Committee: Economic and Social council (ECOSOC)

Topic: The issue of equitable vaccine distribution among member states

Student Officer: Dora Andreou

Position: Deputy President

Personal Introduction

Dear delegates,

My name is Dora Andreou and I am 17 years old. I am a student in Campion School, currently in Year 13, my last year of school and it is my honor to serve as one of the Deputy Presidents in the Economic and Social Council on 'The issue of equitable vaccine distribution among member states' in the 9th CSMUN conference.

I first attended MUN in 2018 and since then I have participated in 5 conferences both as a delegate and an advocate. Thus, it is my first time serving as a Student Officer and my last participation in MUN. From my experience, the most intriguing thing about the process of the Model UN, is that one gets to experience a great debate on global issues, while being able to interact with people from different backgrounds and countries. Personally, MUN at the start, as an idea, was very scary, to my young shy little self. However, after my first conference, which my friends made me apply to as a delegate, I was not only amazed by how much I wanted to take part in the debates, but also by how confident I was feeling in doing so. MUN has helped me become who I am today, made me step out of my comfort zone and helped me decide upon what career I want to pursue in my close future.

Therefore, I look forward to serving as your Deputy President. This study guide is made to provide you with a summary of most, but not all, essential information on this topic. Further personal research should be carried out to help you with your

understanding of this topic. With all that being said, I am proud to welcome you all to the 9th conference of the CSMUN 2021.

Yours truly,

Dora Andreou

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Topic Introduction

The ongoing global pandemic of the coronavirus disease (COVID 19) has had major impact all over the world, being the deadliest pandemic to date, with more than 4.05 million deaths worldwide[1]. COVID-19 infections were first recorded in 2019, and vaccines for the virus were first authorized in January 2021. Vaccines have been getting introduced to countries, however, there are some who have vaccinated most of their population, while others are not being supplied with the necessary doses of the vaccine.

As historically viewed, the global uptake of vaccines has been much higher in more economically developed countries compared to less economically developed countries (LEDCs), especially at the start of the pandemic, regardless of the fact that the COVID-19 cases are higher and more severe in less economically developed countries, minorities and vulnerable populations. Most countries do not have sufficient vaccine supply to cover all their health workers or those at risk, not to mention their general population, which adds to the global imbalance of the COVID vaccine distribution. The world's richest countries order a substantial amount of doses whereas the rest of the world has only been able to secure limited doses. LEDCs, including numerous African nations, are trying to secure more doses, by sourcing doses through

[1] "CSSEGISandData/COVID-19: Novel ...." https://github.com/CSSEGISandData/COVID-19. Accessed 23 Jul. 2021.

the COVID-19 vaccines global access (COVAX[2]) led by the World Health Organization. While these countries are requesting more doses of vaccines, MEDCs such as the USA, order an additional 200 million doses, making contracts with the vaccine companies to have access to 800 million doses, more than enough to vaccinate the entire population.[3]

In addition to that, due to the continuation of the COVID-19 phenomenon, problems related to supply chains still remain, as there are economies that emerge back into the ‘’old world’’, with supply chains facing no issues and no more lockdowns or curfews, while others are still in lockdown.

Another issue that inequitable vaccine distribution is imposing on the world is that it does not allow for a healthy society and global herd immunity, as not everyone has access to vaccines, and there is no coverage for the health and safety of the population.

Solving this issue is of great significance, as there is an important difference amongst the cases and the deaths in different countries based on their economic development and there are unjust health opportunities for member states and none for others. Furthermore, poorer countries are struggling to get the deaths and cases to go down, while there are new diseases forming from the badly treated patients, in addition to patients being unable to receive proper treatment. Hence, the inequitable distribution of vaccines should be further examined.

[2] “Covax.” *World Health Organization*, World Health Organization, www.who.int/initiatives/act-accelerator/covax.
[3] "More Than 3.74 Billion Shots Given: Covid-19 Vaccine Tracker." https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/. Accessed 23 Jul. 2021.

Definition of key terms

Equality

The state of being equal, sharing equal opportunities and rights [4]

Vaccination

A way of protecting people against harmful diseases, before they come into contact with them. It uses your body's natural defenses to build resistance to specific infections and makes your immune system stronger.[5]

Developed countries (MEDCs)

Commonly referred to as MEDCs, are countries that have a developed economy and advanced technological infrastructure relative to other less industrialized nations.[6]

Developing countries (LEDCs)

Countries with a less developed industrial base and a low Human Development Index (HDI).[7]

Herd immunity

Herd immunity is the indirect protection from an infectious disease that happens when a population is immune either through vaccination or immunity developed through previous infection. [8]

[4] "Equality and diversity – what's the difference? | Unionlearn." https://www.unionlearn.org.uk/equality-and-diversity-whats-difference. Accessed 23 Jul. 2021.
[5] "Vaccines and immunization: What is vaccination?." 22 Feb. 2021, https://www.who.int/news-room/q-a-detail/vaccines-and-immunization-what-is-vaccination.
[6] "Developed country - Wikipedia." https://en.wikipedia.org/wiki/Developed_country.
[7] "Developing country - Wikipedia." https://en.wikipedia.org/wiki/Developing_country.
[8] "Coronavirus disease (COVID-19): Herd immunity, lockdowns and ...." 31 Dec. 2020, https://www.who.int/news-room/q-a-detail/herd-immunity-lockdowns-and-covid-19.

Vaccine distribution gap

It is the gap between the number of vaccines administered in rich countries, and the number of vaccines administered through COVAX [9]

Background Information

Historical Background

Influenza

The influenza pandemic has killed more than 40-70 million people worldwide. [10] The influenza vaccines that emerged, targeted the virus by circulating it. However, there were many experts that questioned the effectiveness of the vaccine, and at how effective they were in minimizing the spread of the disease. The vaccine for influenza was distributed among member states; however it was not enough for all countries to be supplied with vaccines to cover their population. Supply chains had difficulty in transporting products in time and efficiently. This is why, even now after so many years, the WHO recommends yearly vaccination for older people. A study showed that Japan, South Korea, Australia, and New Zealand as well as most countries in Western Europe, North and South America achieve at least ≥ 100 doses per 1000 people. However, all African and most Asian countries have fallen far short of the hurdle rate.[11]

Ebola epidemic

Ebola is a virus that causes fever, body aches, diarrhea and sometimes bleeding inside and outside the body. Ebola first appeared during 1976 in Africa, in

[9] "WHO warns against widening gap in COVID-19 vaccine distribution ...." 29 Mar. 2021, https://www.globaltimes.cn/page/202103/1219731.shtml.
[10] "The Spanish flu (1918-20): The global impact of the largest influenza ...." 4 Mar. 2020, https://ourworldindata.org/spanish-flu-largest-influenza-pandemic-in-history.
[11] "Mapping the inequality of the global distribution of seasonal ...." 8 Mar. 2021, https://journals.sagepub.com/doi/full/10.1177/0308518X21998356.

the Democratic Republic of Congo. It damages the immune system and organs causing blood-clotting cells to drop, which leads to severe uncontrollable bleeding. It is estimated that it kills 90% of the people who are infected by it. [12] To treat Ebola there have been some treatments such as Inmazeb which is given through an injection. However, there is a vaccine to prevent getting Ebola called rVSV-ZEBOV which treats the Zaire strain of the virus. Vaccination shifted the distribution of the level of risk in health zones previously identified as at-risk to an overall lower level of risk. The ring vaccination program eliminated high-risk areas. Ring vaccination is a strategy to inhibit the spread of a disease through vaccinating the ones most likely to be infected.[13] The Ebola vaccine was mainly distributed amongst African countries where there was an outbreak, and the rest of the member states received the vaccine later on, causing a gap of time between the vaccine distributions. In 18 months, 300,000 people were able to get vaccinated with support from Gavi, the vaccine alliance. This enabled them to cut the chain of transmission of Ebola. Without the vaccine there would be enormous challenges. Gavi was a very significant player in the treatment of Ebola, funding vaccinations teams, transportation, syringes and the ultra-cold fridges needed to store the vaccines. The Ebola vaccine has proved to be 100% effective in 4,000 people in close contact with Ebola patients. The vaccine uses an Ebola protein to prompt the body's immune system to attack the virus. It is designed to both protect potential contacts and halt the spread of the virus. [14] The vaccine has not been able to eliminate the virus as there are still cases of Ebola in 2021; however it has limited its outbreak, and has controlled its transmission.

[12] "Ebola Virus: Symptoms, Treatment, and Prevention - WebMD." https://www.webmd.com/a-to-z-guides/ebola-fever-virus-infection.
[13] "Ring vaccination - Wikipedia." https://en.wikipedia.org/wiki/Ring_vaccination. Accessed 14 Aug. 2021.
[14] "Ebola vaccine appears to be highly effective, could be 'a game ...." 31 Jul. 2015, https://www.washingtonpost.com/news/to-your-health/wp/2015/07/31/ebola-vaccine-appears-to-be-highly-effective-could-be-a-game-changer/. Accessed 14 Aug. 2021.

COVID-19

The coronavirus was first identified in Wuhan, China in December 2019,[15] where they implemented a lockdown which was not successful enough to contain the virus, and thus the disease spread to the rest of the world very fast. The virus was declared a pandemic by the World Health Organization in January 2020. The pandemic has resulted in severe economic and social issues. As of January 2021, 13 vaccines have been made to protect individuals against the virus.[16] One of them is manufactured by AstraZeneca which has faced a lot of controversy, due to their failure to meet and deliver the specified number of doses to the EU. During the first three months of 2021, AstraZeneca was supposed to deliver 90 million doses to the European Union; however only a third of the doses were received, due to production problems [17]. Under this statement, was a hidden, secret agreement with the UK, which managed to receive all of their necessary doses. This created dispute and impediments to the European countries, who had not received their necessary doses. This event constitutes a significant example of how unequal distribution, and communication problems with the providers, can decelerate the vaccination process. Organizations such as the World Health Organization (WHO) have been trying to limit the issue of unequal vaccine distribution with the help of COVAX, which acts to distribute vaccines amongst all member states. COVID-19 and influenza viruses have similar disease presentations. However, mortality for COVID-19 appears to be much higher than for influenza, especially seasonal influenza.

[15] "The novel coronavirus outbreak in Wuhan, China | Global Health ...." 2 Mar. 2020, https://ghrp.biomedcentral.com/articles/10.1186/s41256-020-00135-6. Accessed 23 Jul. 2021.
[16] "COVID-19 vaccination programme guidance for ... - GOV.UK." 6 Jul. 2021, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/999527/COVID-19_vaccination_programme_guidance_for_healthcare_workers_6July2021_v3.9.pdf. Accessed 23 Jul. 2021.
[17] "Covid Vaccine: Why Did EU TAKE Astrazeneca to Court?" *BBC News*, BBC, 18 June 2021, www.bbc.com/news/56483766.

Technical Background

Process

Manufacturing

The process begins by the manipulation of the active components of the vaccine, those being: viruses, proteins, sugars etc. Following this, multiple processes are being carried out in the labs, including quality controls, to ensure the safety and the effectiveness of the vaccines during the manufacturing process. The manufacturing process of vaccines is a long process which goes through many testing to be completed. The vaccines first go through quality control. The Food and Drug Administration (FDA) is responsible for the safety and effectiveness and quality of vaccines used, particularly in the USA.

Allocation

Allocation refers to the process of calculating the demand that needs to be distributed to a certain part of the population. This applies to the distribution of vaccines as well. For the vaccines that require two doses for immunity, the allocations are split. The first doses that have been released already, or are being allocated and the second doses that are still being manufactured and will be released but have not yet been allocated. The process of allocation is undergone by federal control and commercial partners that allocate their supply. Afterwards, the vaccines are distributed to health departments, hospitals, pharmacies. The allocation of vaccinations for the Covid-19 vaccine is made according to the number of people 18 or older in the jurisdiction in proportion to the entire population.

Ordering

The next step of the process is for countries to order a substantial amount of vaccines to vaccinate their population. The federal and commercial partners order vaccines from the federal government through the use of a vaccine ordering system,

and the vaccine tracking system (VTrckS)[18] .They can order all or some of their weekly allocation from these systems and any leftover doses go to the next week's allocation. Specifically for COVID, the ordering system used is the CDC vaccine ordering system

Shipping

After the manufacturing, the allocation and the ordering, the vaccines are shipped to vaccination providers such as health departments, hospitals and pharmacies. For the Pfizer vaccine, its vaccines are shipped in insulated .Each tray can hold 195 vials and up to 5 trays fit in each container. Dry ice packets surround the container to keep vials at a consistent temperature. A device using GPS technology monitors the location and the temperature of each container. There is a final outer shipping carton to be delivered across the U.S. Specially designed mobile freezers have been developed to keep the vaccines at required temperature. For the Moderna vaccine, 10 vials are gathered and placed into small cartons. 100 doses are available. Vials are then stacked and placed in inner shipping containers and a final outer shipping carton is added to be delivered. [19]

Administration

This is the final vaccine distribution process. The vaccine doses are then given to the people in need. The vaccine administration needs cooperation and partnership amongst people in the federal, jurisdiction and local levels, so that the society has access to the necessary doses. Health departments work with the jurisdiction's vaccination plan, and with providers and clinics to ensure safety and efficiency. Administration involves assessing patient vaccination status and determining needed vaccines, screening for contraindications and precautions, educating patients, preparing and administering vaccines and documenting the vaccines administered.

[18] "VTrckS: Vaccine Tracking System | CDC." https://www.cdc.gov/vaccines/programs/vtrcks/index.html. Accessed 14 Aug. 2021.
[19] "COVID-19 in 2020 - Nina-write or wrong in Lakeway." https://ninawriteorwronginlakeway.com/coronavirus-covid-19/. Accessed 14 Aug. 2021.

Issues and Challenges

Availability of materials

One of the most critical factors raised by the vaccine manufacturing process is the availability of materials. There is a need for basic raw materials and consumables to be available, so that the system of manufacturing can function. For example, due to the fact that Covid-19 numbers are fluctuating all the time it is hard to know how much to order so as to not over-order. This is important because in this case, suppliers have to make priorities. It is said that there is an 'emergency' supply chain management which is somewhat unpredictable and many companies of manufacturing do not know how much to produce and countries do not know how much they need to order. Furthermore, the risk of over-ordering arises because suppliers are setting priorities, and companies are receiving notifications, and that leads to inefficiencies across the industry.

Manufacturing facilities

Even before the pandemic, manufacturing companies have been experiencing shortages of biological manufacturing equipment and supplies. This is even harder now, as due to the pandemic there are many restrictions that do not allow transport or lockdowns to work at full capacity. Thus, it has been very hard to simply keep these facilities open and running. Many things in the manufacturing industry had to be made online. The volume and scales for COVID-19 vaccines and therapies has made it hard for businesses to respond fast and efficiently as most have had a lot of time off due to the pandemic. Hence, these companies have been producing less than optimal processes, requiring further work to improve robustness of the process and to respond to increasing demand volumes.

Regulatory requirements

It is undeniable that the vaccine process is very complex. The composition of vaccines is intricate with various core components. There have to be trials made in

order for them to be approved, which is very time consuming. There are various tests namely quality control tests that have to be made and retested to ensure vaccine quality. Hence, this results in a high vulnerability of supply chain stability and disruptions.

Transportation and storage

When delivering the vaccines, they need to be stored in cold temperatures, to ensure the optimum temperature for the active components of the vaccine. This consequently increases the cost of delivery as well as the average time of delivery. Vaccines have a long lead time to market after their supply is completed and administration is done through injections with extended periods between doses. The journey of production to distribution is a very complicated process. There is inherent variability in source materials and biological systems and the manufacturing process may involve production of one product. Moderna vaccines need to be delivered in -70 degrees Celsius which is highly unlikely to be deployed to countries in Africa for example. So these complexities also create barriers for LEDCs and make it unlikely for them to be able to increase their vaccine supply numbers. A contrary, noteworthy example of this is the Pfizer vaccine, which updated the shot's prescribing information to allow for shortage above subzero temperatures. They can now be stored and transported at standard pharmaceutical freezer temperatures for up to two weeks. This means that deliveries of the vaccine which previously needed to be kept at -44 degrees Celsius to -24 degrees Celsius. This allows for countries like Africa to be able to get more doses of the vaccine and order more vaccines for their populations.

Major countries and organizations involved

United States of America (USA)

The United States, an MEDC, has ordered more than 800 million vaccine doses, while its population stands at approximately 330 million.[20] More than 335 million doses have been given to people[21]. 159 million people in the US have been fully vaccinated which accounts to 48.5% of the population.[22] Evidently, especially in the beginning of the pandemic, the US had ordered a surplus of vaccines, which were eventually not used, due to their expiration. Nevertheless, initiatives have now been taken by President Biden, in an attempt to distribute globally the surplus of vaccines, especially to countries in need.

India

Total doses given to the Indian population 377 million and 73.3 million people are vaccinated which accounts for 5.4% of the total population.[23] India has not been getting equal access to vaccines, and there have been more than 400,000 deaths. Even though India is known for being one of the biggest vaccine manufacturers, vaccines numbers for its own people has been insufficient. With thousands of new cases every day, demand has increased to a point where supply cannot cover people's needs. Underestimation and miscalculation of the actual doses needed, has led to the suffering and overcrowding of hospitals in India's biggest cities.

[20] "United States Population (2021) - Worldometer." https://www.worldometers.info/world-population/us-population/.
[21] "More Than 3.46 Billion Shots Given: Covid-19 Vaccine Tracker." https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/.
[22] "Our World in Data." https://ourworldindata.org/. Accessed 14 Jul. 2021.
[23] "Covid World Vaccination Tracker - The New York Times." https://www.nytimes.com/interactive/2021/world/covid-vaccinations-tracker.html.

United Kingdom (UK)

The strategy of the United Kingdom was to give the first dose of the AstraZeneca vaccine to most of the population, so they have some antibodies against the coronavirus. 80,6 million doses have been given, 34.8 million people are fully vaccinated which accounts for 52.5 % of the population[24] The UK's preparedness for the Covid-19 pandemic is evident. Prior to the first case in the UK, the UK government had worked closely with medical and health organisations in order to set up a mass-vaccination system. The UK government was quick to act and succeeded in achieving quick vaccine deliveries, signing a deal 3 months before the EU.

South Africa

For South Africa, only 2.3% of the population have been vaccinated, in comparison to other countries who have reached our surpassed the 50% mark. [25]South Africa relies on the sharing scheme of COVAX and donations from other countries, and has reported shortages in vaccines. [26] This slow rate of vaccine distribution in South Africa has been caused by mainly by delays in the distribution process, export bans in certain countries and overall lack of funding. Supplies to African countries are unlikely to increase much, thus many countries such as South Africa are resorting to lockdowns and curfews.

COVAX

COVAX, an organization led by WHO, acts for the development and manufacturing of the Covid-19 vaccine to ensure equitability of vaccine distribution for all countries. COVAX, with the advice of experts, is allocating vaccines throughout countries according to population size. By 2021, COVAX hopes to have distributed at

[24] "Covid-19 vaccine tracker - Ft - Financial Times." https://ig.ft.com/coronavirus-vaccine-tracker/.
[25] "Our World in Data." https://ourworldindata.org/.
[26] "Covid-19 Africa: What is happening with vaccine supplies? - BBC ....", https://www.bbc.co.uk/news/56100076.

least 2 billion vaccination doses. The Facility has met that objective and now can increase doses by 1 billion as a right of first refusal for many candidates in CEPI-sponsored clinical studies.[27] This could be enough to end the crisis and the epidemic. African countries rely on COVAX to deliver free doses, but COVAX deliveries ground to a halt after India imposed export restrictions on the AstraZeneca vaccine as it dealt with its own resurgence.

World Health Organization (WHO)

WHO speeds up COVID-19 vaccine research and assists the scaling up of manufacturing capacity. It also collaborates with countries, regional colleagues, to develop policies, to strengthen regulatory capacity, provide training courses, and guide countries through a vaccine delivery program. The WHO's Strategic Advisory Group of Experts (SAGE) has produced policy recommendations for the Pfizer-BioNTech COVID-19 vaccine, the vaccine approved for emergency use.

[27] "Equitable access to vaccines is the best way out of COVID-19 – CEPI." 17 Dec. 2020, https://cepi.net/news_cepi/equitable-access-to-vaccines-is-the-best-way-out-of-covid-19/. Accessed 23 Jul. 2021.

Timeline of events

1796	The smallpox vaccine was created by Edward Jenner, which served as the first vaccine that was produced
1817	The first cholera pandemic outbreak.
1918	The outbreak of the Spanish flu.
February 2003	First case of SARS identified.
2014	The Public Health Agency of Canada developed the first Ebola vaccine.
December 2019	COVID-19 outbreak.
January 2021	First Vaccines for COVID-19 authorized.
April 2021	AstraZeneca fails to deliver the estimated amount of vaccines to European Countries, leading to a shortage of vaccines in Europe
March 2021	The US distributes its 100th Million Vaccine

Previous attempts to solve the issue

COVAX Facility

The COVAX Facility was created in an attempt to ensure equitable global vaccine distribution. Through close monitoring, the COVAX facility has been able to detect vaccine shortages and cooperate with manufacturers, in order to ensure fast delivery. COVAX has been the backbone for vaccine distribution in LEDC's, by providing them with the necessary doses. The COVAX facility has also taken initiative in utilizing surplus vaccines from more economically developing countries, and giving them to countries which do not have access to vaccines.

World Health Organization (WHO)

"WHO is working with Gavi, the Vaccine Alliance, and the Coalition for Epidemic Preparedness Innovations to scale up production and supply while a COVAX manufacturing task force has been formed, and the African Union is set to form the New Partnership for African Manufacturing." [28] WHO is also developing regional regulatory capacity through the African Medicines Agency. It hopes for the production of five vaccine hubs on the continent, with three mRNA facilities in Rwanda, Senegal and South Africa and more in the future.

EU Vaccines Strategy

The EU vaccine strategy[29] is a plan implemented by the European Union in an attempt to help its members get quick and affordable access to vaccines. This is achieved through preparedness, and early purchases of vaccines through agreements, financial support and ensuring the acceleration of the authorization processes and trials, in order for them to be delivered to the members as soon as possible.

Relevant UN Resolutions, Events, Treaties and Legislation

Resolution 2565, Security Council

Resolution 2565 [30] was adopted and voted upon on June 2020 by the Security Council. The resolution called for the international cooperation of the members in an attempt to facilitate quick and affordable access to vaccines. The Security Council steered its attention to countries which are dealing with humanitarian crises, whether

[28] "Unequal Vaccine DISTRIBUTION SELF-DEFEATING, World Health Organization Chief TELLS Economic and Social Council's Special Ministerial Meeting | Meetings Coverage and Press Releases." United Nations, United Nations, www.un.org/press/en/2021/ecosoc7039.doc.htm.
[29] "EU Vaccines Strategy." *European Commission - European Commission*, 10 Sept. 2021, ec.europa.eu/info/live-work-travel-eu/coronavirus-response/public-health/eu-vaccines-strategy_en.
[30] "Resolution 2565 (2020)." *S/Res/2565(2021) - e - s/Res/2565(2021) -Desktop*, undocs.org/en/S/RES/2565(2021).

those are war or other conflicts. The council expressed its need to aid countries which are facing conflicts and to enable vaccination in those regions. Lastly, the need for donations from more developed countries was expressed, whether that's through the surplus of vaccines or through manufacturing donations.

"A Vaccine for all'', Economic and Social Council

On April 16th 2021, a virtual meeting was organized in order to bring together all ECOSOC members.[31] The topic of discussion, ''A vaccine for all'', was mainly focused on ensuring the equitable global vaccine distribution. In this meeting, the importance of donating to the necessary organizations such as COVAX was highlighted. The meeting proposed alternative ways of donating to this organization, namely voluntary licenses, and technology pools. Furthermore, the importance of monitoring progress in order to avoid impediments was discussed and stressed. The Economic and Social Council also emphasized the need for supporting LEDCs through financial aid and by lifting export bans to these countries.

Possible solutions

Mapping supply chains

To limit supply chain shortages in future pandemics, companies and countries should use maps to predict supply chain disruptions and the numerous mapping options at their disposal. This can help enhance their knowledge and be able to take educated measures and re-precautions. In addition to that, they should develop tools and services to aid in the mapping of supply networks while keeping the information private. This will help keep anonymity but also be further informed about the aid that

[31] "Unequal Vaccine DISTRIBUTION SELF-DEFEATING, World Health Organization Chief TELLS Economic and Social Council's Special Ministerial Meeting | Meetings Coverage and Press Releases." *United Nations*, United Nations, www.un.org/press/en/2021/ecosoc7039.doc.htm.

the supply chains need to reduce their shortage during difficult times such as the pandemic. This will be more effective to act quickly and efficiently.

Intra supply chain flexibility

Supplier risk can also be managed by segmenting suppliers into groups. Intra-supply-chain flexibility has been critical for companies coping with COVID, and each food industry has developed different ways to be flexible, this should be continued by all companies to prevent disruption. This means that a company should have enough so as to be able to provide as much as needed. In addition this ensures individual input which will help when dealing with difficult circumstances. If all companies impose intra supply chain flexibilities, then it will be much easier to have enough, and for all to have access to the products, such as the vaccines.

Accelerator for Access to COVID-19 Tools (ACT)

To ensure that developing countries are getting access to vaccines there are some measures that need to be taken. Collaborative approaches for example such as the Accelerator for Access to COVID-19 Tools (ACT) is a way to enhance access of vaccines amongst developing countries. The ACT is set up to deploy tests, treatments and vaccines the world needs. It has been the most coordinated and successful global effort in history to develop tools to fight a disease. This shows initiative and fast decision making during this hectic pandemic but also introduces ways on how to prepare for and respond to global issues that are coordinated and communal. Thus this can enhance international efforts and support a new global consensus to set standards for equal access between and within countries.

Vaccination campaigns

Vaccination campaigns must be well-planned and carried out, which necessitates a functioning health system with adequate infrastructure, population outreach, and human resources, as well as appropriate information systems for

scheduling and tracking vaccines. This can be effective in the information gathering regarding the need for vaccines, and also setting up new ways for distribution amongst member states.

Civil Society Organizations (CSOs)

Civil society organizations (CSOs) can strengthen civil society support and collaboration, and can contribute to fair access to COVID19 vaccinations. These collaborative measures can ensure adequate preparation for a variety of future development cooperation possibilities, particularly through increased use of foresight analysis. Organizations that explicitly need the contribution of the society can be very effective at times in need, as most people respond in a collaborative way to improve their well-being.

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