal, petroleum, and natural gas—satisfy the majority of the world's power needs today, which total up to about 15 terawatts (TW). These resources are derived from the compacted remains of organic matter that died millions of years ago and, along with the uranium necessary for nuclear fission, are nonrenewable and expected to run out eventually due to human usage.

The Earth's renewable energy resources, on the other hand, carry abundant potential and will never be depleted. For example, wind power alone has a commercially-usable potential of 72TW ("Mapping"). Additionally, the entire world's current energy needs can be met by covering a 910,001km^2 area of the world's deserts with solar panels operating at 8% sunlight to electricity conversion efficiency, well below today's industry standards. For comparison, the Sahara Desert is almost ten times that size, covering 9,064,960km^2, most of which is currently unused (Loster). Energy supplied from these nonrenewable resources is clean, unlimited, and incurs significantly lower operating costs once the initial collectors are built. Furthermore, the social, economic, and educational benefits from simple access to electricity are massive. By helping fund renewable energy projects and other measures to improve efficiency and reduce pollution, the World Bank can help significantly improve the quality of life in the developing world.

HISTORY AND DESCRIPTION OF THE ISSUE

The atmospheric levels of CO_2 and methane today are 36% and 148%, higher than pre-Industrial Revolution levels, respectively, and the total concentration of greenhouse gases in the atmosphere is higher than any other time during the last 650,000 years ("Atmosphere Changes"). Improving technology and policy, however, offers ways to mitigate further damage to the Earth's climate system. Firstly, the burning of fossil fuels for energy has contributed a large percentage of the world's total emissions, but the usage of technology that can extract energy from renewable sources using nonpolluting processes will help mitigate this. Secondly, this energy must be connected through a grid in order to reduce total demand and conserve electric resources, and ensure that as large of a proportion of the population uses the cleanest energy as possible. Lastly, other human activities such as transportation and industry must be innovated and regulated in order to reduce emissions from actual usage.

Sources of Energy: Power Generation

Solar Photovoltaic

Solar photovoltaic (PV) cells function by deriving energy straight from the sun's visible and ultraviolet (UV) radiation, by allowing these photons to "knock" electrons into a higher energy state (Bullis). Crystalline silicon (c-Si) is currently the most widely-used type of PV cell and is considered the "traditional" solar cell. Although c-Si technology is often considered outdated and too expensive for widespread use, it has reached theoretical sunlight-electricity conversion efficiencies of 42.8% ("UD-led"). Thin-film solar technology is gaining ground, with start-ups using materials such as copper, indium, gallium, and selenium (CIGS) and cadmium telluride (CdTe) to achieve higher conversion efficiencies at a lower cost. First Solar, the world leader in CdTe technology, claims to be able to manufacture cells at US$1 per watt, approaching grid parity and allowing solar PV to be competitive with fossil fuels ("First Solar Passes" 1).

Solar photovoltaic technology carries significant advantages, including the seemingly limitless supply of energy. Global solar insolation, defined as the amount of sunlight that reaches the Earth at any given time, is measured at 122 petawatts (PW), more than eight million times greater than the current global power usage of 15 terawatts (TW) (Smil 12). Furthermore, the operating costs of solar PV are insignificant—the only costs beyond construction and disposal of power generation materials are essentially very low maintenance costs. As a result, solar PV has already reached grid parity in places where importing fossil fuels is expensive, including California and Japan ("Going For" 1), and is expected to do so for 50% of electricity generated in member countries of the Organization for Economic Co-operation and Development (OECD) by 2010

(Conkling 1). Conversely, small-scale solar installations are an ideal solution for places that are outside of the grid, as seen with an IDA-financed project that installed 75,000 solar home systems (SHS) in rural Sri Lanka, where grid coverage is sparse ("Sri Lanka"). Solar PV also does not generate any emissions when used, and pollution is only a major issue during disposal of solar cells.

Before solar PV power can be used widely, significant challenges in regards to efficiency and storage must be overcome. Solar power requires significant land area, and often can only be built in sparsely populated areas unless incorporated into existing infrastructure via SHS or a similar system. Solar power is also dependent on geography and is best used in areas close to the Equator with generally little cloud cover. It follows that the best place to build solar panels would be the desert, but this presents the problem of connecting these power stations to existing infrastructure, which can often come at a significant cost.

Furthermore, intermittency, defined as the lack of consistent access to an energy source, presents a significant problem for solar PV usage. In the state of Massachusetts, USA, for instance, the power capacity factor for solar PV ranges from 12-15%, meaning that any given solar PV facility only generates 12-15% of the power it would if it were to operate at full capacity over its lifetime due to the lack of constant sunshine (Elofsson 1). Since the sun does not shine at night and insolation during the day often varies heavily, a method to store solar energy must be devised. Pairing solar technology with hydropower is an effective way to solve the intermittency problem, as hydroelectric plants can be easily dispatched when necessary due to the presence of reservoirs. Additionally, pumped-storage hydroelectricity, which involves pumping water uphill using excess electricity during peak generation times and allowing it to flow downhill and turn a turbine during shortages, has significant potential (Gül 8). Excess power can also be used to generate hydrogen fuel through electrolysis, or simply to recharge traditional batteries for use later.

Solar Thermal

Whereas solar PV utilizes visible and UV radiation to generate electricity, solar thermal uses infrared radiation to heat water into steam, which is subsequently used to turn a turbine and power a generator. Nearly all solar thermal mechanisms use mirrors to concentrate sunlight onto a certain area. The heat is then transferred to a fluid—usually a good conductor such as synthetic oil or molten salt, which is then pumped through a source of water, causing it to boil and generate steam ("The Other Kind").

Solar thermal is traditionally cheaper and more efficient than solar PV, and the mechanism by which it functions allows it to easily be substituted with natural gas. This creates significant potential for old natural gas plants to be converted into "hybrid" plants, which utilize both solar thermal and natural gas as seen with the World Bank-funded US$327.57 million Kureimat plant near Cairo, Egypt, which will generate an estimated 150 megawatts (MW) of electricity when completed (El Naggar). Like solar PV, solar thermal is also largely nonpolluting, but suffers from many of the same disadvantages, including a need for large sections of land and a power storage system to compensate for its intermittency.

Wind

Wind power involves the construction of windmills, which convert the wind's energy into usable electricity through the use of a turbine. Wind power is completely clean, and involves simple machinery rather than the potentially toxic chemicals necessary for solar cells. Furthermore, the operating costs of wind power are very close to grid parity—wind in the United States costs US$55.80 per megawatt hour (MWh), compared to US$59.30 per MWh for nuclear power and US$53.10 per MWh for coal ("International Energy"). Although wind turbines take up plenty of vertical space, 70% of British residents surveyed reported that they either liked or did not mind their visual impact (Gourlay). These advantages have led to wind power becoming one of the fastest-growing forms of renewable energy, as evidenced by China's recent construction of its 100MW Pingtan Island facility and its pledge to increase its wind power capacity to 30 gigawatt (GW) by 2020 ("In Search of Clean").

Despite its many advantages, wind power experiences the same intermittency, collection and storage problems as solar, and often is unviable for urban areas due to a lack of space. Similar to solar PV collection, intermittency issues occur with wind energy due to the lack of constant, high-speed winds in most locations. Therefore, the power capacity factor of wind turbines ranges from 20-40%. (Elofsson 1). Finally, the land space required for the turbines to effectively collect wind energy often collides with urban restrictions, and the turbines must be placed in areas which often meet a significant amount of wind resistance.

Offshore wind power provides a solution to the spatial problem and provides other benefits, including lower transmission costs due to the proximity of many cities to the shore, no size limitation of the windmill blades due to the availability of boats as transportation for construction materials, and increased efficiency due to stronger winds offshore (Walsh 4). This technology has not yet been utilized widely, but a US$1.5 billion project is currently underway in the United States (US) to build a 200-turbine, 600MW wind farm off the coast of Delaware (Svenvold 2).

Geothermal

Geothermal power is derived from the heat generated by the Earth's molten interior. Geothermal is unlike other alternative energy sources—it is technically not renewable, as hot-water reservoirs underground have been known to deplete over time; however, additional water can be injected to make up for this, and it is unlikely that the source of the energy, the heat generated by the Earth's core, will ever be depleted ("Geothermal" 1). Geothermal is unlike solar and wind energy in that its energy supply is constant and not subject to changes such as weather and time of day, and therefore does not require a secondary storage system. As a result, it is possible and indeed economical for states to derive large percentages of their power supply from geothermal energy, and it currently accounts for more than 15% of power usage in five states: Costa Rica, El Salvador, Iceland, Kenya, and the Philippines (Fridleifsson 2).

Although the cost of geothermal is often insignificant—the Geysers geothermal plant in California currently generates at US$30-35 per MWh—the initial price of the plants is often very expensive, ranging from US$2.50 per watt to US$5.00 per watt for smaller installations ("Geothermal"). Although geothermal power is clean, the long-term environmental impacts of methods such as "hot dry rock" energy, which involves the injection of water to create manmade hot-water reservoirs where natural ones do not exist, are often unknown. A hot dry rock project in Switzerland was shut down in 2006 after reportedly triggering 3500 minor earthquakes in the region (Glanz 2).

Hydropower

Hydropower functions by routing water flowing downhill through a dam, turning a turbine which then powers a generator. Hydropower is one of the most developed and commonly used forms of renewable energy, accounting for 88% of the world's renewable energy and 20% of total energy generation in 2005 (Martinot 5). Further, the power capacity factor ranges from a high 30 – 80% (Elofsson 1). Unlike solar or wind, any hydropower plant employing a reservoir can be readily dispatched, and even those without reservoirs provide a constant stream of energy. Although hydropower's large reservoirs are an ideal breeding ground for anaerobic bacteria, which in the process of breaking down organic materials trapped in the water could release more greenhouse gases than traditional oil-fired power plants, proper cleanup and removal of organic matter from the affected area beforehand will ensure that actual emissions are significantly lower (Graham-Rowe).

Hydropower is also very economical; for example, it is estimated that the Three Gorges Dam in China will recoup its costs after five to eight years of usage, providing electricity at CN¥250, or US$39.59, per MWh ("Beyond Three Gorges"). A recent US$130 million World Bank project in Bujagali, Uganda is expected to provide 250MW of power to that country (Sibanda). Furthermore, small- and micro-scale hydropower projects that power a single home or community have significant potential for development, as seen with the IDA's scheme in Lao People's Democratic Republic (PDR), which led to the electrification of 6000 remote villages without access to grid electricity ("Providing Electricity").

Unfortunately, hydropower also comes with a plethora of disadvantages, including significant negative impacts on ecological systems and human communities due to the creation of the reservoir. Hydropower also has a limited capacity for development, and many of the prime locations for hydropower plants along major waterways have already been developed and future development opportunities come with the price of more expensive transmission and construction costs due to isolation from population centers.

Biofuel and Biomass

Biofuel and biomass are derived from recently deceased or harvested organic material, and provide a readily available and renewable alternative to traditional fossil fuels. Biofuels are specifically grown for the purpose of fuel—they will be explored in depth later on. Biomass, however, is a viable alternative to traditional energy generation methods, especially in the developing world. Innovative solutions such as the use of farm waste to generate energy and the harvest of methane from landfills provide a way to produce energy at low cost (Leonard). Proper management of biomass, however, is essential to ensure its sustainability. For example, in Senegal, effective IDA-funded community management of traditional forest-based biofuels (wood and charcoal) led to 20% of Senegal's wood fuel consumption coming from sustainable forests in 2004 ("Sustainable Wood fuel").

Continued Use of Nonrenewable Sources

Although the ideal solution for climate change would be to phase out nonrenewable energy sources entirely, this will not be possible in many parts of the developing world. As a short-term method to address the problem of climate change, nonrenewable plants must be made more efficient in general, with more power generated per gram of carbon released and per liter or gram of fuel used. In China, where many new coal plants use higher steam temperatures, efficiencies can reach as high as 44%, reducing greenhouse gas emissions by a third (Bradsher). In Bangladesh, the IDA leveraged US$259 million to develop two independent power producers (IPPs) in Haripur and Meghnaghat. These plants now provide 20% of Bangladesh's power supply and have a "spotless" environmental record, earning the highest International Organization for Standardization (ISO) certification ("Low Cost Private" 1). More ambitious projects in the fossil fuel sector involve the sequestration of carbon dioxide directly from the fuel, having the potential to nearly eliminate emissions from the burning of fossil fuels; however, these methods are highly experimental and largely unsuitable for the developing world.

Another well-known alternative to fossil fuels is nuclear energy, derived from nuclear fission, which typically generates a power capacity factor of close to 100%, as long as fuel is readily supplied (Elofsson 2). Nuclear power is largely clean, and an average nuclear plant only releases 1-5% of the emissions that an average coal plant does over their respective lifetimes (Kleiner 2). Nuclear power, however, generates hazardous waste products with a complicated and expensive disposal process, and it carries many safety risks including a small possibility of meltdown.

Energy Sector Challenges

Connecting Source to User: Power Grid Expansion

Expanding the power grid is a crucial aspect of the sustainable development of energy, since no amount of conversion to renewables will bring access to power to the 1.6 billion people around the world who currently lack it ("Technical and Economic" xxv). Combined with SHS, grid expansion would bring massive developmental benefits to those living in rural areas that currently lack access to electricity. In Bangladesh, for example, an IDA-financed project using this approach brought forth a myriad of benefits including a decrease of 20% in the number of school days missed by children ("Electricity for Rural"). A similar initiative in Vietnam brought electricity to 2.7 million rural Vietnamese, 30% of whom reported higher incomes as a result ("Reliable Electricity"). In addition to increasing quality of life, grid expansion is necessary because any

development of renewable energy resources that occurs will not advance development if they are not connected with population centers.

In order to be truly effective, grid expansion in developing countries must be accompanied by innovation. Specifically, the idea of a "smart grid"—a grid monitored by computers so that energy is stored and used in the most efficient manner, with as little going to waste as possible. Such technology is a necessity for countries with plans to use highly intermittent sources of power, and can easily result in positive side effects such as the ability for individuals to sell excess power generated by SHS. Although building such a grid will likely incur significant expenses, studies show that it can reduce peak demand by up to 25%, potentially saving billions of dollars a year ("Building the Smart Grid").

Responsible Usage: Transport and Industrial Activity

Although power generation presents the primary challenge in stopping anthropogenic climate change, it only constituted 41.9% of total worldwide carbon dioxide emissions in 2005. The next two largest sources of carbon dioxide emissions were internal transportation, contributing 18.4% of total emissions, and manufacturing/construction, contributing 16.8% of total emissions ("Carbon Dioxide Emissions" 1). In developing states, manufacturing and construction contributed close to 25% of total emissions; conversely, in developed states, transportation tends to contribute more, constituting over 30% of all emissions in the United States (2). A global emissions strategy cannot be successful without taking into account these two activities. Energy usage also presents a unique challenge, in that users are often private individuals or corporations rather than governments, and therefore solutions must often be more complicated and involve policy stipulations as well as simple funding contributions.

Innovation in transport can lead to significant reductions in emissions. In recent years, biofuels have gained traction as an alternative for gasoline and diesel; however, first-generation biofuels derived from food crops such as corn have gained a bad reputation due to their tendency to increase food prices. The production of biofuel also releases greenhouse gases—it is estimated that for every ton of CO_2 released during the combustion of biofuels, close to 0.75 tons are released during production ("The Advance"). Technological advances, however, have allowed biofuels to become a viable alternative again, with second-generation cellulosic biofuels deriving ethanol from non-foodstuffs like switchgrass, forest waste, and wood chips at a much higher efficiency than corn (Doering). Although biofuels present significant challenges, in that they are not readily substitutable for gasoline or diesel and cars must be built or upgraded to run on a mixture with high biofuel content, US Energy Secretary Steven Chu estimates that cars can be upgraded to run on 85% ethanol for as little as US$100 per vehicle (Beaumont).

A more drastic method for reducing transportation emissions involves the use of a fuel source that is derived from the grid—usually electricity or hydrogen fuel. This would eliminate the need for separate initiatives to reduce emissions in vehicles, since the energy would essentially emanate from the same source. Current-generation electric vehicles are limited in their range, making them ideal for inner-city users but unfeasible for shipping and other long-range transportation. Although advances in lithium-ion battery technology could push electric vehicle range to 400km by 2015, they will always face the limitation of having to idle and charge after some time (Taylor). On a smaller scale, electric bikes (e-bikes) also present a feasible solution for inner-city users. China has over 100 million battery-powered e-bikes on the road; they are often reported to be more convenient and, at a price of US$290 per vehicle, more affordable than cars (Ramzy 1). This alternative is particularly appealing for both the environment and the individual's personal health.

Hydrogen fuel cells offer another environmentally-friendly alternative; since hydrogen burns efficiently and cleanly, the only byproduct produced is water. Like batteries, hydrogen cannot currently be used as a primary fuel source, but can be electrolyzed from water using excess energy. Currently, few countries in the developing world make use of hydrogen fuel cell technology, but it holds significant development potential, as seen with a recent pilot program in Brazil involving four buses powered by hydrogen fuel cells ("Brazil Launches").

Often, the initial economic cost to both consumers and producers of vehicles dependent on biofuel, electricity, or hydrogen will act as a disincentive to adopt such technology, especially during times when the alternatives are significantly less expensive, such as historical drops in petroleum prices. As an incentive, governments will often provide tax credits to those who buy hybrid or electric vehicles, which can be as high as US$15,000 in the US for a large, commercial electric vehicle ("Electric Car-Makers"). The World Bank, along with funding the necessary infrastructural and technological advances for alternative fuel vehicles, could easily provide funds for the implementation of such credits, which have been shown to be extremely successful in the short term.

A recent World Bank working paper aptly states that "the scale of investment needed to slow greenhouse gas emissions is larger than governments can manage" (Larson). This is especially true when used in reference to manufacturing and construction, sectors in which governments often do not actively participate. Broadly speaking, efficiency and emissions regulations can be implemented in order to limit the emissions, but a more economically-focused system must be considered, especially in today's economic climate.

Emissions trading offers the ideal solution for many countries. Under a system such as the European Union's (EU) Emissions Trading Scheme (ETS), private industries would be given a certain emissions allowance, and companies that do not reach that allowance can sell the excess on the market while companies that exceed it must either buy emissions credits to compensate, or face fines ("Emission Trading"). Emissions trading carries the unique benefit of being both an incentive system for companies that invest in cleaner technology and a disincentive for those who choose to pollute, while also offering an alternative to simple fines for exceeding regulated emissions levels. With the help of the ETS, the EU reduced emissions 7.7% from 1990 to 2006, and is on track for as much as a 20% reduction by 2020 (Balint 3). Emissions trading, however, is not perfect, and the ETS has been vulnerable to manipulation due to economic shocks—companies that cut their production 20% because of the recession, for example, register a 20% reduction in emissions without actually adopting cleaner technology (Darling).

CURRENT STATUS

The "Green Collar" Economy and the Global Recession

In 2007, the then-US Presidential candidate Barack Obama saw global warming as "a moment of opportunity for innovation, and job creation, and an incentive for businesses" (Obama). Obama's statements underlie a broad, innovative solution to the global warming problem: a "green collar" economy based around the construction and maintenance of renewable power plants and other clean technologies (Jones 9). This idea is becoming ever more relevant in today's world, with demand for electricity in the developing world increasing and developed states in need of economic stimulus.

Even though research shows that, dollar-for-dollar, money spent on "green" technology creates more jobs than money spent on road construction or tax cuts, the development of sustainable energy is likely to displace millions of workers by replacing jobs in the energy sector and raising energy prices, forcing firms to restructure in order to compensate ("The Grass" 1). Research found that in Spain, which currently has one of the highest unemployment rates in Western Europe, every "green" job created by government investment would have resulted in 2.2 regular jobs being created had that money been left to the private sector (2). In addition to not necessarily creating more jobs, environmentally-friendly technology is often simply more expensive. It is estimated that, without help from governments, installations of new renewable energy equipment will decline 30-50% in the coming year (Galbraith). The World Bank's role in financing sustainable energy projects has become ever more important in this economic climate, and as an organization devoted to "helping developing countries move to a lower carbon path," the Bank is obliged to help keep the sustainable energy sector alive ("Clean Energy").

International Action: On to Copenhagen

The Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC), adopted in 1997 in Kyoto, Japan, is considered the cornerstone of the international movement to curb the growth of emissions and fight climate change. The Protocol, however, was famously stillborn when the US refused to agree to it, on the grounds that developing states had significantly lower obligations to reduce their emissions. Fortunately, recent signs point to a shift in perception of the importance of international action against climate change. The week leading up to the Major Economies Forum in July 2009 led to the adoption of a resolution by the G8 that pledged US$400 million in aid for developing countries to lower their emissions, as well as a commitment to lower emissions in the developed world by 80% (Weisman 1). This resolution, however, was met with staunch resistance by developing states, who felt that the target of a 50% reduction in emissions worldwide would impede economic development in their countries (Chipman). These negotiations, along with another set in Bonn, Germany in June, are all a part of the road to the much-anticipated Copenhagen UNFCCC meeting in December, which is expected to yield a successor to the Kyoto Protocol. The unspoken aim of Copenhagen is to limit global mean temperature rise to no more than two degrees Celsius above pre-industrial levels—this goal will no doubt require significant and expensive action to reach ("Questions and Answers"). However, as UNFCCC Secretary Connie Hedegaard aptly states, "the economic cost of inaction is far greater than the price of taking action now" (Abaño).

BLOC POSITIONS

Part I (Developed) Countries

Although the focus of this committee is to address sustainable usage of energy in the developing world, developed countries also have a large role to play in shaping that usage. The role that developed countries play in reducing overall world emissions will be a critical subtext in debate, since developed states still contributed 63% of overall carbon emissions in 2005 ("Carbon Dioxide Emissions"). Countries such as Germany, the world's leader in solar PV energy, and the United States, where many of the world's renewable energy start-ups are based, should be eager to share this technology with developing states and potentially set up export markets abroad. In addition, developed states that have pursued similar initiatives or research into new technology can share expertise in developing states. The ambitious Masdar Plan in the United Arab Emirates (UAE), for example, involves the establishment of a research institution on par with the Massachusetts Institute of Technology, the creation of a global manufacturing hub for renewable energy technology, and the construction of a zero-emissions city of 40,000 people, all of which would be of much utility to a developing country looking to adopt more environmentally-friendly practices. There is a danger, however, in tensions flaring up due to the fact that most developed states still contribute far more emissions per capita than the developing world—the UAE is the world leader in this category ("Masdar Plan").

Part II (Developing) Countries

While there are no states with zero potential for development of renewable energy resources, some are undoubtedly better endowed in this sense than others. Countries located close to 30° N and 30° S latitudes are most suitable to solar PV and thermal power, due to the presence of deserts like the Sahara and Arabian Deserts in North Africa and the Middle East, Namib Desert in southern Africa, Gobi Desert in China and central Asia, Mojave and Sonoran Deserts in the United States and Mexico, Atacama Desert and Altiplano in Chile, Argentina, and Bolivia, and the Australian Outback. Meanwhile, countries located at the equator in the Intertropical Convergence Zone lack direct sunlight due to significant cloud and plant cover, and countries further north and south lack direct sunlight for large portions of the year ("Measuring Solar Insolation").

Wind speed appears to be greatest around 60° N and 60° S latitudes, so southern African and South American states are in a prime position, although fewer developing countries are located along 60° N ("Global Wind Speed"). Research also shows that mountains, plains, and shorelines are prime locations for wind turbines, with the potential greatly reduced in areas with high vegetation (Archer).

Geothermal power has the most potential in areas with high volcanic activity, although theoretically any geothermal project can yield significant results if drilled deep enough. The best locations for hydropower

have largely been exploited, but there is still significant potential in states with large river systems. Other energy sources are not geographically-dependent, although projects that are markedly more expensive or require significant advanced infrastructure may be of more interest to middle-income states rather than low-income states.

In addition to uneven distribution of resources, it is worth noting that different states can have vastly different needs due to demographic and economic factors. The manufacturing and construction sectors in rapidly growing or heavy producer states can be responsible for much higher percentages of emissions than the average, constituting 29.3% of total emissions in China and 31.3% in Vietnam. In states without well-developed transportation infrastructure, transport can be responsible for a much larger percentage, reaching as high as 54.5% in Ethiopia and 63.5% in Mozambique ("Carbon Dioxide Emissions"). The most pertinent problems to each state vary greatly, and evaluation on a case-by-case basis is required to truly succeed in tacking this issue.

COMMITTEE MISSION

The overall mission of the World Bank in regard to sustainable energy development varies from that of a session of the UNFCCC or United Nations Environment Programme (UNEP) in two ways: the scope of the committee and the depth of its initiatives. While a session of the UNFCCC might propose broad, sweeping initiatives and long-term targets, or even delve into potential solutions, the role of this committee is to evaluate the situation of a single country, determine the best course of action, and execute it at a very specific level. Although World Bank initiatives may have long-lasting impacts, most projects occur in the short term.

In essence, while the UNFCCC and similar conferences or summits play the role of the strategist, the World Bank's job is more akin to that of a field commander, with national governments and private contractors playing the role of foot soldiers. Treaties must rely on the compliance of their signatories to ensure success; the World Bank, as an independent organization with its own budget, can implement its own ideas.

On that note, you should never hesitate to be as specific as possible. The chance that US$50 million allocated to "development of solar energy" in Country X actually serves its intended purpose is slim, whereas it would be difficult to spend US$50 million allocated for "construction of a 100MW parabolic trough solar thermal and natural gas hybrid plant in City Y, and connection of said plant to Capital Z and Port W" on anything else. The information covered in this background guide is exactly that—background—and as world-class economists you are expected to do the research necessary to make prudent decisions on the uses of the World Bank's funds.

Environmental activist Robert F. Kennedy, Jr. once stipulated that the trade-off between the economy and the environment is a "false choice" (Kennedy 1). As Secretary-General Ban expressed, "the eyes of the world are upon us… succeeding generations depend on us. We cannot rob our children of their future" (Ban 2).

Figure 1: Important Energy Source Statistics

Source	Price (/W)	Cost (/kWh)	Global Installed Capacity	Global Capacity Potential
Renewables				
Hydropower	$1.00-$5.00[1]	$0.02-$0.10[9]	723 GW[4]	2,800 GW[4]
Biomass	Varies	$0.02 (with coal) $0.03-$0.05 (dedicated) $0.04-$0.09 (cogeneration)[1]	40 GW[1]	5,000 GW[1]
Wind	$1.80 (onshore) $2.40-$3.00 (offshore)[1]	$0.04-$0.08[9]	94 GW[1]	72,000 GW[1]
Geothermal	$2.50-$5.00[5]	$0.02-$0.10[9]	10.5 GW[3]	70 GW[1] (current tech)
Solar PV	$2.80+ (CSi) $1.76+ (thin film)[2]	$0.25-$0.40[1]	9 GW[1]	100,000,000 GW[1]
Solar Thermal	$1.50-$2.50[1]	$0.12-$0.15[6]		
Nonrenewables				
Nuclear Fission	$1.30-$3.50[7]	$0.03-$0.07[1]	370 GW[1]	80 yrs[1]
Coal	$2.00-$3.50[8]	$0.04[9]	N/A	251 yrs[9]
Petroleum	$0.90-$1.90[8]			41 yrs[9]
Natural Gas	$0.90-$1.90[8]			64 yrs[9]

[1] Morton
[2] "Solar Module"
[3] Stephure
[4] "Global Hydropower"
[5] "Geothermal"
[6] "Cheaper Solar Thermal"
[7] "Cost of Nuclear"
[8] "Electricity Market"
[9] "World Energy Assessment"

IMPROVEMENTS OF PRIMARY AND SECONDARY EDUCATION SYSTEMS TO REDUCE POVERTY

TOPIC B

INTRODUCTION

Former United Nations (UN) Secretary-General Kofi Annan once expressed that "education is the premise of progress, in every society, in every family," stressing the "liberating" qualities of information (Annan). Annan's statements outline a view generally shared by the international community—that a lack of education lies at the root of many of the world's problems, among them war, disease, and poverty. For this reason, when the Millennium Development Goals (MDGs) were drafted in 2000, one of their aims was to "achieve universal primary education" by the year 2015 ("The Millennium" 14).

The Benefits of Education

The benefits of education are unparalleled in their depth and scope. A 2003 study by a University of Manitoba group showed that, the more schooling parents had, the more likely it was that they would have fewer children, each with a better rate of survival and better nutrition, and each more likely to eventually use contraceptives to continue the positive cycle (Sackey). A smaller population decreases strain on the public and private institutions of a country including hospitals, schools, transportation, and housing, and, along with use of appropriate contraceptives, limits the spread of infectious diseases such as malaria and Human Immunodeficiency Virus (HIV).

Furthermore, education is directly correlated with economic growth. The lightning-fast growth of the "Asian tiger" economies prior to the 1997 economic crash largely stemmed from advances in education. Thailand, for example, mandated 12 years of compulsory public schooling at the time and is currently considering extending government-funded free education to 15 years ("Banking"). As Nobel Peace Prize-winning Indian economist Amartya Sen noted, "educate part of a community and the whole of it benefits" ("No School").

The Need for Education

In order to be effective in the developing world, better education must be put into place now. In many areas of the developing world, populations are significantly younger than in developed states—44% of sub-Saharan Africans, for example, are below the age of 15 (LaFraniere 1). This has caused increased demand for educational services, which, in conjunction with a lack of adequate supply in faculty and facilities, has led to unmanageable class sizes in Africa.

In addition to demographic influences, recently there has also been an economic bias towards better educated workforces, especially in the area of foreign direct investment (FDI), one of the most powerful engines of growth in developing states. In 2004, FDI in services exceeded that of goods, signaling the downfall of manufacturing-oriented FDI and making it crucial that workforces are educated so that they are able to execute the services necessary to attract investment and drive growth (McRae).

A lack of action, combined with the overt poverty that afflicts many education-deprived areas of the developing world, can contribute to a continued lack of economic growth, spread of diseases, and even terrorism. As the Pakistani Minister of Education, Javed Qazi, claims, the "illiterate masses become ready recruits for all sorts of unhealthy activities" ("Teacher, Don't").

Despite the urgent need for education, many developing countries simply lack the resources to improve their educational institutions. In fact, the 30 African countries deepest in debt spend as much annually on interest as they do on healthcare and education combined ("No School"). The World Bank and developed states, on

the other hand, possess the necessary resources, and it therefore falls on them to help achieve MDG 2 and move towards a better world for all.

HISTORY AND DESCRIPTION OF THE ISSUE

Increasing Access

The Education for All (EFA) initiative, launched in Jomtiem, Thailand in 1990, pledges to bring education to "every citizen in every society" ("Education for All"). EFA plays a central role in the World Bank's philosophy regarding the improvement of education systems, underlying the first improvement necessary for the achievement of MDG 2—an expansion of access to educational services. Similarly, the Fast Track Initiative (FTI), a joint program launched in 2002 by more than 30 donors, aims to achieve universal primary education (UPE) by 2015 ("Fast Track Initiative" 1). The World Bank is a central financer of FTI, and through its contributions has helped decrease the number of primary-age children out of school worldwide from 103 million in 1999 to 75 million in 2006 (2).

School Construction & Expansion

World Bank research shows that, in order to achieve UPE, 10 million classrooms must be built worldwide at a total cost of US$72 billion (Theunynck 1). Building more schools affects student attendance by reducing travel times—in one instance in Ghana, reduction of transit times by 45 minutes increased school attendance from 10% to 80% of capacity (Ingram 44). Further research in the Western Sahelian region of Chad only 8% of villages had schools located inside them. This is particularly significant because 80% of the students in schools came from those 8% of villages, suggesting that travel times are a significant factor in school attendance (Lehman 2).

Construction of schools is often influenced by policy concerns, such as movable furniture for group learning, space in corners for reading, and distance from sources of noise (Theunynck 2). Factoring these considerations into account, the average construction cost of a single classroom is roughly US$7000 in Africa, US$8000 in Latin America, and US$4000 in Asia (1). In addition to building classrooms, many existing facilities have fallen into disrepair and cannot be used, and it is estimated that two-thirds of the money used on school construction through 2015 will be spent to rehabilitate classrooms in unusable condition (2).

Reduction or Elimination of School Fees

Research has shown that school fees often comprise a barrier to attendance. When Malawi abolished school fees in 1994, for example, attendance skyrocketed by 51% (Kattan 2). School fees, however, are often an important source for qualitative inputs—in India, 76% of fees go towards the purchase of textbooks, and much of the remaining 24% go towards other administrative needs (3). For countries where the reduction or elimination of fees is impractical, scholarships, which have been shown as crucial to student retention and female enrollment, can be used as a fee reduction mechanism for a certain sector of the population (Patel 31). In Afghanistan, for example, a US$17.4 million post-conflict grant by the IDA to establish scholarships led to the increase of primary and secondary school enrollment from 3.1 million to over 5 million ("Expanding").

While fees are usually only an issue of access in low-income states, they also present a policy dilemma in middle-income states, where gross inequities exist due to their presence. In China, despite the one-child policy, school fees now comprise the single largest proportion of families' budgets ("Chaos"). This has created inequalities in the system between the wealthy urban class and poorer rural families, who often lack the funds to pay for their children to advance beyond primary school. This fact is disastrous when combined with the Chinese government's apparent inability to back their compulsory education laws with the appropriate public funding—in 2001, per student public spending in rural areas of Guizhou province was just CN¥485, compared with CN¥5886 in urban areas of Shanghai (Wang). This inequality often leads students in less-developed areas of middle-income countries to drop out of secondary school in order to work and

save their families the financial burden, as seen in Turkey, where the quality of education in the rural East lags far behind that of urbanized areas such as Istanbul ("Turkey's Curriculum").

Out-of-Classroom Education

In remote or conflict-afflicted areas of the developing world, building schools and reducing fees will often do little. As a result, out-of-classroom education is often necessary to fill the void. In recent years, the advent of the Internet and cellular phones has made this task much easier, and company Roundbox Global is now working with the United Nations Children's Fund (UNICEF) to provide education to child refugees by using cellular phones and radios. Corporate research has shown that, although less than 10% of schools in Latin America and Africa have access to the Internet, online classes can be effectively conducted through cell phones or even radios (Garland 1).

Increasing Quality

Increasing access without increasing quality and capacity is most likely a dead-end approach to improving education. For example, Ayani Primary School in Kibera, one of Kenya's largest slums, nearly doubled its enrollment from 1293 to 2087 students in 2002 thanks to the abolition of school fees. The downside to this increase in quantity is that, without the income from fees, the school could only afford to add two more teachers, and academic quality was negatively impacted, with standardized test scores dropping 7% the next year (Bengali). Similarly, when Uganda moved in 1997 to abolish school fees, enrollment nearly doubled from 3.4 million to 5.7 million, overwhelming the capacity of the country's educational system and causing educational quality overall to stagnate (Dugger 2). This problem is compounded when students do not complete grades due to poor quality and must retake them, further backing up the education system, as demonstrated in Brazil, where the over-capacity secondary schools would have ample room for all students if not for overage students who are retaking grades ("Cramming").

Conversely, where school fees still exist, parents are unlikely to be willing to spend money to send their children to schools with high student-to-teacher ratios (Ingram 44). A study in South Africa drew a definitive link between the quality of schools and the quality of education. It found that formerly white, urban schools, which were better-built and equipped, showed higher test scores even after apartheid ended and their demographics shifted to encompass a student body that was majority black and economically disadvantaged. Poorly-built rural schools, on the other hand, suffered even after their student bodies diversified to include more privileged students (Wine 1).

School Infrastructure

All schools require basic infrastructure—access to water, food, sanitation, and electricity—in order to ensure the best quality of education. An estimated 443 million school days are lost every year due to a lack of clean drinking water ("Benefits"). Innovative solutions are necessary in this case, since expanding the water grid is impractical in many cases. The PlayPump, developed by nonprofit organization Roundabout Outdoor, is one such case—a large wheel that can be spun by children and is connected to a machine that pumps clean water from underground aquifers to a water tower. Two sides of the tower's walls are sold as advertising space to pay for the cost of the pump, and the other two carry public service announcements (PSAs), usually pertaining to HIV/AIDS ("How the PlayPump"). Food is another basic necessity that should be provided by the school. It presents a huge incentive for parents to enroll children in schools in low-income communities, and enough food can be provided to feed a child for one year for as low as US$34. Currently, the New Partnership for Africa's Development (NEPAD) is working with the World Food Programme (WFP) to provide meals for children in Africa for this purpose (Madamombe). Sanitation comprises another necessity in the developing world, where a child dies from diarrhea every 15 minutes. Research has shown that building latrines increases school attendance by up to 20%, especially among girls (George). The presence of electricity also aids greatly in providing quality education, as seen with the installation of solar photovoltaic (PV) panels in Myeka High School outside of Durban, South Africa, which increased the graduation rate from 30% to 70% due to access to electronic educational materials (Lipschultz). Improvement in the quality of school

buildings themselves is also important, particularly if classes are prone to be disrupted by noise, in which case school infrastructure such as walls and windows must be improved (Ingram 45).

School Supplies

After achieving independence from the Soviet Union, Turkmenistan declared Turkmen the official language, replacing Russian. However, they failed to purchase many new textbooks to reflect this change, and, as a result, the number of students pursuing higher education has dropped from 40,000 at independence to 7,000 today, reflecting the importance of purchasing necessary school supplies ("Brain"). In Ghana, where authorities recognized that a quality education necessitated quality school supplies, a US$45 million IDA project helped pay for 11 million textbooks, along with the construction of hundreds of new schools and thousands of classrooms. These changes helped lead to an increase in Criterion Referenced Test (CRT) mean scores in both English and mathematics ("Ghana").

In today's increasingly digital world, no education would be complete without basic training in the use of computers. One way of putting computers in educational institutions in the developing world is recycling, pioneered by Computers for Schools Kenya (CFSK), a nonprofit that donates old computers, installed with Microsoft Office and other learning tools, to schools in Kenya. CFSK has found that companies looking to legally dispose of electronic waste will often be willing to donate the computers instead, as seen with Barclays Bank's donation of 1000 used PCs in 2007 for this purpose (Sturgeon). Computers may also be specifically manufactured for developing countries, as demonstrated famously by One Laptop per Child (OPLC), a company that manufactures durable, partly solar-powered US$100 laptops for children in developing countries. Although OPLC is struggling in the current economic climate, the future looks bright, with India recently ordering 250,000 of the devices for its students (Neelakantan). The use of computers, however, does come with caveats, as teachers must first be trained in the use of the devices, and schools must have electricity in order to use them.

Teacher Hiring and Training

From 1999, the IDA started a project that provided just US$4.9 million in funding for teacher training and hiring in Cambodia. Five years later, an evaluation showed that this money had led to a high pay-off in student retention, promotion, and learning, and concluded that "cost-effectiveness calculations show that even small amounts spent on teacher training may have a large impact on learning" ("School Quality").

The hiring of more teachers is one of the top priorities in the developing world, where many states face a gross deficit of teachers in comparison with growing student bodies. Mali's School H, for example, has a student-to-teacher ratio of 126:1, a number that is unimaginable in most of the developed world (LaFraniere 1). The United Nations Educational, Scientific and Cultural Organization (UNESCO) estimates that 18 million more teachers must be hired worldwide in order to achieve UPE by 2015 ("World Teacher's"). In the country of Nigeria alone, an estimated 459,000 trained teachers are required to close the gap ("Teachers Needed"). Countries that invest in teachers experience myriad benefits, as seen with Cambodia and Burkina Faso, where a US$32.6 million IDA project led to an 8% increase in public teachers, which increased student enrollment from 20% to 62% in 2006 ("550,000 More Children").

According to Jonathan Jansen, dean of education at the University of Pretoria, nearly half of the two million primary schoolteachers in sub-Saharan Africa are either under-qualified or unqualified, creating an education "crisis." As expressed by Faye Chung, former UNICEF Director of Education, quality education depends on the quality of the teachers, with their education level, experience, motivation, and dedication all playing a role (Otto). In addition to being trained, teachers' morale must be kept high, as research in South Africa has shown that more than half of that country's teachers have considered quitting due to low morale and high stress. In order to achieve this, teachers must receive their pay on time—research shows that teachers' attitudes towards their living and working conditions are "strongly influenced" by this factor. Educators' perceptions of their surrounding conditions are "significant determinants" of teacher morale, and are a cause of teacher absenteeism when low (Ingram 43).

Furthermore, educator wages must be improved, as there is little motivation for young and talented adults to pursue a career in teaching when this choice yields little reward. In Zambia in 2001, the average monthly salary for teachers was a low US$44 (McGregor). This is an issue even in middle-income countries, where education is often an unstable and unpredictable career path. In Brazil, where only 33% of teenagers attend secondary school, teachers in São Paulo scramble every year to get jobs at the highest quality schools due to the presence of a lottery system, leading to high teacher turnover and reducing performance ("Start").

Reform of the system used to train and recruit educators should consider incentives as the most important factor. Singapore, ranked number one in the world in math by the Trends in International Mathematics and Science (TIMSS) study, recruits students from the top third of their secondary school graduating classes directly into fully-financed teacher-education programs, where they eventually choose one of three career ladders: curriculum specialists, mentors for other teachers, or school administrators. The starting salary of a teacher in Singapore is higher than that of a doctor as a result of the government's emphasis on education, which should be emulated in developing countries to improve the quality of teachers (Darling-Hammond).

Furthermore, head teachers or school administrators, who are meant to provide leadership and increase administrative efficiency and transparency, often lack the necessary qualifications in developing countries. A study by the Research Triangle Institute International and East Africa Development Consultants showed that head teachers in Kenya had almost no practical skills—50% kept no administrative records, 30% had no training in financial management, and 85% lacked basic computer skills ("Time Ripe"). Head teachers are crucial in providing leadership and reporting results for education initiatives and their training should be considered just as important as that of general educators.

Curriculum Improvement

Education expert Andreas Schleicher, of the Organization for Economic Co-operation and Development (OECD), describes teachers in the developing world as often "working in the dark" and receiving little guidance in what to teach ("Cramming"). Development of curricula in low-income countries is therefore crucial, and should follow the system in place in Finland, where curriculum development is emphasized in teacher training and curricula focus on the individual needs of the student, factoring in both gifted and struggling students (Darling-Hammond). In middle-income countries where the actual development of curricula is not a problem, they are often outdated and not conducive to analytical thought. In China, for example, a survey by the Education Ministry found that 80% of students in China disliked school, 50% so much so that they considered suicide. As a result, China implemented reforms that made textbooks more "lively" and encouraged teachers to treat them as "platforms" for deeper thought rather than "sacred texts" to be read and memorized ("Roll Over"). Clearly, it is vital that the health of the student's psyche be taken into account when planning the student's curriculum.

Due to the fact that general education often lacks connection to real world jobs, a different approach may be necessary in some instances. An ideal solution is vocational and technical education and training (VET)—secondary or postsecondary education that focuses on practical skills rather than thought or knowledge. Studies show that VET is important for economic growth, but the relationship is not quite linear (Tilak). As noted by educator P.J. Foster, "the provision of vocational education must be directly related to those points… where demand for skills is beginning to be manifested." As such VET should only really be allocated where necessary—in countries where there is a clear demand for skills in certain sectors (Foster 153). In addition, VET must incorporate general education to ensure that students of VET programs do not fail if demand falls for their particular field (Tilak).

Testing

Although testing cannot replace legitimate field research, it provides an important reference point of the quality of education and progress of educational initiatives. In Tanzania, for example, the pass rate on the Primary School Learning Examination (PLSE) increased from 22% to 48.9% from 2000 to 2004. Over the

same period of time, the number of students transitioning from primary to secondary school increased from 21.7% to 30.1% (Lasway 46). It should be noted, however, that exam ratios at best are a "proxy" and do not by themselves reflect "improved quality" of education (51).

Testing must also be transparent and fair. For many years in the country of Georgia, college entrance examinations were prone to bribery and corruption due to their subjective nature. In 2005, the World Bank stepped in and funded the development of a new exam with enhanced barcodes, overseas printing facilities, and surveillance cameras in testing facilities. These changes greatly improved fairness and nearly eliminated any chance for foul play ("When Hard Work").

Policy Considerations

Bigotry and Bias in Education

In their third year of secondary school, Saudi children are reportedly taught that communism, Arab nationalism, secularism, capitalism, and Shia Islam are all apostasy. Many efforts have been made to reform education in Saudi Arabia, but nearly all have been met with staunch resistance, as seen by a petition signed by 160 important Saudi academics, clerics, and judges who called educational reformers "partisans of infidelity, polytheism, and delusion" ("The Risks"). Unfortunately, such systematic bias often pervades the educational institutions of developing countries, and must be taken into account when the World Bank considers offering an educational loan to one of these countries.

Sometimes, bias can be addressed through funding, especially in cases where countries will accept the change in the educational program but lack the funds to implement it. In Pakistan, for example, the Sustainable Development Policy Institute (SPDI) has found multiple "falsehoods, omissions and distortions" in textbooks that serve political interests (Nayyar x). Review by a third party in situations like these will often help address the problem, as seen with India's recently-instated annual textbook review by the National Council of Educational Research and Training (NCERT), an independent organization (Verghese).

Equal Access

Female education has been shown over the years to be exceptionally important. UNICEF's 2004 "State of the World's Children" report found that an increase in the general educational level of girls in any country brought about increased gross domestic product (GDP) per capita, increased rate of GDP growth, increased school enrollment of future generations, decreased rate of HIV infection, decreased child mortality for children under five years old (by 5-10%), and decreased maternal deaths (Bellamy 20). Furthermore, female education is closely correlated with smaller family size—a positive outcome in countries where population puts significant strain on institutions such as hospitals and schools ("A Man's World").

One of the most effective ways to promote equal access to education is the use of stipends and scholarships for the disadvantaged group—in this case, females. An IDA project in Bangladesh that has taken US$185 million in funding since 1993 has promoted female education greatly through the use of such scholarships. In 1991, girls accounted for only 33% of children enrolled in secondary school; that number increased to 56% by 2005, allowing Bangladesh to achieve MDG 3—"gender parity"—in education. Transparency played a large role in the success of the program, as a new program management administration was established in the Ministry of Education to oversee the scholarships and a mechanism was created for direct transfer of funds into the girls' bank accounts ("Stipends").

CURRENT STATUS

Education and the Economic Crisis

Although funding for education by national governments may decline or stagnate over the course of the economic crisis, putting more money towards education is a wise option for a stimulus, as an educated

workforce helps the economy achieve stable, long-term growth through foreign direct investment and domestic entrepreneurship. This is why, in early 2009, the World Bank announced a near-doubling of funding for global education to US$4.09 billion ("World Bank"). While education may be a clear long-term bulwark against economic downturn, its immediate utility may not be clear, and funding to meet EFA goals in the economic crisis is therefore crucial. In Indonesia, which suffered a massive financial collapse in 1997, aggressive government action with support from donors prevented a collapse of the education system and prevented the recovery from becoming even more difficult ("EFA in Indonesia" 2).

Where We Stand: The State of Worldwide Education in 2009-2010

Overall primary enrollment in the developing world has increased from 83% in 1999 to 88% in 2007, with South Asia and sub-Saharan Africa registering the largest increases—11% and 16% respectively ("The Millennium" 14). Despite these promising numbers, the global numbers of children who still have not enrolled in primary school are "dropping too slowly and unevenly for the target to be reached by 2015" (15). It is estimated that nearly half of the children currently not enrolled in primary school have never had any contact with formal education, leading to the conclusion that new awareness methods must be implemented. In addition, educational parity indices, which measure the attendance rate of the most disadvantaged group with that of the least disadvantaged group within countries, vary between 0.59 and 0.99 for primary education and 0.17 and 0.98 for secondary education (16). Clearly there is a long way to go before EFA can truly be achieved.

BLOC POSITIONS

Part I (Developed) Countries

Developed countries will be crucial in providing advice and guidance for Part II countries as Part II countries aim to improve their education systems. With the exception of South Korea, which exceeds the OECD average test scores, and some Eastern European countries, which come close, most Part II countries lag far behind Part I countries in mean standardized test scores ("Chaos").
Part I countries, however, rarely harbor perfect education systems, and many problems have become apparent over the years. While overall primary enrollment increased from 1999-2007 in developing countries, it actually decreased one percentage point in developed countries, leading to the notion that the educational systems of most Part I countries are far from perfect ("The Millennium" 14). However distant these problems may seem now for most of the developing world, they will ultimately present themselves one day as a major issue and should be factored, at least minutely, into the Bank's decisions today.

Part II (Developing) Countries

Part II countries vary greatly in the effectiveness of their education systems and the problems therein that must be addressed. Low-income countries, particularly those in sub-Saharan Africa and South Asia, will probably need to improve many aspects of their institutions from the ground up, with significant funds being spent towards building classrooms, purchasing supplies, and training teachers. Low-income Part II countries will likely want to work towards eliminating school fees, but must keep in mind that without proper measures this action could lead to severe school overcrowding.

Middle-income Part II countries should take a different approach to the situation. Many of the necessary educational institutions exist in these countries, and there is not much need for more classrooms or supplies. Therefore, middle-income Part II countries will probably need to take a more policy-based approach to improving their education systems. In many of these states, gross inequities exist in education between the privileged and underprivileged classes, and it will be a great challenge for delegates to find a solution that elevates lower-income students without bringing down higher-income students. Curricula will also likely be a major focus with Part II countries, as they seek to reform the way that their students learn. Teacher training may also be another factor, as even middle-income states often lack qualified teachers, and education is often not considered a desirable career path.

COMMITTEE MISSION

The mission of this committee is simple: to work towards achieving EFA goals in an efficient, effective, and specific manner. Although legislation or treaties may have effects on even climate change, the legislation and treaties will do little to bring increased access and an increased quality of education to students in the developing world. Legislation and treaties do nothing for education without their implementation. The true catalyst for the improvement of education comes from the construction of more and better schools, the availability of textbooks and computers, the development of teachers and curricula, and the improvement of administrative processes—including fewer school fees and less discriminatory practices.

Again, this committee should never hesitate to be specific. There is a great deal of research on the exact costs of qualitative inputs, and delegates will be expected to use these to their advantage in committee. The World Bank, unlike UNICEF or UNESCO, has its own budget and does not solely need to rely on donor countries, making the World Bank uniquely positioned to provide funds for the necessary aspects of educational institutions and systems.

However technical the building of X number of classrooms or the training of Y number of teachers may seem, you should never lose sight of the ultimate goal—to decrease poverty and alleviate its accompanying social ills through perhaps the only sustainable, long-term solution that works. To quote former UN Secretary-General Dag Hammarskjöld, we must not let "our learning, our knowledge, and our mastery [become] too much concentrated on techniques that we forget about man himself" (Cordier 303).

RESEARCH AND PREPARATION QUESTIONS

As mentioned in the Note on Research and Preparation, it is imperative that delegates answer each of these questions in their position papers.

TOPIC A

1. What is climate change, and what is causing it? Why is it important to address climate change? What are the consequences for the world, and your state, if action is not taken to mitigate it?

Part I (Developed) Countries:

2. What experience does your state have with renewable energy resources? How can this experience be of use to developing countries?

3. What technological advancement or research is your country currently undertaking that could help developing countries adopt sustainable energy practices?

4. Which sustainable energy initiatives should the World Bank invest in? Which ones have the potential to improve the quality of life for the most people? Why should the World Bank fund these projects?

5. What effects has adopting sustainable energy practices had on your country and its economy? What effects will the use of these same practices by developing countries have on your country?

Part II (Developing) Countries:

2. What renewable energy sources are available to your country? Does your country have any geographic advantages in renewable energy resources (deserts, long coastline, rivers, etc.)? How can these be best utilized to your advantage?

3. What are the main sources of your country's energy? How much of it is derived from renewable sources? How can you increase this percentage?

4. What is the state of your country's electricity grid and other energy infrastructure? Is it in need of improvement or repair? If so, what is the best approach?

5. What technologies can your state adopt to reduce emissions from the use of automobiles and other forms of transport? How are these technologies best suited to your country's particular situation?

Both Part I and Part II Countries:

6. How can your state use policies and laws to reduce emissions from transport and industrial activities such as manufacturing and construction? Is your country suitable for the implementation of an emissions trading scheme? Why or why not?

7. What potentially adverse effects could "going green" have on your state's economy? How can these effects be mitigated? Do the costs of adopting sustainable energy practices outweigh the benefits? Why or why not?

TOPIC B

Part I Countries

1. What is the education system currently like in your country? What are its strengths and its weaknesses?

2. How did the education system in your country develop, and what can Part II countries learn from this process?

3. In what ways does your country ensure that students have access to schools? How are students who choose not to enroll in schools educated?

4. How does your country ensure the quality of its schools? Are any of these methods suitable to developing countries?

5. What policy considerations should developing countries have when improving their education systems? How does education policy affect institutions in your country?

Part II Countries

1. What is the current state of the education system in your country? What are its general strengths, and where is there room for improvement?

2. How did education in your country come to be the way it is today? Was it better in the past? If so, what can be done to reach that level again? If not, how did it improve?

3. What challenges are there regarding access to education in your country? Are school fees too high? Is there a geographical problem with access? How can this be fixed?

4. Is the capacity of your country's education system adequate? If not, how can this be addressed?

5. Do schools in your country have access to basic infrastructural necessities? What about textbooks, and other supplies? If not, how can this be addressed?

6. Are there enough teachers in your country? Are they qualified, and do they have high enough morale? If not, how can this be changed?

7. What policy considerations are there pertaining to improvement of your educational system, if any? How will these affect the views of the World Bank or other countries?

IMPORTANT DOCUMENTS

The following documents have been hand-selected by Directors to further aid in delegate preparation. Please make a concerted effort to read and analyze these documents prior to the conference.

TOPIC A

Abeku, Tarekegn et al. "Working Group II Report 'Impacts, Adaptation, and Vulnerability'." IPCC Fourth Assessment Report. 17 November 2007. <http://www.ipcc.ch/ipccreports/ar4-wg2.htm>.
The most comprehensive climate change report out there. Check out "Summary for Policymakers" for brief overview of impacts, or other sections of the report for other material.

"Carbon Dioxide Emissions by Economic Sector 2005." International Energy Agency. 2005. <http://earthtrends.wri.org/pdf_library/data_tables/cli2_2005.pdf>.
Sector-by-sector and country-by-country overview of the exact sources of carbon dioxide emissions. Very useful for evaluating problem areas to address.

"Clean Energy & Climate Change." The World Bank. <http://go.worldbank.org/7W3DZHKNF0>.
Overview of the World Bank's policy and initiatives on clean energy and climate change. Good jumping-off point for further research.

"Electricity for Rural Population in Bangladesh." International Development Association. June 2007. <http://go.worldbank.org/HJCNIRQ9G0>.
"IDA at Work" overview of a World Bank grid expansion and SHS project in Bangladesh. The IDA website features a number of user-friendly project profiles like this one, and I highly recommend reading them for ideas about what typical IDA projects are like.

Fridleifsson, Ingvar B. et al. "The Possible Role and Contribution of Geothermal Energy to the Mitigation of Climate Change." IPCC Geothermal (11 February 2008): 1-35. <http://iga.igg.cnr.it/documenti/IGA/Fridleifsson_et_al_IPCC_Geothermal_paper_2008.pdf>.
IPCC paper detailing many aspects of geothermal energy. Recommended read for countries looking to pursue geothermal as a solution.

Kolbert, Elizabeth. Man, Nature, and Climate Change. New York: Bloomsbury USA, 2006.
An extremely useful and interesting book that provides great background on anthropogenic climate change through first-hand experience and account of facts. If you read one source for background on global warming, this should be it.

Larson, Donald F. et al. "Carbon Markets, Institutions, Policies, and Research." The World Bank. 1 October 2008. <http://go.worldbank.org/07MTROIHM0>.
Detailed paper about the institutions necessary in order to effectively implement a carbon market.

Morton, Oliver et al. "A Task of Terawatts." Nature 454.7206 (14 August 2008). 805-823.
Clear and comprehensive overview of all the major renewable energy sources, plus nuclear fission. Highly recommended for background info and statistics.

"The Other Kind of Solar Power." The Economist. 4 June 2009. <http://www.economist.com/search/displaystory.cfm?story_id=13725855>.
Economist article on solar thermal power. Very recent, and does a good job of detailing challenges and the various types of solar thermal.

"Technical and Economic Assessment of Off-grid, Mini-grid, and Grid Electrification Technologies." Energy Sector Management Assistance Program. December 2007.

<http://siteresources.worldbank.org/INTENERGY/Resources/MiniGridElectrificationTechnicalReport61207.pdf>.
Very extensive (300+ page) World Bank paper on grid electrification technologies.

"World Energy Assessment Overview 2004." United Nations Development Programme. 2004. <http://www.energyandenvironment.undp.org/undp/indexAction.cfm?module=Library&action=GetFile&DocumentAttachmentID=1010>.
Update to a joint UN report on the state of world energy originally released in 2001. Excellent source for statistics and background info.

TOPIC B

"550,000 More Children Attend Primary School in Burkina Faso." International Development Association. March 2007. <http://go.worldbank.org/7W00SC6ET0>.
IDA at Work profile of a project in Burkina Faso to increase access to schools. These profiles are useful for surface research—if you wish to look deeper most will have a link to a "Project Documents" page that has in-depth information.

Dugger, Celia W. "In Africa, Free Schools Feed a Different Hunger." New York Times. 24 October 2004. <http://www.nytimes.com/2004/10/24/international/africa/24africa.html>.
Times article about the state of education in sub-Saharan Africa. Slightly dated, but still a recommended read for basic background info.

"Expanding Access to Education in Afghanistan." International Development Association. April 2007. <http://go.worldbank.org/O6LHRVBMF0>.
IDA at Work overview of a project in Afghanistan to bring equal access to girls.

Ingram, Gregory K. et al. "Project Performance Assessment Report: Ghana." The World Bank. 01 July 2004. <http://go.worldbank.org/9Y727ICA80>.
In-depth analysis of effects of the wide-ranging Ghana IDA project on Ghana's educational system. Recommended for low-income countries.

Kattan, Raja B. and Nicholas Burnett. "School Fees: A Roadblock to Education for All." Education: The World Bank. August 2004. <http://siteresources.worldbank.org/EDUCATION/Resources/Education-Notes/EdNotes_Userfee_3.pdf>.
Brief on the effects of school fees on enrollment.

"The Millennium Development Goals Report 2009." United Nations. 2009. <http://www.un.org/millenniumgoals/pdf/MDG%20Report%202009%20ENG.pdf>.
Report on the status of MDGs in 2009. Recommended source for updates as to MDG 2 - education status. Highly recommended further review when 2010 report is published.

Theunynck, Serge. "Education for All: Building the Schools." Education: The World Bank. August 2003. <http://siteresources.worldbank.org/EDUCATION/Resources/Education-Notes/EdNotesConstruction.pdf>.
Excellent brief on the construction of schools in developing countries for the purposes of reaching EFA.

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Basic information on and explanation of the role of the International Centre for Settlement of Investment Disputes, a member of the World Bank Group.

"About MIGA." MIGA.org. <http://www.miga.org/about/index_sv.cfm?stid=1588>.
Basic information on and explanation of the role of the Multilateral Investment Guarantee Agency, a member of the World Bank Group.

"The Bretton Woods Conference, 1944." U.S. Department of State. <http://www.state.gov/r/pa/ho/time/wwii/98681.htm>.
Overview published by the US State Department of the history surrounding the Bretton Woods conference and the event itself.

Goodman, Peter S. and Krissah Williams. "Scandal May Jeopardize World Bank Funds." The Washington Post. 8 May 2007: A01. <http://www.washingtonpost.com/wp-dyn/content/article/2007/05/07/AR2007050700490.html>.
News article about the 2007 World Bank scandal surrounding President Paul Wolfowitz.

Kapur, Devesh et al. The World Bank: History. Washington, DC: Brookings Institution Press, 1997. <http://books.google.com/books?id=mtBFK_ACbv8C>.
Detailed history of the World Bank, presented from a variety of different perspectives and regarding a number of relevant issues and past World Bank projects.

Tully, Andrew F. "World: Demonstrators Protest World Bank/IMF Meetings". Radio Free Europe. 4 April 2000. <http://www.rferl.org/Content/Article/1093711.html>.
A news article about the events surrounding the 2000 IMF and World Bank protests in Washington, DC

"What is IDA?" The World Bank. <http://go.worldbank.org/ZRAOR8IWW0>.
An overview of the role and history of the International Development Association, the branch of the World Bank responsible for low-income nations.

"What We Do." International Finance Corporation: World Bank Group. <http://www.ifc.org/ifcext/about.nsf/Content/WhatWeDo>.
An overview of the role and history of the International Development Association, the branch of the World Bank responsible for low-income nations.

"World Bank History." The World Bank. <http://go.worldbank.org/2GIYUD9KB0>.
The World Bank's own overview of its history. A useful source for background information.

TOPIC A

UN Sources

Ban Ki-moon. "We Cannot Steal Our Children's Future, Secretary-General Tells High-Level Segment of Climate Change Conference, as He Urges Breakthrough in Bali." High-Level Segment of the United Nations Climate Change Conference. Bali, Indonesia. 12 December 2007. <http://www.un.org/News/Press/docs/2007/sgsm11325.doc.htm>.
Secretary-General Ban's speech to the Bali UN Climate Change Conference in December 2007.

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"The Advance of Biofuels – A Boon for the Climate?" EnergyPortal.eu. 3 August 2006. <http://www.energyportal.eu/reviews/biomass/30-the-advance-of-biofuels-a-boon-for-the-climate.html>.
Article that goes over the basic advantages and disadvantages of biofuels, and evaluates their potential use in the EU.

Archer, Cristina L. and Mark Z. Jacobson. "Evaluation of Global Wind Power." Journal of Geophysical Research (2005). <http://www.stanford.edu/group/efmh/winds/global_winds.html>.
Research that shows wind speed at multiple stations around the world.

"Atmosphere Changes." U.S. Environmental Protection Agency. 17 December 2008. <http://www.epa.gov/climatechange/science/recentac.html>.
Summary of IPCC research about potential atmospheric changes due to anthropogenic global warming.

Balint, Judit et al. "Greenhouse Gas Emission Trends and Projections in Europe 2008." European Environment Agency. 16 October 2008. <http://www.eea.europa.eu/publications/eea_report_2008_5>.
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Beaumont, Thomas. "Energy Secretary Wants E85 capability in All Cars." Des Moines Register. 23 June 2009. <http://www.desmoinesregister.com/article/20090623/NEWS09/906230375>.
Article about Energy Secretary Steven Chu's proposition to make all cars compatible with 85% ethanol fuel cocktails.

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Article about the Three Gorges Dam, its future, and the state of renewable energy overall in China.

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