

XXIX

TECMUN Jr.

United Nations
Conference on Trade
and Development

XXIX TECMUN Jr.
Sessions Schedule

Miércoles 10 de noviembre

Ceremonia de inauguración	9:00 – 10:00 h.
Receso	10:00 – 10:30 h.
Primera sesión	10:30 – 12:00 h.
Receso/comida	12:00 – 12:30 h.
Segunda sesión	12:30 – 14:00 h.
Receso	14:00 – 15:00 h.
Tercera sesión	15:00 – 16:00 h.

Jueves 11 de noviembre

Ceremonia magistral	8:30 – 9:30 h.
Receso	9:30 – 10:00 h.
Cuarta sesión	10:00 – 11:30 h.
Receso/comida	10:30 – 12:00 h.
Quinta sesión	12:00 – 13:30 h.
Receso	13:30 – 14:30 h.
Sexta sesión	14:30 – 16:00 h.

Viernes 12 de noviembre

Septima sesión	8:00 – 9:30 h.
Receso	9:30 – 10:00 h.
Octava sesión	10:00 – 11:30 h.
Receso/comida	11:30 – 12:00 h.
Novena sesión	12:00 – 14:00 h.
Receso	14:00 – 15:00 h.
Ceremonia de clausura	15:00 – 17:30 h.
TECMUN GLOOM	17:30 – 18:00 h.

XXIX TECMUN Jr.
General Agenda

Secretary General: Vanessa Arroyo Jerez

Chief of General Coordination: Paola Ayelén Hernández Hernández

ASAMBLEA GENERAL

Subsecretary General: Andrea Michelle Martínez Lozano
Coordinating Supervisor: Ximena Serna Mendoza

Sesión Plenaria de la Asamblea General

President: Jade Artemis Gonzáles Díaz

- A) Estrategias para contrarrestar la epidemia contra el VIH y el Sida, en América Latina y el Caribe, partiendo desde las desigualdades existentes
- B) Acciones para erradicar la esclavitud sexual de mujeres y niñas en la región de China y Birmania

Primera Comisión de Desarme y Seguridad Internacional

President: Sofía Victoria Solís Uribe

- A) Contrarresto de la violencia cotidiana y la adulteración económica a causa del tráfico internacional de armas de fuego ilícitas entre grupos narcotraficantes de América Latina, con énfasis en la República de Colombia
- B) Fortalecimiento del desarme y desmovilización en el área del Estrecho de Ormuz, con énfasis en ataques nucleares y de fuego entre Estados Unidos de América y la República Islámica de Irán para prevenir un posible conflicto armado

United Nations Conference on Trade and Development

President: Mariana Cortés Gallardo

- A) Strategies to ensure safe, affordable, and reliable innovation on nanotechnology in the field of healthcare to developing countries in Latin America and The Caribbean
- B) Strategies for the implementation of renewable energies in sub-Saharan Africa with emphasis on efficiency and reliability for the needs and resources of the area

United Nations Office on Drugs and Crime

President: Elena Ramírez Sandoval

- A) Strategies to cope with the massive illicit opioids trafficking in the Islamic Republic of Afghanistan through the Balkan Route
- B) Measures to reduce the illegal production of injected drugs on Southeast Asia, focusing on HIV

Office of the United Nations High Commissioner for Human Rights

President: Chiara Trejo Infante

- A) Actions to diminish government censorship in Belarus, focusing on the restriction of information and attacks on human rights activists and opposition
- B) Strategies to prevent human rights violations in South-Central Somalia, focused on al-Shabab's attacks on civilians and blockage of humanitarian assistance

Organización Internacional de Policía Criminal

President: Abraham Alejandro Carlos Mendoza

- A) Acciones para combatir la piratería marítima en el Golfo de Guinea con énfasis en buques de carga y plataformas petroleras
- B) Medidas para combatir el fraude cibernético de suplantación de identidad con énfasis en Europa

CONSEJO ECONÓMICO Y SOCIAL

Subsecretary General: Maria Fernanda Casillas Monrroy

Coordinating Supervisor: Anahí Amairany Pérez Escobedo

Counter-Terrorism Committee

President: Diego Márquez Sánchez

- A) Measures to mitigate the financing of the extremist group ISIL in the Middle East focusing on the illegal distribution of petroleum in the black market
- B) Actions to counter the interventions of the terrorist group Hamás in the Belic conflict between the State of Israel and the State of Palestine with a special emphasis on the consequences for the population residing in the Gaza Strip

United Nations Entity for Gender Equality and the Empowerment of Women

President: Kenya Damaris Ruiz Arellano

- A) Measures to mitigate sexual violence as a form of hatred towards women part of the LGBTQ+ community in the region of South Africa
- B) Measures to address police brutality concerning the feminist movement as a result of the past women's day protests in the region of Mexico and the Republic of Chile

Comisión de Prevención del Delito y Justicia Penal

President: Emilio Díaz López

- A) Medidas para prevenir los homicidios de civiles por el uso indiscriminado de armas debido a la Segunda Guerra del Alto Karabaj entre Armenia y Azerbaiyán, con enfoque en los Principios Básicos sobre el Empleo de la Fuerza y de Armas de Fuego
- B) Medidas para prevenir cualquier método de tortura y detención indefinida en la prisión de Guantánamo, bajo dirección del gobierno de Estados Unidos de America, con enfoque al respeto de las Reglas Mínimas para el tratamiento de los reclusos de las Naciones Unidas y el Derecho Internacional

United Nations Educational, Scientific, and Cultural Organization

President: Paula Inclan Villamil

- A) Actions to ensure education in areas of armed conflict generated by extremist groups of Islamic Origin with a focus on Western Asia
- B) Measures to counter the appropriation of African culture in the United States of America with a focus on capitalisation of the fashion industry

United Nations High Commissioner for Refugees

President: Regina Montserrat Villalpando Camberos

- A) Strategies to face the humanitarian crisis in Bangladesh, as a consequence of the extreme migratory measures taken towards the Rohingya Muslim population in Myanmar
- B) Strategies to combat the migratory crisis of refugees in Southeastern Europe due to the civil conflict against the Bashar al-Ásad government in Syria

Conseil de l'Europe

President: Yunuen Blancas Cruz

- A) Mesures pour sauvegarder la liberté d'expression et d'information, notamment la liberté de la presse en raison de la pandémie de covid-19 dans les pays d'Europe du sud-est
- B) Stratégies pour assurer une utilisation correcte du certificat COVID numérique de l'UE et éviter les répercussions sur les droits de l'homme de la population européenne

AGENCIAS ESPECIALIZADAS Y ORGANISMOS REGIONALES

Subsecretary General: Javier Márquez Saucedo

Organización de los Estados Americanos

President: Andrea Burgos Mondragón

- A) Medidas para hacer frente a la violencia en procesos electorales con énfasis en las recientes elecciones de los Estados Unidos Mexicanos
- B) Medidas para frenar las injusticias socioculturales hacia los pueblos indígenas en Canadá con énfasis en el sistema jurídico

Comisión Económica y Social para Asia y el Pacífico

President: Valeria Loera Gómez

- A) Estrategias para abordar la crisis social tras el golpe de Estado en la República de la Unión de Myanmar, en el marco de la represión de manifestaciones pacíficas y la ley marcial
- B) Estrategias para contrarrestar las implicaciones económicas provocadas por fenómenos meteorológicos en el Océano Índico y el Sudeste Asiático

Comité Internacional de la Cruz Roja

President: Ana Lourdes García Nila

- A) Estrategias para la localización de víctimas de la trata de personas en México con énfasis en el reencuentro de familias y la ayuda esencial
- B) Acciones para mejorar las condiciones de vida en las prisiones de El Salvador con énfasis en la dignidad de los presos

Organismo Internacional de Energía Atómica

President: Ixtli Zenit Ramírez García

- A) Medidas para controlar la producción de uranio en la República Islámica de Irán con base en el Plan de Acción Integral Conjunto de 2015 con el objetivo de prevenir el desarrollo de armas nucleares
- B) Acciones para fomentar el uso de energía atómica de forma sostenible con el fin de combatir la contaminación atmosférica por carbonización con énfasis en Asia y el Medio Oriente

Security Council

President: Gerardo Calderón Huerta

- A) Measures to stop the criminal cybernetic groups commanded by Darkside based in the Russian Federation and Eastern Europe regarding the recent attacks made to The United States of America
- B) Mechanisms to address the growing crisis regarding naval disputes located in the South China Sea region

International Court of Justice

President: Fernanda Valentina Martínez Reyes

- A) Alleged Violations of the 1955 Treaty of Amity, Economic Relations, and Consular Rights (Islamic Republic of Iran v. United States of America)
- B) Alleged Violations of Sovereign Rights and Maritime Spaces in the Caribbean Sea (Nicaragua v. Colombia)

“Yet, in the face of oppression, plunder and neglect, our response is life. Neither floods nor plagues, neither famines nor cataclysms, not even eternal wars through the ages and centuries, have succeeded in reducing the tenacious advantage of life over death”.

- Gabriel García Márquez

For the present, the moment you read this,
Wanting to change the world is a dreamer's idea.

The world is full of monotony, conformism and intolerance. Years of violence, corruption, discrimination, injustice and selfishness have ended up dehumanizing the individuals who make it up, turning us into nothing more than fragments clinging to a concept of life that is far removed from goodness and innocence. We turn what we condemn into our normality, to such a degree that living under the incessant sensation of fear has been the only constant over the years. Wars, crises, inequality, weapons and crimes are just some of the words that make up the topics that you will discuss over the next three days, but today, I would like to ask you that beyond clinging to your position, you become that agent of change that remembers that mistakes are human and that empathy is a concept that can only prevail if we understand that the reality of this world is not limited to a shade of gray, but to a myriad of shades.

Humanity was condemned to freedom, to the ability to have options and create a criteria about them, implying a responsibility that goes beyond our understanding, since it is not limited to the selfishness of our actions but to the repercussions of this. In a world so full of inequality, frustration and hopelessness, it is easy to forget that the capacity for change still lies in the minds and hearts of those willing to see the truth. Beyond our passion for debate, we work on this model because we are dreamers and we faithfully believe that the world can change if we all dare to rebuild ourselves under the concepts of respect, forgiveness and empathy. We seek to remind you that your voice has value, just as your actions can represent the struggle of thousands of people. After four years in this project, I would like to share with you that my true reason for fighting for a better world lies with you and the people who make up TECMUN. It is here where I have found genuine hope for a better present and future, where I learned the importance of not being indifferent to your context, where I found the strength in my voice and where I found my place in the world. I want to remind you that it is that small spark of inspiration that we find in unexpected places that usually unleashes the greatest revolutions in our hearts and minds, that pushes us to take hold of that capacity for change that we are so terrified to explore and that ends up making us raise our voices against what we believe is right. Three days are not enough to change the world, but I hope they were enough to make you feel inspired. Don't be afraid to be a dreamer, to wish for a better tomorrow, and don't feel ashamed for being afraid to take the first step. At the end of the day, this is a path that we will walk together and never stop learning from. Today I just want to thank you for inspiring me once again and for being the reason TECMUN remains strong. *Hope*, that's what you and this model represent to me, so thank you for changing my life.



Vanessa Arroyo Jerez
Secretary General for the
XXIX TECMUN Jr.

"I am not throwing away my shot."

- *Lin-Manuel Miranda*

Participant,

A couple of years ago I met someone who could talk all day about TECMUN. I didn't really get it, to be honest with you, the way she talked like it was the most inspiring and breathtaking thing ever. I didn't get it for a while, until the very first model I was a part of. Seeing rooms full of delegates, like you, taking on a posture for three days to try and solve a problematic that probably nobody else cares to solve at the moment. Their excited looks, concentrated faces, and their firmness raising their hands to speak out is something that will always stay with me. There is something truly special in the way that hundreds of young people that have never met each other in their lives share ideas and possible solutions, all for a common, incredible end: the one of helping people in need.

I may not know you personally, but you, by reading this, have already given me hope in a better world. A world that can't only change, but that can be changed by people like you. Because, believe it or not, you have one of the greatest powers to ever exist: *courage*. Don't stick to the version of the world that has been sold to all of us. Believe in the power of a single, courageous voice that dares to defy the ones filled with indifference or that are deeply corrupted. Believe in the power of being alive, of being free, despite and *because* of the ones who are not. Be what many others can't or won't be. Believe in your own capacity, desires and goals, because when you want to be a part of change, your post doesn't matter; what matters is what you can do, want to do and dedicate yourself to do, and who you can become with all of that. I fully believe that you can grow to be and do something extraordinary, because you have taken the very first step by joining this model.

I have learned that TECMUN is not only a United Nations model; TECMUN is whatever you take from it. It can be an eye-opening place, an experience of growth, a space of support, and much more. But I can go as far as saying that it is an elemental opportunity. Many of us have gotten to know the pieces that make us up right here, and we put them together a little bit more with every day we spend being a part of it. Maybe the same will happen to you, or maybe not, but there is definitely something that you will take with you from the model.

It's time to stop waiting for the better. It's time to push away all of the doubt, and take a chance. Every single one of us, at some point, has been completely oblivious to the topics debated in this model. But, for you, that ends here and now. I have faith that the next three days will only be the beginning of a journey for you, of becoming a person who is aware of the challenges that surround millions of people in this world every day, and of wanting to do something about it. Lastly, I want you to know that, by being here, you have already inspired me in many ways. Today, at this very moment, you have taken your shot. And I know you will continue to do so.

Paola Ayelén Hernández Hernández
Chief of General Coordination for the
XXIX TECMUN Jr.

“There is no gate, no lock, no bolt that you can set upon the freedom of my mind”

Virginia Woolf

Delegadx:

Quiero que sepas que ya estuve en tu lugar, ya viví lo que estás a punto de experimentar, ya viví esos nervios, ese estrés, esa incertidumbre y esa emoción al entrar a la sala, y créeme que puedo asegurarte que todo valdrá la pena. El hecho de que estés leyendo esto, habla más de lo que te imaginas; habla de tu compromiso, tu capacidad, y sobre todo, tu sed de cambiar al mundo, porque así es delegadx, hoy ya eres parte del cambio. Es cierto que es imposible transformar al mundo en tres días, pero puedo asegurarte que este solo es el inicio, y que a partir de este momento, nunca volverás a ver el mundo como lo veías antes de vivir esta experiencia. Quiero darte un consejo, y te lo daré desde mi experiencia como delegada, mesa, presidenta y, ahora, como subsecretaría para la Asamblea General: no te limites a dejar tu ingenio, empatía y tus conocimientos en un debate, o en una hoja de 15 puntos. Estos tres días de trabajo arduo te irán enriqueciendo en muchas formas, pero te pido delegar, dalo todo, no tengas miedo, confía en tus habilidades y en ti mismo, tú puedes. De hoy en adelante, empieza por ti, y luego, marca la diferencia; haz hasta lo imposible por ser el cambio que tanto deseas ver en el mundo. Créeme que al igual que tú, el miedo en muchas ocasiones me intentó consumir, pero ese mismo miedo se ha convertido en fortaleza, y desde ese sentimiento, quiero pensar, protestar y luchar en voz alta. Si bien, al crecer nos damos cuenta que es una realidad que vivimos en un país machista y opresivo, donde como mujeres, escuchar historias de abuso es parte de lo ordinario, estando siempre bajo la incertidumbre de salir sin terror a no volver, y vivir sin saber hasta cuando. Hoy te digo que, también es una realidad que nunca más otorgaremos la comodidad de nuestro silencio, haremos ruido, porque la lucha por nuestros derechos es y seguirá siendo en voz alta. Finalmente me gustaría cerrar diciendo lo siguiente, por favor no te conformes, recuerda que el éxito no se mide únicamente por lo que logras, también se mide por todos los obstáculos y las barreras que superas. Espero con todo mi corazón que después de esta experiencia no puedas ver las cosas de la misma manera, espero que tus ganas de querer cambiar al mundo sean más fuertes que nunca, porque de eso se trata, de abrir tus ojos para tener esas ganas de innovar, crecer y mejorar.



Andrea Michelle Martínez Lozano
Subsecretara para la Asamblea General para el
XXIX TECMUN Jr.

“Nothing happens until something moves.”

- Albert Einstein

Delegate:

First of all let me thank you for being in this committee, I really hope you enjoy it. For the next few days we will be working together and discussing some important topics, mostly about the development of technology and its impact. What I really want you to obtain at the end of this experience is that you take the importance it deserves, but not only from the topic that we'll be debating, if not all the current problems that occur near and far from you. The United Nations Models are made to give us a broader perspective of the issues, from different points of view, even from the context of a country we didn't even know existed. Learning is the first step to make a change, but let's not let it end in that, taking action is the key. Although at times it may seem like something very difficult or even impossible at our age, we will be the ones who choose how our generation will be defined.

If you are not convinced of something, or you disagree, you should raise your voice, but more importantly seek change. Transform the way the world works for the common good. Bear in mind that what past generations believed was good is probably not good for us anymore. Remember that each of us helps to write the course of the future, and we all have the capacity to make an impact. The difference is that some people act and others do not. There is also no specific path that you must follow to achieve a change or your goals, you must do what you like the most and are passionate about, that is the best contribution you can give to the world. So my advice to you is to support others by being yourself. Not many people have the ability to know themselves, to know everything they are capable of and how to apply their qualities, don't be conformist.

Finally, I would like to emphasize that the quality of being open-minded is the most useful, for the debate and for your daily life, since it consists of listening and respecting the opinions of others, and based on this being able to reach a solution that benefits everyone. I know that you are capable of doing anything you set your mind to, so settle big goals and work for them. I can't wait to see what you will do.

Mariana Cortés Gallardo

President of the United Nations Conference on Trade and Development for the
XXIX TECMUN Jr.

Background

The United Nations Conference on Trade and Development (UNCTAD) is a permanent intergovernmental body, established by the General Assembly in 1964. It was created in response to the urgency of addressing issues related to the position of developing countries in international trade and global participation. Nowadays, UNCTAD counts with 195 Member States and works in cooperation with many international organizations, governments, companies, and civil society. Its main objective is to help developing countries access and take advantage of the globalized economy, including aspects of technology, trade, and investment, in order to achieve sustainable advancement in those nations. UNCTAD is currently holding around 218 projects in 80 different countries, concerning least developed countries, globalization, up growth strategies, investment, international trade, commodities, and technology.

Faculties

With the aim of achieving a world where all countries are integrated into the economy and development, the UNCTAD:

- Provides analysis on the trends and prospects of the world economy, and conducts studies on successful development strategies.
- Facilitates the consensus for the development of national and economic policies.
- Offers technical assistance to developing countries in their efforts to integrate into the international financial system.

- Contributes to the international debate on globalization and the management of its impacts in developing countries.
- Carries out training and capacity building programs.

Topic A

Strategies to ensure safe, affordable, and reliable innovation on nanotechnology in the field of healthcare to developing countries in Latin America and The Caribbean

Introduction

Nanotechnology is the application in science, technology, and engineering of matter so small that it cannot be seen with the naked eye or with a conventional microscope. This small matter is measured by the nanoscale, which “on a comparative scale, if a marble were a nanometer¹, then one meter would be the size of the Earth” (NNI, *n.d*). Nanotechnology works together with Nanoscience, which studies the matter and processes at the nanoscale. Nanotechnology and Nanoscience also referred to as N&N, are some of the most promising fields of technological development and have particular relevance in medicine, since they provide new ways of dealing with genetic diseases², drug delivery systems³, diagnostics, and have clinical applications (Paddock, 2012). Currently, not all countries in Latin America and the Caribbean have made N&N a priority field of research, and only certain countries have public policies that allow economic funds on N&N, like the United Mexican States, the Federative Republic of Brazil, the Republic of Chile, and the Argentine Republic (Foladori, 2016). To compare the growth in nanotechnology between countries, in 2016, 52.3 % of the nanotechnology articles and publications came from Asia and Oceania, 28.4 % from Europe, 14.7 % from North America, and only 2.7 % from Latin America (NBIC, 2017).

Given the enormous potential of N&N in medicine, international cooperation is necessary to ensure that innovation and progression in this particular sector are safe, reliable, and affordable for developing countries, and as such, the initiatives taken by countries in

¹ **Nanometer:** 0.000,000,001 of a meter. (Cambridge Dictionary, *n.d*)

² **Genetic disease:** Disorder caused in whole or in part by a change in the DNA sequence away from the normal sequence. (NHGRI, 2018)

³ **Drug delivery systems:** Engineered technologies for the targeted delivery and/or controlled release of therapeutic agents. (NIBIB, 2016)

Latin America and the Caribbean must receive international support. But as technology develops in Latin America and around the world, new challenges arrive, and one of the most prominent is the fear of the insecurity that nanoparticles⁴ can bring to the environment, humans, and other organisms. A principal reason for this concern is that when working with nanoscale materials, the surface effect occurs: "the smaller the size, the larger the external surface and, therefore, greater reactivity⁵ with atoms⁶ from neighboring materials" (Foladori, G., & Invernizzi, N., 2012). For some scientists and even organizations such as the House of Lords of the British Parliament, the ignorance of the reactivity of all the elements in nanoscale, presents a great risk, especially when ingesting these nanoparticles. Nanotechnology is now present in many products on the market, such as food, household appliances, sporting goods, computers, cell phones, textiles, medicines, cosmetics, materials from the construction industry, weapons, among others. According to a study conducted by the International Pollutants Elimination Network (IPEN) in 2012, the United States of America, the Federal Republic of Germany, Japan, the United Kingdom of Great Britain and Northern Ireland, and the People's Republic of China were at the forefront in terms of research and production of nanotechnologies, but all developed countries and a good number of developing countries are also researching and starting to produce within this field.

Economic and social impact of nanotechnology in Latin American countries

⁴ **Nanoparticle:** Ultrafine unit with dimensions measured in nanometres. (Encyclopedia Britannica, 2019)

⁵ **Reactivity:** The relative capacity of an atom, molecule, or radical to undergo a chemical reaction with another atom, molecule, or compound. (Dictionary, *n.d*)

⁶ **Atom:** the smallest unit of any chemical element, consisting of a positive nucleus surrounded by negative electrons. Atoms can combine to form a molecule (Cambridge Dictionary, *n.d*).

Nanotechnology has such an impact because it requires knowledge in vast areas of science, such as biotechnology⁷, informatics, and cognitive sciences⁸. For this reason, these sciences have been labeled as “convergent technologies” (Carmen, 2009). For economics, this means that a greater market is in dire need of qualified personnel with vast knowledge in these areas of science, making evident the need for education in this field. In addition, it is expected that the market of nanotechnology will keep growing, as of 2015, it had a net value of over 800 billion dollars, with its front-runners not only being big-tech companies but also Gap and L’Oréal, as an illustration (Milenio, 2017). Still, almost no countries from Latin America will benefit from this expanding market, since most investments are from private mega-corporations and public funding from developed countries, especially in Asia, Western Europe, and the United States of America. These two account for around 7.1 billion dollars of investment, which consists of 90 % of the global investment in nanotechnology (Foladori & Invernizzi, 2009). Even so, the lack of funding is not the only problem that the evolution of nanotechnology in Latin America is facing, education remains a big challenge for these countries, since, on average, the entire region was in 2015 “2.5 years of schooling behind the Organisation for Economic Co-operation and Development (OECD) average” (Worldfund, 2020).

Taking all of this into account, it can be concluded that two main factors determine the impact of nanotechnology: the amount of investment and the number of educated people a country has. In a globalized economy primarily driven by knowledge and a skilled, educated workforce, nanotechnology stands high as one of the most demanding areas of

⁷ **Biotechnology:** the use of living things, especially cells and bacteria, in industrial processes (Cambridge Dictionary, *n.d*).

⁸ **Cognitive science:** is the scientific study of the human mind (MIT, *n.d*)

research, with implications in all areas of the economy. N&N have not only significance for countries that struggle with education and public investment, but the real scope of nanotechnology is almost uncharted, and as such, it is essential to resolve matters such as environmental, safety, economic, and even apocalyptic concerns, to avoid a negative image of nanotechnology, similar to what happened to Genetically Modified Organisms (Duarte, 2019). On the other hand, it is about achieving social acceptance of N&N because their applications and products are directed towards population, this with the promise of solving old and new problems such as environmental pollution, ecological imbalance, diseases, malnutrition, and poverty, for which the scientific dissemination of truthful information turns out to be reliable.

The labor sector has also been impacted since nanotechnology is now creating methodologies, processes, protocols, and its language, which is bringing together a variety of industries, researchers, and scientists. In one particular study presented to the International Input-Output Conference, nanotechnology was found to reduce Producer Price Indices (PPI), thus, making products cheaper and more efficiently manufactured, and a similar result was shown in the size of the labor force needed for the production process, which was also reduced and concentrated on technical workers (Sharify, Sharify, & Sharify, 2010). For the advancement of N&N, there will be high demands for scientists, engineers, and technicians, but the trend towards miniaturization⁹ and automation¹⁰ of production processes and services will also be promoted, which will result in the reduction of jobs, similar to what happened

⁹ **Miniaturization:** the process of making something very small using modern technology (Cambridge Dictionary, *n.d.*).

¹⁰ **Automation:** the use of machines and computers that can operate without needing human control (Cambridge Dictionary, *n.d.*).

with the microelectronics revolution. As they are multifunctional products, with long useful life and that require less raw material, they considerably increase the competition with the market of traditional products. Even nanoproducts and nanomaterials could replace raw materials, as an illustration "nanotubes can also replace copper wires that transmit electricity, modifying all world trade" (IPEN, 2012).

Nanotechnology and its importance in the health sector

Some researchers consider nanotechnology as a great revolution in technology and a new stage in science, the reason for this is the wide possibility of discovery and expansion in the field. At the nanoscale, materials have different physical, chemical, and biological properties than those already known on a larger scale, this is known as a quantum effect, which opens the possibility of finding many new functions of the elements and materials. Such as carbon, which in the form of graphite is soft, but processed on a nanoscale its hardness is up to 100 times greater than steel. With these kinds of characteristics, N&N has lots of opportunities in the health sector, and the interaction between medical fields and nanotechnology is referred to as nanomedicine. The up growth of nanomedicine is important since, with it, scientists and researchers hope to improve current processes and make them more efficient, in particular, minimally invasive surgeries, personalized treatments, cell therapies, biosensors, among many other uses of technology at the nanoscale.

Currently, one of the main objectives to be achieved with the advancement of nanotechnology in the medicinal and biological area is to be able to control and manipulate

nanomachinery in cells¹¹. The use of nanomachinery, a complete and functional system made up of nanoscale elements, can provide a better understanding of cellular mechanisms in living cells, and lead to the development of advanced technologies for the early diagnosis of disorders, with the signaling of various biomarkers¹² in human diseases and treatment of them (Saini, R., Saini, S., & Sharma, S., 2010). Another innovation sought with N&N is drug delivery, which consists of managing drugs using smart materials and nanoparticles, which can help improve the effectiveness of existing drugs. Nanomedicine also helps in the improvement of smart drugs, which are nanoparticles that can target specific affected areas and tissues and monitor the process. Looking forward, nanomedicine is expected to help solve major diseases and conditions such as cancer¹³, atherosclerosis,¹⁴ and even tissue generation.

Regarding cancer, nanotechnology allows nanoparticles or nanomaterials to be handled and directed specifically to cancerous cells, thus avoiding damaging healthy cells, as can be the case of conventional methods. Likewise, clearer images of cancerous tissues could be obtained to achieve better treatment planning, all this using nanomachinery. Besides, the creation of nanostructures for medicine can bring several uses, such as carbon nanotubes, which can repair damaged tissues and even help in tissue regeneration, just as this invention can be used to increase the stability of atherosclerotic lesions, seeking not to be

¹¹ **Cell:** The basic membrane-bound unit that contains the fundamental molecules of life and of which all living things are composed (Encyclopedia Britannica, 2021).

¹² **Biomarker:** is an objective measure that captures what is happening in a cell or an organism at a given moment (NIEHS, 2021).

¹³ **Cancer:** a serious disease that is caused when cells in the body grow in a way that is uncontrolled and not normal, killing normal cells and often causing death (Cambridge Dictionary, n.d).

¹⁴ **Atherosclerosis:** occurs when the blood vessels that carry oxygen and nutrients from your heart to the rest of your body (arteries) become thick and stiff — sometimes restricting blood flow to your organs and tissues (Mayo Clinic, 2021).

only efficient, but tolerable and accepted by the human body. The upgrade of nanomedicine not only brings the possibility of discovery and production but also of improving people's quality of life. Even so, the efficient improvement of nanomedicine in developing countries of Latin America is not something simple, since the health systems and needs of each country must be considered. According to a 2020 study by the OECD in which 33 countries in Latin America and the Caribbean were analyzed, “most countries have a fragmented health system with parallel subsystems that have multiple mechanisms and overlapping governance, financing, and service delivery, making it difficult to efficiently direct resources where they are needed most.”

Regulatory challenges in nanomedicine

Nanotechnology is a research area whose enrichment has occurred in recent years, so it could be called a new science since there is a long way ahead. Like other technologies, being something new brings with it several social and economic challenges, and more specifically in the international market. Talking about nanomedicine, “there is currently very little regulatory guidance in this area, despite repeated calls from the research community, something that is critical to provide legal certainty to manufacturers, policymakers, healthcare providers and the general public” (Biomater. Sci., 2020). As mentioned before, the nanoscale elements present a great difference in their behavior compared to their usual size. The same happens with nanomedicines or nanostructures used in the health sector. Consequently, rigorous regulatory measures are needed to correctly administer these new nanomedicines. Currently, regulatory bodies such as the Food and Drug Administration

(FDA) use the safety data¹⁵ obtained from bulk¹⁶ drugs, which does not represent the same physical and chemical effects as those drugs at the nanoscale, and its effects in a clinical application could be very different if it authorizes its sale in the market.

In addition, one of the most important factors to consider when using nanomedicines is toxicity¹⁷. Nanomedicines interact directly with genetic material and biomolecules¹⁸, which, according to the Royal Society of Chemistry in 2020, can cause genotoxicity¹⁹ and mutagenicity²⁰. Being minuscule particles, they are easy to spread throughout the body:

The toxic effects of a high drug dose in the nano form may be that of toxicity of a particular cell or organ or the emergence of antibiotic resistance. Additionally, the size of the particles may pose a threat to patients, given that they are more mobile than their larger counterparts. This allows them to cross the blood-brain barrier, potentially compromising brain function long-term, or at least causing edema²¹ (Biomater. Sci., 2020).

Sufficient data and studies of these nanoscale drugs are needed to approve their use, but this can also delay the commercialization of nanoproducts and public approval. It is also difficult to create adequate regulations when there are limitations in the knowledge of nanomedicines

¹⁵ **Safety Data Sheet:** is a detailed informational document prepared by the manufacturer or importer of a hazardous chemical. It describes the physical and chemical properties of the product (UC San Diego, 2021).

¹⁶ **Bulk:** Large size or mass (Cambridge Dictionary, *n.d.*).

¹⁷ **Toxicity:** the level of poison contained in a drug, or the ability of a drug to poison the body (Cambridge Dictionary, *n.d.*).

¹⁸ **Biomolecule:** a type of molecule (= the simplest unit of a chemical substance) that is involved in the processes that keep an organism alive (Cambridge Dictionary, *n.d.*).

¹⁹ **Genotoxin:** chemical or agent that can cause DNA or chromosomal damage (NCBI, *n.d.*).

²⁰ **Mutagenicity:** the capacity to induce mutations (Merriam-Webster, *n.d.*).

²¹ **Edema:** swelling caused by excess fluid trapped in your body's tissues (Mayo Clinic, 2021).

and their effects, as key organizations are often not helped by scientific expertise on how diverse nanomedicines are.

Public policies on nanotechnology in Latin American countries

Several Latin American countries have adopted public policies in nanotechnology, the most prominent ones are the most developed: the United Mexican States, the Federative Republic of Brazil, and the Argentine Republic, however, other countries have adopted public policies in this matter as well, such as the Republic of Ecuador, the Bolivarian Republic of Venezuela, Eastern Republic of Uruguay, the Republic of Colombia, and the Republic of Peru. Most of these countries cannot transition to an economy of knowledge, where knowledge and skill are even more valuable than the labor force or capital (Záyago-Lau & Foladori, 2009). For example, according to a study made by the World Bank where countries were ranked according to their ability to make the transition to an economy of knowledge, the Federative Republic of Brazil was ranked 54, and the United Mexican States was ranked 59. In one more recent study in 2021, they were ranked 68 and 57, respectively (UNDP & MBRF, 2021). Moreover, the absence of resources to finance technological growth in the United Mexican States has had repercussions on other indicators that show the lack of attachment between the design of public policies in technologies and its management. One of these indicators is the expenditure allocated to research and experimental development as a percentage of Gross Domestic Product (GDP), in which according to data of the OECD, in 2008 the United Mexican States only dedicated 0.50 % of its GDP, less than what other economies such as the Federative Republic of Brazil, with 1.02 %; or developed countries like the Federal

Republic of Germany with 2.53 %, the United States of America with 2.62 %, the Republic of Korea with 3.23 % and Japan with 3.39 %.

As been seen, Latin American countries have supported N&N, most of them, under the watch of international organisms such as the Organization of American States and the World Bank, anyhow, in the case of the biggest economies of Latin America, the United Mexican States, the Federative Republic of Brazil, and the Argentine Republic, the prioritization of nanotechnologies has been present since the 90s. These countries in particular have also supported research in nanotechnology financially through their respective ministries for science. For instance, there is the Argentine Nanotechnology Foundation (FAN), the Center for Nanosciences and Nanotechnology (CNyN-UNAM), the Institute of Materials Science and Technology at the University of Havana, and the Venezuelan Nanotechnology Network, among others. The support by Latin American countries to N&N involves financing laboratories, providing infrastructure and equipment, and supporting teams of researchers (Foladori, 2016). It is very hard to trace the exact amount of economic support for nanotechnology from each nation. Nevertheless, estimates suggest that between the biggest economies, the investment in science and technology is about 300 million dollars in the first decade of the century.

Thanks to these efforts, these countries have managed to acquire the necessary installations and infrastructures to compete internationally, as well as producing qualified personnel in nanotechnology and nanoscience. At the same time, existing public policies in Latin American countries make it very difficult for companies and organizations to have a high impact in the current global context. It is important to emphasize that N&N was quickly

appropriated by large corporations, making it difficult for small and medium-sized companies in developing countries to grow without their companies being bought by them. This is reflected in existing public policies, as in the case of the Republic of Argentina, public financing is explicitly aimed at small and medium enterprises, in the Federative Republic of Brazil it seeks to integrate financing in national thematic laboratories and in the case of the United Mexican States, its policies are mainly focused on national development projects. In other countries, there exist competitions together with other areas of research, for example, with the objective that the financing is short-term and favoring the centers of excellence of the countries, in other words, the government encourages and incentives nanotechnological companies so that later those companies invest in research of N&N and of incorporating knowledge into production processes to reach the market with products.

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Topic B

Strategies for the implementation of renewable energies in sub-Saharan Africa with emphasis on efficiency and reliability for the needs and resources of the area

Introduction

Renewable energies are obtained from resources that are believed to be inexhaustible, that is, they can be regenerated incessantly through natural cycles. On the other hand, non-renewable energies are obtained from finite resources, such as fossil fuels. The creation and use of renewable energies is not something recent, in fact, the Greeks and Romans were able to use solar power in the third century BC, concentrating the radiation²² that the sun emitted to light torches. Nowadays, thanks to technological growth, they have become a viable option to obtain energy²³ and electricity²⁴. "The worldwide growth in the consumption of primary energy from renewable sources was 7.1 %, in 2018" (Statistical Review of World Energy, 2019). Despite this, renewable sources are the fourth source of primary energy consumption in the world, and although the consumption of fossil fuels such as petroleum and coal has been reduced, they represent respectively 33.6 % and 27.2 % of energy sources.

Sub-Saharan Africa (SSA) currently produces most of its energy from fossil fuels and hydropower, nevertheless, only one-third of the population in SSA has an electricity connection, the lowest number of any region. Moreover, it is estimated that by the year 2030, 600 million people won't enjoy access to electricity according to the U.S. Energy Information Administration in 2018. Despite this, Africa is perhaps the richest continent in natural resources, holding as much as 30 % of the global mineral deposits, 40 % of gold reserves, and almost all chromium and platinum (UNEP, *n.d*), materials needed for the production of

²² **Radiation:** energy from heat or light that you cannot see (Cambridge Dictionary, *n.d*)

²³ **Energy:** power to do work that produces light, heat, or motion, or the fuel or electricity used for power (Cambridge Dictionary, *n.d*)

²⁴ **Electricity:** a form of energy that provides power to motors and devices that create light or heat (Cambridge Dictionary, *n.d*)

electronic components and other industrial equipment. SSA is particularly diverse in natural assets, being, according to an article made in 2018 by Ivailo Izvorski, significantly more diverse than any resource-rich region, hence these countries depend on their natural capital as natural reserves became the basis of their wealth. With this in mind, Sub-Saharan Africa is generally considered to be very promising in the development and innovation of renewable energy, given the region's current electricity demands and production. But a great challenge that these countries face and restricts them in the successful implementation of these energies is the lack of capital and execution capacity, still, "there are wide variations at the national and local level, where the potential of specific renewable energy sources can be much higher. Solar and wind costs are falling rapidly, and these technologies should expand further at SSA in the coming years" (The Nordic Africa Institute, 2008).

Renewable energies, characteristics, and types

The principal characteristic of renewable energies is that they are naturally replenished, meaning that they rely on reserves that will never run out. The most common ones are solar, wind power, hydroelectric, geothermal, and biomass obtained from inexhaustible resources such as sunlight, wind, power of water in motion, heat from the interior of the earth, and organic matter respectively. Renewable energy is generally thought to be better for the environment than traditional energy, which relies on fossil fuels, yet, as with almost every technological advance, there are positive and negative aspects. Not all renewable energies are considered green energies since, according to the United States Environmental Protection Agency, the last ones are those that convey the best benefits for the environment. Consequently, some energies like hydroelectric are not considered green, since they may cause deforestation and habitat destruction. Withal, some matter such as the biofuel obtained

from biomass cannot be considered as clean energy since its use emits pollutants and greenhouse gases²⁵ like carbon dioxide (TWI Ltd, 2021).

For instance, solar power is one of the most known and used energies since it relies on using the captured radiation power emitted by sunlight, not only limited to photovoltaic (PV) cells²⁶ made from silicon or other materials, but also in other ways to heat water and buildings. Some devices are based on using mirrors to concentrate the light of the sun in a certain area to heat water and produce electricity from steam. This technology, in particular, can also be considered clean, as it does not release pollutants into the atmosphere. Also, wind power does not produce carbon dioxide or other harmful matter, which makes it a clean energy source. It consists of wind turbine blades that power an electricity generator, and it must be placed in areas with high wind speeds, making it ideal for hills, plains, or open waters, but not for other high-consumption places like cities (Shinn, 2018). Turbines are a great opportunity for the production of jobs since they require maintenance, nonetheless, most of them have the size of skyscrapers and meters in diameter, so they can also affect the ecosystem in other ways, such as the noise they produce or the danger they pose to the animals like birds.

Hydropower is the largest energy source in sub-Saharan Africa, except for the Republic of South Africa. It relies on moving water from rivers or descending water. This water spins the turbine from an electric generator, thus converting the force of water into

²⁵ **Greenhouse gases:** allow the sun's rays to pass through and warm the planet but prevent this warmth from escaping the atmosphere into space (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride) (David Suzuki Foundation, *n.d*)

²⁶ **Photovoltaic cells:** an electrical / electronic device that converts the incident energy of solar radiation into electricity through the photovoltaic effect (Planas, O., 2019).

electricity. Hydroelectric power can be classified into two groups, large and small hydroelectric power. Large hydroelectric or mega-dams have an installed capacity of 40 megawatts²⁷ and can harm the local ecosystems and economy by flooding large landmasses and redirecting river flows. Small hydroelectric power stations (below 40 megawatts) generally do not face this problem and can be considered green energy.

Access to energy in sub-Saharan Africa

Despite having natural resources, Africa has a worrying lack of infrastructure and access to electricity, especially in sub-Saharan Africa. By 2019, access to electricity in Sub-Saharan Africa was 46.9 %, and although this number has been improving since the 90s, it is still the lowest in the world, 39.3 % less than the average of developing economies, and 42.1 % less than the world average (IEA, 2020). SSA alone was home, in 2011, for 35 % of the population without access to electricity at a global scale (Simelane & Abdel-Rahman, 2011). Moreover, according to the Sustainable Development Goals Report of 2021 published by the United Nations, 97 million people in urban areas and 471 million in rural areas are still without access to electricity in SSA, furthermore, due to the pandemic of COVID-19, the people without access to electricity increased after making progress in the past years. Not only the effects of the pandemic affected, but also the cost of electricity services in sub-Saharan Africa, which remains one of the highest in the world. Poverty levels also play an important role, as countries will be forced to reduce access to basic electricity because citizens will not be able to afford it (White, T., 2021).

²⁷ **Megawatt:** a unit for measuring electric power, with the value of 1,000,000 watts (Cambridge Dictionary, *n.d*)

Sub-Saharan Africa also has energy inequality across countries. Notably, the Republic of South Africa had in 2019 the highest percentage of access to electricity in Sub-Saharan Africa at 94.3 %, anyhow, in the same year, the Central African Republic registered 3.1 %, and some countries in North Africa like the Arab Republic of Egypt registered 99.4 %. It is estimated by the International Energy Agency (IEA) that the amount of investment to achieve full electricity access in SSA needs to be 27 billion dollars per year (2018-2030), double the amount invested in 2018. At the same time, “in 2018, financial flows to developing countries for climate change and renewable energy were 35 % lower than in 2017” (White, T, 2021), making it even more difficult to ensure access to electricity for all inhabitants. On the other hand, Africa’s electric grids²⁸ are shared across its regions, having Northern, Western, Eastern, Southern, and Central African Power Pools (NAPP, WAPP, EAPP, SAPP, and CAPP). These grids often have unreliable power supplies; despite that, it has proven to be beneficial for cooperation between African nations who would rely on the grid in the event of an emergency in one of the countries.

Social, environmental and economic implications of the implementation of renewable energies in sub-Saharan Africa

Renewable energies could represent a great change in the current context of sub-Saharan Africa. Therefore, it is necessary to find a way to apply them correctly in order to obtain the best outcome possible. First, they would provide electricity to more inhabitants in rural areas, and this is indispensable since:

²⁸ **Grids:** Interconnected network: electricity to multiple customers, large distance for industry, commercial, urban, and reachable rural areas (OECD, 2018).

The lack of access to electricity severely limits the adoption of emerging and potentially transformative technologies in sectors such as banking, education, agriculture, and finance that could otherwise alleviate some core challenges facing Africans, such as low productive employment opportunities and limited health care (White, T., 2021).

Technological advances in renewable energies such as solar power can greatly expand access to electricity for those not served or neglected by the grids. This will expand people's options for accessing household electricity, increasing the reliability of the power supply, and reducing local pollutants that are generated by the use of diesel in SSA.

In the economic aspect, the cost per kWh²⁹ for using renewable technology is often higher than grid connections, nevertheless, long-range transmission costs are avoided to provide access to electricity for local use or in mini-grids³⁰, which do not need the ongoing continuing cost subsidies³¹ that are common in many grid systems. The necessary subsidies for the development of renewable mini-grids are expected to be achieved with the decrease in the cost of this technology and as supportive policy frameworks emerge to attract investors. It is estimated that direct and indirect subsidies for fossil fuel production and power generation were USD 26 billion per year (Whitley and van der Berg, 2015) so, according to the OECD, moving these public finances towards the implementation of clean energies could make a significant difference to counteract the lack of financing. On the other hand, although

²⁹ **Kilowatt-Hour:** Equals the amount of energy you would use by keeping a 1,000 watt appliance running for one hour (Electricity Plans, *n.d*).

³⁰ **Mini-grids:** Distribution system for localised group of customers isolated from grid supply in unserved or underserved areas (OECD, 2018).

³¹ **Subsidy:** money given by a government or an organization to reduce the cost of producing food, a product, etc. and to help to keep prices low (Cambridge, *n.d*).

domestic investment in these energies is the most important, private financing is also essential to offer these renewable options to more residents of SSA. "In Pico solar and Solar Home System markets, tailored consumer finance business models (e.g. via pay-as-you-go and mobile money) and private investment are enabling markets to grow rapidly in some countries and, importantly, to reach the poor" (OECD, 2018).

According to the International Renewable Energy Agency (IRENA), the outlook for Sub-Saharan Africa with the implementation of an energy transformation towards the use of renewable energies exposes a greater distribution of electricity from marginalized communities, in addition to the creation of local jobs, less dependence in fossil fuels and clean cooking. On the other hand, in its Energy Transformation Roadmap to 2050, IRENA mentions that jobs in the labor energy sector will increase by 200,000, but it is still well below what would be expected, about three times less. Even with good planning and execution of an energy transformation, by 2050 the number of jobs in the fossil fuel sector will surpass jobs in the renewable sector by 400 thousand. However, investment in renewable energy is also expected to be twice that of non-renewable power by 2050, about 7 billion dollars a year. Finally, the percentage of welfare improvement would be 6.2 % by 2030 and 13.5 % by 2050, this considering economic, social, and environmental factors of the transformation of energy in SSA (IRENA, *n.d*).

Actions of the UNCTAD and the international community

One of the main issues and topics addressed by the United Nations Conference on Trade and Development (UNCTAD) focuses on Africa and the least developed countries (LDCs), intending to help these countries move forward and have a good quality of life, as well as

allowing them to engage more with the international community. UNCTAD together with the United Nations Economic Commission for Africa (UNECA) developed a project with a duration of three years starting in 2020, where they seek to build productive capacities and provide technical assistance to countries such as the United Republic of Tanzania and the Republic of Rwanda. This is intended to help African countries achieve the SDGs, yet, it does not focus on renewable energies. At the same time, UNCTAD has conducted officially mandated studies, such as 2008 one, which discusses Renewable Energy Technologies for Rural Development based on case studies and analyzes to highlight how renewable energy technologies can be used to support rural areas around the world.

In like manner, UNCTAD held a seminar in April 2021 that explored solutions to the worrying trend that most new technologies remain out of reach for the poor such as nanotechnology³², biotechnology³³, artificial intelligence, and technology of renewable energies. Additionally, a partnership between the Institute for Transformative Technologies, TATA Power, and the Rockefeller Foundation, was presented, and its goal is to have 10,000 mini solar energy networks by 2026 for villages in the Republic of India. UNCTAD has carried out technology assessment (TA) projects that examine all the possible impacts of new or modified technologies in countries such as the Republic of Seychelles, the Republic of South Africa, and the Republic of Zambia, in the energy and agricultural sectors, so that negative consequences are avoided and benefits are managed to promote the sustainable development of the countries. This by analyzing the socio-economic and environmental

³² **Nanotechnology:** an area of science that deals with developing and producing extremely small tools and machines by controlling the arrangement of separate atoms (Cambridge Dictionary, *n.d*).

³³ **Biotechnology:** the use of living things, especially cells and bacteria, in industrial processes (Cambridge Dictionary, *n.d*).

implications, along with strengthening the capacities of national science, technology, and innovation (STI) policymakers and counteracting the lack of capacities in the countries. As can be seen, these are not actions specifically directed at Africa or renewable energies, though, they are actions that the organization has carried out to promote developing countries in this area. Most of the other support comes from non-governmental organizations such as "*Energía sin Fronteras*", multinational organizations such as the World Bank, and even State organizations such as the Spanish Development Financing Company (COFIDES), with its Renewable Energy Program for Sub-Saharan Africa, focused on supporting renewable energy projects and mini-grids in rural areas.

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XXIX TECMUN Jr.
Glossary for Resolution Papers

Preambulatory Phrases

Preambulatory Phrases are used at the beginning of every Resolution Paper in order to give context about the resolutions made for the topic. Preambulatory Phrases must be written in italics followed by a sentence that gives said context. For each Resolution Paper there must be five sentences beginning with a Preambulatory Phrase.

Affirming	Desiring	Noting with deep concern
Alarmed by	Emphasizing	Noting with satisfaction
Approving	Expecting	Noting further
Bearing in mind	Expressing its appreciation	Observing
Believing	Fulfilling	Reaffirming
Confident	Fully aware	Realizing
Contemplating	Further deploring	Recalling
Convinced	Further recalling	Recognizing
Declaring	Guided by	Referring
Deeply concerned	Having adopted	Seeking
Deeply conscious	Having considered	Taking into consideration
Deeply convinced	Having examined	Taking note
Deeply disturbed	Having received	Viewing with appreciation
Deeply regretting	Keeping in mind	Welcoming

XXIX TECMUN Jr.
Glossary for Resolution Papers

Operative Clauses

Operative Clauses are used at the beginning of every resolution within the Resolution Paper on the debated topic. It must be written in italics and bold.

Accepts	Endorses	Notes
Affirms	Draws the attentions	Proclaims
Approves	Emphasizes	Reaffirms
Authorizes	Encourages	Recommends
Calls	Expresses its appreciation	Regrets
Calls upon	Expresses its hope	Reminds
Condemns	Further invites	Requests
Confirms	Further proclaims	Solemnly
Congratulates	Further reminds	affirms
Considers	Further recommends	Strongly
Declares accordingly	Further requests	condemns
Deplores	Further resolves	Supports
Designates	Has resolved	Takes note of
		Transmits
		Trusts