Forum: Sustainable Development Sub-Commission 1

Issue: Measures to strengthen the role of education in achieving

                    sustainable development

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Introduction

According to UNESCO, Education for Sustainable Development (ESD) is the integration of key sustainable development issues into teaching and learning. It requires teachers to be hands on and involves teaching/learning methods that empower and motivate learners to take action in favor of sustainable development. ESD promotes critical thinking, decision making, and imagining collaboration for future scenarios. It allows individuals to contribute to the Sustainable Development Goals (SDGs) by providing knowledge and competencies necessary to understanding the SDGs and engaging in bringing about the necessary change the goals call for.

Contrary to most education movements, ESD was not initiated by individuals inside of the educational community. Instead, this movement was initiated by international political and economic forums, including the United Nations (UN). Concepts and content related to ESD continue to be developed by ministries and given to educators to present. Education was identified as essential for achieving sustainable development in Agenda 21, an international document produced after the 1992 Earth Summit. Chapter 36 of Agenda 21 identified four priorities   to begin the work of ESD. These priorities included:

1. Improve basic education
2. Reorient existing education
3. Develop public awareness
4. Training

In order to realize the importance of ESD, the relationship between education and sustainable development must be analysed. When discussing sustainability in an international dialogue there are two major issues that arise: population and resource consumption. An increase in population and, as a result, resource use are thought to hinder the potential of developing a sustainable future. Education has been found to be linked to both fertility and resource consumption, therefore, in order to achieve sustainability, education is imperative. There are various other ways in which education and sustainability are connected. For instance, when education levels of a country are low, their economies are limited to resource extraction and agriculture, which causes harm over a long time period. In many countries, the low level of basic education is hindering the plans and development for a sustainable future. Therefore, a higher level of education is needed in order to create jobs and industries that are more environmentally friendly and sustainable.

Research has shown that education can lead to improvements in agricultural productivity, enhancement in the status of women, and the reduction of population growth rates. It has also shown that basic education plays an important role in a nation's ability to develop and achieve sustainability. Better education enables farmers to adapt more easily to new agricultural methods, cope with risks, and respond to market signals. It also enables them to mix and apply chemicals, such as fertilizers and pesticides, reducing the risks to human health. Better education has life-altering effects on a woman. With education, a woman is able to be more independent and gain a higher status in her community. More educated women tend to marry later and want smaller families, leading to a reduction in the population growth rate. Educating women helps create more equitable lives for women and their families, leading to more participation in community decision-making and working towards achieving local sustainability goals.

There are three areas in which education directly affects sustainability plans:

- Implementation: Education plays a vital role in the implementation of informed and sustainable development. It has the potential of enhancing or limiting a nation's sustainability plan. Nations with uneducated citizens and an unskilled workforce have fewer development options as they are forced to purchase manufactured goods and energy on the international market with hard currency. In order to get this hard currency, these nations need international trade, which tends to lead to the exploitation of natural resources or the conversion of lands into areas for cash-crop agriculture. An educated workforce is key to moving beyond an economy reliant on extraction and agriculture.

- Decision making: Whether a community-based decision affecting social, economic, and environmental well-being is good, depends on educated citizens. The possibilities of implementing development that are more environmentally friendly expand as education increases. Educated citizens are able to protect their communities by analysing data and reports that relate to community issues and help provide solutions.

- Quality of life: Education also plays a vital role in improving the quality of life. Education raises a family's economic status, improves living conditions, and improves the educational accomplishments of future generations. As a result, the chances of economic and social well-being are increased for future generations. This holds both individual and national implications.

Definition of Key Terms

Education

Education is a process in which an individual's talent and inner potentialities are developed and molded. During this process, an individual's knowledge, behavior, and character are also developed and shaped. Education is extremely important when discussing and achieving sustainable development. With quality education, individuals are able to deviate from the cycle of poverty, reduce inequalities and achieve gender equality. Education has a life-long effect that allows individuals to be tolerant of others and live a more healthy and sustainable life.

Sustainable Development

Sustainable development, as defined at the World Commission on Environment and Development in 1987 is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Sustainable development is an essential guiding principle in terms of long-term global development. Sustainable development strives to achieve economic development, social development, and environmental protection. In order to achieve sustainability, these three pillars must be balanced in equal harmony.

- Economic sustainability means that a business or country is using its resources responsibly, allowing it to operate in a sustainable manner in order to continually produce an operational profit. Without an operational profit, the business or country is not able to sustain it's activities for a long time.
- Social sustainability means that a society is persistently achieving good social well-being. Achieving this form of sustainability will allow a community, organization or country to maintain social well-being for a long time.
- Environmental sustainability means that the human population is living within the means of the natural resources provided by Earth. In order to live environmentally sustainable, the human population must consume the natural resources at a sustainable rate or find alternative resources that are renewable, for example, solar power. Humans must be considerate of the possibility of material scarcity and damage to the environment from extraction of these natural resources.

Cash Crop Agriculture

Cash crop farming, also known as commercial farming or cash cropping, is when agricultural crops are grown in order to be sold or to make profit, instead of to barter or be used for sustenance. Most commonly, LEDCs are the ones that grow and supply the cash crops to the MEDCs. As a result, the price of cash crops are dependent on the supply and demand in the MEDCs.

Advantages

- Cash cropping has proven to be as effective method to raise high quantities of affordable food.

- This form of agriculture is profitable for farmers and is a valid source of sustenance for them.

- Cash cropping allows for additional employment which is necessary for processing the cash crops. This promotes economic diversification.

- Cash crops farmers are able to earn revenue from the government.

Disadvantages

- There is limited production of certain food crops when cash crop farmers solely grow one crop on the same land each year. This is known as monocropping.
- Continuous monocropping leads to soil degradation or decline in soil quality. This further leads to the an increase in the presence of pests and disease-causing pathogens. The final result would be mass starvation due to the vast destruction of a specific crop.

- This form of agriculture tends to only be beneficial to farmers who have food safety and access to other sources of income. Small farmers tend to face constraints.

Lifelong Learning

Lifelong learning is defined as learning that is pursued throughout life. This definition is based on the four pillars of education for the future developed by Jacques Delors' in 1996.

- "Learning to know - mastering learning tools rather than acquisition of structured knowledge.
- Learning to do - equipping people for the types of work needed now and in the future including innovation and adaptation of learning to future work environments.
- Learning to live together, and with others - peacefully resolving conflict, discovering other people and their cultures, fostering community capability, individual competence and capacity, economic resilience, and social inclusion.
- Learning to be - education contributing to a person's complete development: mind and body, intelligence, sensitivity, aesthetic appreciation and spirituality."

Lifelong learning is flexible, diverse and available to the learner at different, but all, time and places. It promotes creativity, initiative, and responsiveness in individuals. It enhances an individual's skills to manage uncertainty,   communicate within and across cultures and communities, and negotiate conflicts.

Background Information

Priorities of ESD

The first priority: Improve basic education

The recognition of the need for quality basic education sets ESD apart from other educational efforts, such as environmental education or population education. Basic education, its content and the amount of years, is different around the world. For example, in some countries basic education encompasses primary school while in others eight or twelve years is mandatory. Simply increasing the basic literacy as it is taught now will not allow Nation States to advance into sustainable societies. Instead of focusing solely on reading, writing, and ciphering, education systems should also focus on skills, values, and perspectives that encourage and support community decision making. In order to accomplish this, basic education must be reoriented to address sustainability and expand to include various skills such as critical thinking, to analyse issues that confront communities, and to organize and interpret data.

Since the 1990s, much progress has been made in basic education. Enrollment rates in primary education has risen and is continuing to rise in most regions of the world; the rate for girls has increased at a faster rate than that of boys. Between 1999 and 2015, the overall enrolment in primary school around the world increased by approximately 7%; the enrolment of males increased by 5% and that of girls increased by 9%. As a result, the gender gap is becoming smaller in both primary and secondary school. However, in many states, the level of basic education is still too low and is consequently hindering national plans for a sustainable future. In parts of Asia, many children only attend school for about five years and to complicate matters,

girls receive even fewer years of schooling. In parts of Africa, the average attendance in public education is measured in months, not years. Sadly, as a result, these LEDCs are severely limited in the options available in order develop short and long term sustainability plans.

The second priority: Reorient existing education to address sustainable development

The term "reorienting education" has become a powerful descriptor in understanding the change required for ESD. An appropriately oriented basic education includes more principles, skills, perspectives, and values related to sustainability. ESD encompasses the integration of the environment, economy, and society into the curriculum. Reorienting education to address sustainability is something that should occur throughout the formal education system. Although reorienting primary and secondary education has attracted international attention, this attention is also needed at the university level. University level education systems must be reoriented to include many and complex facets of sustainability if these young people are expected to lead all sectors of society. When reorienting education to address sustainability, program developers must find a balance between looking forward to a more sustainable society and looking back to traditional ecological knowledge. For example, indigenous traditions often have values and practices that encourage sustainable resource use which can be adapted to life in the 21st century.

The third priority: Develop public understanding and awareness

In order to achieve sustainability, a population that is aware of the goals of a sustainable society and has the skills and knowledge to contribute to those goals is required. An informed and educated voting citizenry can help governments execute sustainable measures. Citizens must also be knowledgeable consumers who can see beyond the "green washing", which is public relation efforts that showcase the environmentally responsible activities of a company and hide the activities that are not. In the 21st century, the population is continuously surrounded by media and advertisements, therefore, the population must become literate and able to analyse the messages being published. Education has been helpful in other types of programs such as public-health efforts to stop the spread of a disease.

The fourth priority: Training

The World needs a literate and environmentally aware population, the citizens and the workforce, to guide nations in implementing sustainability plans. Therefore, all business sectors are encouraged to provide training to their workers and train their leaders in environmental management. Training is different to education in that training is focused to a particular job or groups of jobs. Training informs individuals of accepted practices and procedures, giving them the skills necessary to perform specific tasks. On the other hand, education is a socially transforming process, in which the student is given knowledge, skills, perspectives, and values that allow them to contribute to their own well-being and that of their community.

Some training is simple, while others are more complex. Teaching workers how to use equipment safely, comply with regulation, and be more efficient can be fairly simple. However, training a woman to use solar cookers instead of cooking on open, wood fires involves change in social dynamics and practices. In this situation, the woman must not only learn how to use the solar cooker, but also change her daily routine of meal preparation as she must cook while the sun is high in the sky rather than in the evening.

Challenges when discussing ESD

As with all initiatives, there are challenges associated with ESD. The first step that must be taken after launching an ESD program is to increase awareness to the public, specifically the educational community, for example, that ESD is essential in order to achieve sustainability. Once the public realizes the importance of education in order to increase the implementation of national policies and resource management programs, governments and stakeholders will be able to more easily reorient to help achieve sustainability. When raising awareness, it is also important to outline the relationship between education and building a sustainable society. On an international level, ESD is already recognized as important when achieving sustainable development. Various delegations have already shown willingness to move forward with the next step. If the public realizes that there is a need, it will lead to a change in the educational systems. However, the majority of the public has yet to realize the importance of education in order to create large change for sustainable development. The recognition of the education sector is imperative in order to make progress.

One major obstacle that is necessary to discuss when addressing ESD is popularity. Although member states recognize that education is important when striving to achieve sustainable development, it is not a prevalent theme in cultures. For example, many societies have developed a "disposable" culture, where food containers, food wrappers, or eating utensils are thrown out after one use. This "disposable" culture results in the unsustainable use of raw resources such as trees (timber) and fossil fuels. These resources are used up more rapidly than they can be replaced. Since the principles of sustainable development are not popular in culture, the emergence of ESD could help shape and encourage individuals to adopt behaviors and ethics that enable the achievement of a sustainable future.

Another challenge that arises is structuring and placing ESD in the curriculum. Each state has the responsibility to determine how to incorporate ESD into the curriculum, whether it be by creating an additional subject or to redirect entire curriculums to address sustainable development. Some communities may not to integrate ESD into their education systems at all and others will barely address the topic. Each member state will work towards achieving this goal in their own way. Nation states and educational institutions must also decide whether they will be teaching about sustainable development or teaching to help achieve sustainable development. Experimentation will allow parties involved to determine the level of ESD that is appropriate and most successful in allowing a community to meet their sustainability goals. In doing so, the parties must realize that there are limitations to both ways of teaching previously mentioned. For example, teaching about sustainable development is similar to teaching the theory behind an abstract concept. In order for ESD to be most effective, students must be given skills, perspectives, and knowledge necessary in order to live sustainably. On the other hand, true

education is not indoctrination. There will be issues when ESD is initially implemented into curriculums, however, they will be addressed as ESD continues to develop and mature.

Sustainable Development Goals (SDGs)

The SDGs are a set of 17 goals that work towards ending poverty, protecting the planet and ensuring prosperity for all over the next 15 years. These goals are different than ones previously proposed, because they are adapted for all countries, MEDCs, LEDCs, and NICs, to be able to promote success and growth while still protecting the planet. These goals recognize, for example, that in order to end poverty, strategies to build economic growth must be implemented. The SDGs address a range of global issues including social protection, education, and environmental protection. Although the SDGs are not legally binding, all nation states are expected to take responsibility and work on establishing national frameworks in order to achieve these 17 goals.

Goal 4 of the 17 SDGs is to "ensure inclusive and quality education for all and promote lifelong learning." Although there has been major progress in increasing overall access to education, more audacious efforts are required in order to achieve universal education goals. Each goal has a set of targets that nation states are asked to focus on achieving by 2030. Some are as follows:

- Ensure that primary and secondary education are completed by all girls and boys free of charge.
- Ensure equality in women's and men's access to affordable and quality tertiary, technical, and vocational education. This includes university.
- Ensure that both men and women, that are part of the youth and some adults, achieve literacy and numeracy.
- Ensure that all learners receive the knowledge and skills necessary to promote sustainable development.
- Expand the number of scholarships available to developing countries globally, especially least developed countries, for enrolment in higher education.

Major Countries and organizations Involved

UNESCO

The United Nations Education, Scientific and Cultural organization (UNESCO) has had a vital role in encouraging nation states to integrate ESD into all aspects of education and learning. UNESCO has been a part of two major efforts in order to accomplish this goal: the UN Decade for Sustainable Development (DESD) and the Global Action Programme (GAP).

The UNDESD was a goal set up to encourage all nation states to successfully integrate principle, practices, and values of sustainable development into their education and learning systems. This effort also sought to encourage a change in the public's behavior allowing nation states to create a more sustainable future for present and future generations. UNESCO was a lead agency in the efforts to accomplish the UNDESD, by coordinating various UN agencies and organizations involved in the

UNDESD. During the duration of the project, UNESCO worked to share good and effective ESD practices, create relationships between nation states that have been able to successfully integrate ESD into their policies and curricula with those that have not, and served as a forum to bring together important stakeholders, such as youth associations and key multinationals.

The Global Action Programme (GAP) was the follow-up to the UNDESD. This programme sought to accelerate advancements towards sustainable development and contribute to the 2030 agenda. The GAP anticipated on accomplishing these goals through two objectives: reorienting education and learning in order for everyone to be able to have the opportunity to obtain characteristics which empower them to help create a sustainable future; and strengthening the role of education and learning in all activities, programmes, and agendas that work towards promoting sustainable development. Four main implementation strategies were developed in order accomplish these objectives. These four strategies involved: building new momentum by encouraging stakeholders to make initial commitments; harnessing partnerships; fostering a global community of practice by hosting a Global Forum in which stakeholders would be able to meet regularly and exchange ideas; and showcasing good practice by sharing these good practices widely and on the GAP website.

United Nations Economic Commission for Europe (UNECE)

The UNECE developed a Strategy on ESD which was adopted by nation states in 2005. The strategy was developed in order promote the integration of ESD into education systems in Europe. The UNECE describes the strategy as a "practical instrument to incorporate key themes of sustainable development into the region's education systems". The objectives of this Strategy are as follows:

1. "Ensure that policy, regulatory and operational frameworks support ESD;
2. Promote sustainable development through formal, non-formal and informal learning;
3. Equip educators with the competence to include sustainable development in their teaching;
4. Ensure that adequate tools and materials for ESD are accessible;
5. Promote research on and development of ESD;
6. Strengthen cooperation on ESD at all levels within the UNECE region."

Timeline of Events

Date	Description of Events
1987	UN General Assembly - World Commission on Environment and Development
1992	The United Nations Conference on Environment and Development, also known as the Rio Earth Summit
20-22 June, 2012	Member States decided to launch a process to develop the set of Sustainable Development Goals (SDGs)
10-12 November 2014	UNESCO World Conference on Education for Sustainable Development
19-22 May, 2015	World Education Forum 2015

September 25, 2015   Countries adopt Sustainable Development Goals (SDGs)

Relevant UN Treaties and Events

- Agenda 21
- Report of the World Commission on Environment and Development, 11 December 1987 **(A/RES/ 42/187)**
- The Strategy for Education for Sustainable Development
- United Nations Decade of Education for Sustainable Development (DESD)
- Sustainable Development Goals (SDGs)
- Follow-up to the United Nations Decade of Education for Sustainable Development (2005–2014): Global Action Programme on Education for Sustainable Development, 19 December 2014 **(A/ RES/69/211)**
- Incheon Declaration for Education 2030

Previous Attempts to solve the Issue

United Nations (UN)

The United Nations, and organizations associated with the UN, have been active in encouraging and promoting the integration of sustainable development into various sectors of education. The UN has done this through the creation of resolutions and treaties with the purpose of leading nation states in the right direction. Various of these resolutions and treaties have been mentioned previously in this research report. UN organizations have also initiated efforts in order to promote ESD. Efforts, such as the UNDESD, led to nation states developing their own strategies on implementing ESD.

Possible Solutions

In order to strengthen the role of education in achieving sustainable development, nation states and stakeholders should ensure that all those residing in their country have access to education. Through education, people will be able to recognize the importance of sustainable development and work towards creating a more sustainability-oriented society. Sustainable development begins with education therefore nation states and stakeholders must ensure that education is being received no matter what the circumstances.

Women and girls are two groups who have difficulty in having access to education. In regions such as Oceania and Sub-Saharan Africa, girls continue to confront barriers when entering either primary or secondary school. This not only causes issues in the short term, but also leads to a lack of access to opportunities in labor for young women. Therefore, nation states and stakeholders must create and implement gender-sensitive policies and learning environments in order to ensure gender equality. These policies should work towards eliminating gender bias and discrimination as a result of cultural and

social attitudes and practices in educational institutions. This will further ensure that teaching and learning in all nation states are equal to boys and girls.

Crises, such as pandemics, conflicts, and natural disasters can be a major obstacle to accessing education. Nation states should ensure that education systems are resilient, inclusive and responsive, so that they can meet the needs of the youth and adults even in moments of crisis, including the displacement of persons or refugees. This education will provide support for those affected by the crisis and provide them with the skills for a sustainable future and how to prevent disease, disaster, and conflict in the future. Documents, such as the Inter-Agency Network for Education in Emergencies (INEE) Minimum Standards, should be used to guide planning and response to the crisis context. Nation states should ensure that education sectors have plans and policies in place that anticipate risks and measures to ensure that a certain level of education is being maintained at all times.

In addition to making education more accessible to all, nation states should also work towards improving the quality of education, which includes improving the relevance of education and learning. Institutions providing education should be equitably resourced and have safe and easily accessible facilities. Nation states should also ensure that each institution has enough resources to provide the students with quality education. This includes having a reasonable teacher to student ratio, in order to ensure that each student is receiving enough attention, and having a sufficient amount of learning materials.

Having a safe, friendly environment is extremely conducive to positive learning outcomes. Therefore, all nation states should take extensive measures to ensure that education institutions are zones of peace and are free from violence. For example, special measure should be applied in conflict zones in order to protect women, men, girls and boys who wish to receive education. Routes to and from the educational institution should also be free from attacks and violence.

Nation states should ensure that all educational institutions provide instruction and information regarding the following subjects: climate change, disaster risk reduction, biodiversity, poverty reduction and sustainable consumption.

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Forum:	Sustainable Development Sub-Commission 1
Issue:	Promoting sustainable tourism as a means of creating jobs
Student Officer:	Emma Fogarty
Position:	Deputy President

Introduction

Every member state of the United Nations has its own history, charm and every country has an opportunity for a thriving tourism industry. This issue is aimed at creating tourism that will sustainably last into the future while taking into account the social construct, environment and economic background of each member nation. As well as this a reason behind creating this sustainable tourism is to create jobs and improve the economic structure of that country as a result.

The tourism industry has boomed over the past decades, most likely due to the increase in travel availability. With the increase of tourism the availability of jobs has hugely increased also. There are statistics laid out in the following sections that will portray how influential tourism is becoming to a member nations GDP and general prosperity. For these very reasons, it is incredibly important that a member nation secures a tourism sector that is sustainable in the future.

The tourism industry can at times have negative impacts on the environment in which it stands especially if the touristic site is a natural one. Therefore to ensure that tourism is sustainable in the future, the environment cannot be destroyed as a result of that tourism. There are suggestions at combating this in the possible solutions.

The United Nations has much to offer in help with the sub body named UNWTO (the United Nations World Tourism Organisation) and the ILO. These organisations are mentioned throughout the report and should be included in each resolution on this topic.

Definition of Key Terms

Tourism

Travel for pleasure or business; as well as the business of attracting, accommodating, and entertaining tourists through tours and other activities.

Sustainable tourism

"Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities"

Jobs

Both part time and full time employment; in relation to both year round employment and also employment for only a section of the year.

Background Information

Sweden

The total tourism revenue of Sweden increased by over six percent to 251.7 billion kronor (€27.88 billion) in 2016 and created nearly 12,000 new full-time jobs in that year alone, while export value rose by nearly 13 percent and 93.6 billion kronor in 2009, as measured by foreign visitor consumption in Sweden. This result was larger than the capital earned from exports of cars, iron and steel combined.

Tourism is a staff-intensive industry. Since 2000, the sector has created nearly 36,000 new full-time jobs, an increase of almost 30 percent, while total employment in Sweden increased by 4 percent in the same time period. This demonstrates that last year was not an exception but instead a long term effort on behalf of the Swedish economy responsible for creating a huge amount of jobs for its residents. Sweden is a good example of a country that may not be traditionally popular for its tourism. This would be due to its extreme weather or not having any particularly famous sights. Nowadays most of the general public tend to go away to a warm climate or famously historic area for their holidays.

Sweden has however still made a successful tourism industry through sustainable tourism. The reason Sweden's tourism industry has boomed in recent years is due to their promotion of their skiing resorts, scenery and other aspects of their individuality. Other member nations can take from Sweden's example and learn how to specify a tourism programme to suit their resources and climate.

World Travel and Tourism Council

According to the World Travel and Tourism Council data: in 2015 tourism directly created over 107 million jobs (3.6 per cent of total employment representing 3 per cent of total GDP) and supported (directly and indirectly) a total of 284 million jobs, equivalent to one in 11 jobs in the world. By 2026, these figures are expected to increase to 136 and 370 million jobs respectively representing one in nine of all jobs worldwide.

Within G20 countries, China, India, Indonesia, Mexico and South Africa are expected to be among the fastest growing tourism and travel destinations. Among the non-G20 economies Kyrgyzstan, Myanmar, Tanzania, Vietnam and Zambia are expected to show the most growth.

These statistics highlight the significant contribution of tourism to employment and GDP. Furthermore, it is essential to make sure that the growth and development of this sector is sustainable, socially responsible and creates decent work opportunities.

Sustainable Development Goals

154 heads of state or government adopted the 2030 Agenda for Sustainable Development, during the 70th Session of the UN General Assembly along with the 17 Sustainable Development Goals (SDGs) that aim to "end poverty, protect the planet, and ensure prosperity for all".

The tourism industry has the potential to contribute to economic and social development. A number of Sustainable Development Goals recognize this fact, for example Goal 8 (Promote inclusive and sustainable economic growth, employment and decent work for all) includes a target (8.9) on tourism: "By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products." Through having these aims laid out in the sustainable development goals means that these goals are accessible and identical for all member nations. Goal 12 (Ensure sustainable consumption and production patterns) and Goal 14 (Conserve and sustainably use the oceans, seas and marine resources) also include targets relating to tourism.

The unified nature of the Sustainable development goals means that all member nations are striving for sustainable development as a means of creating jobs together. On an international platform we can use each other's strengths in an attempt to reach them.

Ministers Meetings and their resulting actions taken

Following the significant growth of the tourism sector in terms of employment and its contribution to GDP in the recent decades, the G20 Tourism Ministers' Meetings were set up in 2010 with the aim to create an opportunity for G20 tourism ministers to place tourism on the global agenda. Representatives from the member nations meet and discuss opportunities to develop and expand tourism resulting in an increased number of jobs in the sector as well as the challenges of the sector and how to overcome them for example the best ways of dealing with the off peak times and reduce the negative effect on jobs during these times. The tourism ministers meet once every year.

The Chinese G20 Presidency hosted the 7th T20 Ministers' Meeting on 20 May 2017 under the theme "*Sustainable Tourism – An Effective Tool for Inclusive Development*". China hosted the First World Conference on Tourism for Development. It took place in Beijing, on 19 May 2016 under the theme "Tourism for Peace and Development". Both meetings provided an opportunity to promote sustainable tourism as a drive for decent work, economic growth and sustainable development.

The theme for this year's World Conference on Tourism for Peace and Development is "Sustainable Development: An Effective Tool to Promote Inclusive Development." At the meeting the UNWTO published the themed report under the same title. The official report of the 7th G20 Tourism Ministers Meeting was adopted. This theme links perfectly to this topic as the UNWTO, the UNs tourism body, is specifically focussing on inclusive sustainable development this year. This is of course precisely what the resolutions on this topic should strive for as sustainable development is reliant on the workforce and employment in all sectors of the economy including the tourism sector.

The new Agenda aims to build peaceful, just and inclusive societies that aim to provide equal access to justice for all and based on respect for human rights (including the right to development). It gives special mention to the use of National Councils for Sustainable Development and recognise that

they can typically help to provide "responsive, inclusive, participatory and representative decision-making at all levels" (target 16.7) as well as "policy coherence" (target 17.14) which are lain out in the 2030 Agenda.

ILO and UNWTO

The ILO (International Labour Organisation) works to promote employment and decent work for all in the tourism sector, meaning a safe and secure working environment holding up to the recommended conditions laid out by the UNHCR and their own agenda as laid out below. The ILO promotes " the four pillars of the Decent Work Agenda " in the tourism sector, mostly by promoting rights at work, encouraging opportunities for decent employment, "enhancing social protection and strengthening social dialogue". The "four pillars" that are laid out in the ILOs agenda were put in place to provide goals and recommendations for all member nations to achieve good working conditions in all aspects of their economy.

The ILO works directly with the UN through their paired work with the UNWTO as well as a large amount of countries in the UN individually taking part in the Ministers meetings in conjunction with the ILO. As a result they have a huge part to play in addressing this issue.

The UNWTO and the ILO have worked together in the past in their joint project called the Employment and Decent Work in Tourism Project. This project is aimed at contributing to the improvement of methods of statistical data collection as well as providing better coverage and working conditions of persons employed in tourism industries.

Issues relating to tourism and the effect on businesses during off peak times in the year

Tourism is often seasonal with the "high /peak" season followed by "low/off" season. The options businesses face in managing both depends on the financial security of the business. If enough profit has been made to sustain the business through the low season then there are several options:

A. Research the market to see what competitors offer and develop market expansion or possible innovations to the product offered

B. Maintain the buildings or upgrade the decor

C. Encourage the loyalty of the best seasonal employees by offering them training and possibly team building activities . They in turn will promote the business better with efficiency and food people skills when dealing with the customer. Additionally keeping them with the business will also save on recruitment and basic training of someone new.

If the business is not financially viable for the off season it can try to diversify seeking a new focus to remain sustainable by adapting to the season for example a shop-owner providing cold drinks and ice-creams in the hot summer and hot drinks with local hand-made chocolates for the cold winter. A hotel might promote outdoor activities and beach access for the summer and the historical sites or local fairs/ festivals for the winter months. Employees might be offered reduced hours rather than none at all to

encourage their staying and diversifying their role from tour guide to activities co-ordinator or painter/ decorator to cleaning/maid service.

Major Countries and Organizations Involved

ILO (International Labour Organisation)

The ILO is committed to the promotion of employment and decent work for all in the tourism sector. The ILO adopted a declaration on social justice with the aim of promoting social justice at work called the "Decent Work Agenda" in 2008. This declaration has four objectives named the "four pillars" that their work is based off. These include promoting decent employment opportunities in a fair system for all, in all member nations, "enhancing social protection" involving access to health care and income security, "strengthening social dialogue" which will lead the process of consensus-building, and to "guarantee fundamental principles and rights at work".

UNWTO (United Nations World Tourism Organisation)

The UNWTO strives to achieve sustainable tourism as laid out in this definition: "Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities."

As mentioned above, the UNWTO and the ILO have worked together in the past on the Employment and Decent Work in Tourism Project, aimed at contributing to the bettering of working conditions of persons employed in tourism industries.

G20 countries

The Group of Twenty is comprised of 19 countries plus the European Union. The countries are Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, the United Kingdom and the United States of America. the G20 countries were the countries who set up the ministers meeting spoken about in the above section and throughout this document.

Relevant UN Treaties and Events

- Report on the World Committee on Tourism Ethics: Recommendations on Accessible Tourism, Twentieth session, Zambia, Zimbabwe, August 2013 **(A/RES/637)**

- Report on the World Committee on Tourism Ethics: (b) Accessible Tourism for All, Nineteenth session, Gyeongju, Republic of Korea, October 2011 **(A/RES/606)**

- Declaration on the Facilitation of Tourist Travel, Eighteenth session, Astana, Kazakhstan, October 2009 **(A/RES/578)**

- Recommendations on Accessible Tourism for All, Sixteenth session, Dakar, Senegal, November – December 2005 **(A/RES/492)**

Previous Attempts to solve the Issue

As mentioned earlier Sweden has managed to create jobs on a large scale from their tourism industry and as a result has positively impacted the country's economy and GDP. Many other countries have done the same. Any country that has attempted to improve their tourism sector as a means of creating jobs is already attempting to solve the issue. Ireland, for example, has hugely improved their tourism sector through advertising the scenery and music that can be found and enjoyed here. A huge factor is that Ireland has managed to create a very active image for tourism such as promoting water sports, cycling or walking the Wild Atlantic Way, hiking and rock-climbing. Despite the cold and often wet climate, tourists do tend to look upon Ireland as a desirable destination to be outdoors. Failte Ireland (Irelands tourism sector) collected a series of quotes during a survey on businesses that rely on tourism. A hostel owner based along the west coast of Ireland said; "Yes, people are following the Wild Atlantic Way. Good weather helps as people come here for outdoor activities i.e. hiking, walking, cycling etc". This sums up how yet another country has managed to defy the odds of popular tourism with its individuality. The survey also found that 68% of businesses that are reliant on attractions or sites in Ireland, and an average of 74.3% of hotels, guesthouses and hostels saw an increase in overall visitor volumes in 2016 compared to the previous years. The tourism affecting these businesses is creating and maintaining jobs all across the country.

Possible Solutions

Your possible solutions will be what you base your resolution operative clauses on. These ideas should be very implementable for all member nations while not infringing on their national sovereignty. They should be concise and to the point while at the same time ensuring that there is a body who can oversee and aid in and plans and processes you wish to implement.

For this topic you must ensure that the basis of your resolution is the creation of jobs in the tourism sector. You must remember that the tourism you are promoting also must be sustainable. That means that it should contribute to employment over a prolonged period of time, for example; if it is a natural resource that is used as a touristic site, it must be protected and safe, and that businesses and sites must be able to support themselves or be supported in that country's economy.

For this committee we must ensure that we stay within the rights and responsibilities of the Sustainable Development Commission. We must focus every clause on the creation of jobs as a result of tourism while ensuring that these jobs, as well as the aspect of tourism (e.g. natural such as a national park) in which these jobs are needed, is sustainable.

Some suggestions for possible clauses in a resolution are laid out below. Remember that these are guidelines and original ideas need to also be included in your resolution.

You could encourage all member nations governments to attempt to set up their tourism industry similarly to the set up in Sweden or Ireland if they would gain from it due to similarities in climate or culture for example.

Furthermore you could also ask the UNWTO to continue to conduct extensive research into a country's economic gain from tourism with special vigour in relation to a country's history, sites and tourism industry to find possible ways to increase the productivity of the industry and so create maximum jobs available to the residents of that country.

Investing into skills development and vocational education and training, (by the UNWTO) and improving working conditions (member nations government) to improve the image of the working sector and service quality, bearing in mind that the skills level, professionalism, commitment, loyalty and soft skills of workers are key for competitiveness.

Continue the work to achieve the Sustainable Development Goals;

- Goal 8 which promotes inclusive and sustainable economic growth, employment and decent work for all.
- Goal 12 (Ensure sustainable consumption and production patterns)
- Goal 14 (Conserve and sustainably use the oceans, seas and marine resources)

Create targets for each member nation that are sustainable for that member nation.

Another possible solution is to ask members from the United Nations to become regular attendees to the G20 minister meetings and continue to be actively involved with the goings on of the ILO.

You could talk about building on the relationship between the ILO and the UNWTO through further projects with which they work together to better working conditions as well as creating jobs in the tourism industry.

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Forum: Sustainable Development Sub-Commission 1

Issue: Ensuring a reliable, affordable, and efficient supply chain to prevent food waste

Student Officer: Kjetil Monstad Hansen

Position: Deputy President

Introduction

Hunger is one of the world´s most urgent development challenges. Of the Earth´s population, almost a billion are malnourished. Despite this, humans are producing more than enough food the feed its entire population. Over the last 30 years, the world has seen a 17% increase in food production, yet only half of it is ever consumed. 1.3 billion tons of food produced is either lost or wasted globally each year, representing one-third of all food produced for human consumption. One-fourth of all food wasted annually is enough to end world hunger. Food waste is not only associated with the ethical implications of world hunger, but the waste of limited resources used for production. Labour, land, water, energy, and other inputs are wasted on the production of food that is never consumed.

Food waste is a problem taking place at roughly the same level in both developed and developing countries, however, usually at different stages of the food supply chain. 670 million tonnes of food is wasted in developed countries, and 630 million tonnes is wasted in developed countries. The food supply chain represents the four stages of food production; production, processing, retail, and consumption. In developing countries, 40% of food waste takes place at the processing stage, post-harvest, whilst in developed countries, 40% of food waste takes place during retail and consumption.

Food waste mainly occurs due to three problems, differing slightly between developed and developing countries. In developing countries, a lack of advanced technology leads to spoilage and waste during food processing and storage. In developed countries, food is wasted due to strict food policies and consumer behaviour. One-third of total food waste occurs because of quality standards over-emphasising on appearance.

Definition of Key Terms

Food waste

Food waste is a part of food loss, which is the decrease in quantity or quality of food. It refers to both discarding and alternative uses, such as feeding animals, of food that is safe and nutritious for humans to consume. The definition of food waste includes waste along the entire food supply chain.

Food supply chain

The food supply chain consists of an entire network, either directly or indirectly interlaced in serving consumers. Producers converting raw material into products, warehouses storing the products, and retailers, such as grocery stores selling the products to consumers, are a part of the food supply chain. The stages are divided into production, food processing, retail, and consumption.

Industrial agriculture

Industrial agriculture is monoculture, meaning to grow a single crop on a very large scale. The most commonly grown crops through industrial agriculture are corn, wheat, soybeans, rice, and cotton. This type of farming needs large amounts of synthetic fertilizers and pesticides, it is therefore often associated with environmental damage.

Subsistence agriculture

Subsistence agriculture is farming with the intention of providing the farmer with his basic needs. There is little surplus for marketing. The small-scale way of farming provides a self-sufficient lifestyle for the farmer and family.

Food production

Food production converts raw food products into marketable products, most commonly grains, fruits, vegetables, and meat. Food production includes both the growing and raising of crops and animals, as well as the stages of post-harvest and post-butchering.

Food processing

Food processing is often considered a part of food production. It is a set of methods and technics used to process raw materials into products ready for retail. It includes packing, cooking, mixing, and all other methods necessary for the products to be sold at stores.

Retail

Retail is selling goods directly to the ultimate consumer. Grocery stores are considered retailers, as they have previously obtained their goods from a wholesaler or supplier, and are now selling the products directly to the consumers.

Consumption

Consumption is the act of destroying, using up, transforming or eating a substance. Most notably recognized as eating or using food. Consumption is the last stage of the food supply chain.

Background Information

The alarming issue of food waste has seen an increase in public awareness over the years. Environmental organisations, such has Feedback, has in collaboration with governments and NGO´s educated the public about the severity of food waste. These campaigns provide an important first step in preventing food waste; awareness.

Food waste in developing countries

At 630 million tonnes annually, developing countries dissipate almost the same amount of food as developed countries, though slightly less. Half of all the food produced in all developing countries is never consumed, but rather wasted. Not only does this cost billions of dollars, but unfortunately, countless lives. Authors John Mandyck and Eric Schultz write in their book, *Food Foolish: The Hidden Connection Between Food Waste, Hunger, and Climate Change,* that most food in developing countries decay in fields or farms before harvest. If not during harvest, then it is spoiled while being transported. Most food wasted in developing countries never get very far on the food supply chain, usually never past food production or processing.

Harvesting

Huge amounts of food are wasted during harvest in developing countries. If the crop has not already been ruined by pests or weather, then actually harvesting the crops requires specific weather conditions. Furthermore, as harvesting in developing countries is often done by hand, a large amount of labour is needed. Shortages of appropriate weather and labour can cause crops to go bad before ever even being harvested.

Harvesting methods are also essential. Whilst some foods like rice are fairly robust, others like fruit are quite fragile. If bruised during harvest, the fruit begins to rot. Once a fruit has rotted, the rot spreads to all other fruits touching it. Thus, when a harvest begins to rot it can be very hard to contain, causing large amounts of food waste.

Processing

While crops such as rice and corn might be immune to bruising, they require specific processing before storage. Both rice and corn are harvested with a degree of damp which needs to be dried off, otherwise the food becomes mouldy quickly. For small scale agriculture, this usually does not prove to be a problem. Countries such as Madagascar would spread the rice out on the hot asphalt, letting it dry there before storage. However, this does not work for large scale agriculture which requires appropriate processing plants and reliable energy infrastructure.

Storage

Storing processed food can prove difficult, especially for developing countries as they may lack the needed technology. Warehouses need to be damp-proof, ventilated, have the appropriate temperature, and inaccessible to rodents and insects. Typically, even a small leak or infestation can lead to the entire warehouse being contaminated.

Transportation

A chill environment whilst transporting food to the market is essential for its shelf life. Unfortunately, many developing countries do not have the technology nor the money to provide such transportation. Thus, food is wasted whilst being transported to the consumers. Author John Mandyck claims that "If developing countries had the same level of refrigeration for the transportation and storage of food as developed countries, approximately one-quarter of food loss would be avoided". Furthermore, developing countries may not have access to the needed equipment to transport fragile produce such as tomatoes and peaches. A shortage of crates and palettes causes food to be bruised and spoils while transported.

Food waste in developed countries

At 670 million tonnes annually, developed countries waste more food than developed countries. Furthermore, more food is wasted at the retail and consumption stages of the food supply chain. Estimations show that per capita food waste by consumers in Europe and North America is between 95kg to 115kg per year.

Food policies

Large quantities of food are wasted at retail level due to policies. Developed countries often have strict food policies regarding the appearance of the food. Thus, tons of perfectly edible food are wasted just because it does not match a standard based on appearance. One-third of total food waste is due to such policies. Other policies that cause food waste are the ´sell-by/best-before` dates on products. These dates usually refer to the quality, not the safety of the products, and a lack of public awareness cause households to throw away edible food. Finally, developed countries produce more food than they are able to consume. The United States currently have twice the calories needed for its entire population. Restaurants and diners waste on average 17% of their meals, less than half of which is taken home for leftovers.

Households

Of all the food waste in developed countries, consumer eating habits are a major contributing factor. A lack of planning whilst buying groceries cause products to be wasted by households, for example, if they are not used before their expiration date. Furthermore, a lack of planning causes households to over-shop and prepare too much food, resulting in large amounts of leftovers being thrown away. Households also waste large amounts of edible food as they are uneducated about the difference between the ´use-by` and ´best-before` labels. Poorly regulated labels are one of the biggest reasons why households waste food.

Lastly, households in developed countries throw away food because they can afford to. According to USDA calculations based Euromonitor International data from August 2016, Americans spend only 6.4% of their budget on groceries. As there are few economic incentives to reduce food waste, and it is affordable, households care less about the food they throw away.

United Nations Sustainable Development Goals

The 13 Sustainable Development Goals of the United Nations were adopted on September 25th, 2015. The aim of the goals is to end poverty, protect the planet and ensure prosperity for all by the end of 2030. The agenda expects that both governments, private sectors and individuals take part in ensuring that the goals are reached.

Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Goal 2 aims to rethink how people grow, share and consume food. By 2030, agriculture productivity should be doubled. In order to achieve this, there will be increased investments in rural infrastructure, agriculture research, and technological development. Furthermore, plant and livestock gene banks will be established to enhance agriculture productivity in developing countries.

Goal 12: Ensure sustainable consumption and production patterns

Goal 12 aims to enhance efficiency and reduce food waste along the food supply chain. Education and awareness raising are key to achieving Goal 12. The UN and all other countries involved with the Sustainable Development Goals are supporting developing countries to strengthen their technological capacity within agriculture, allowing them to move towards more sustainable food production.

Major Countries and Organizations Involved

Food and Agriculture Organization of the United Nations

The Food and Agriculture Organization of the United Nations (FAO) was established in 1945 and leads international efforts to stop world hunger. The FAO currently has 194 member states, and works in over 130 countries worldwide. The FAO´s goal is to achieve food security and ensure that everyone has regular access to healthy food. As food waste is a major contributing factor to world hunger, the FAO is actively battling the issue. In collaboration with Messe Düsselforf, donors, bi- and multi-lateral agencies, financial institutions, and private sector partners, the FAO is developing a program on food waste reduction called *Save Food*. The program focuses on raising awareness, policies, and investment from both public and private sectors. Furthermore, the FAO works to strengthen political will to battle food waste, educate the public, and reduce risks related to agriculture.

Feedback

Feedback is an environmental organisation established in 2009 with the single goal of ending global food waste at every level of the food supply chain. In collaboration with governments, NGO´s, international institutions, and grassroots organisations, Feedback attempts to change societies attitude

towards food waste. Feedback recognises food waste as a result of a broken food system, and therefore aims to build an entirely new food system. The founder of Feedback, Tristram Stuart, published a book, *Waste: Uncovering the Global Food Scandal (Penguin, 2009)* shortly before establishing Feedback. The organisation is constantly communicating with decision-makers across governments, ensuring that they follow the expert advice on food waste provided to them. Lastly, Feedback claim to specialise in uncovering hidden waste along the food supply chain.

DC Central Kitchen

DC Central Kitchen was founded in 1989 by Robert Egger. Robert Egger was a young night club manager frustrated by the inefficiency of volunteer charity organizations. He therefore established DC Central Kitchen, aiming to liberate people from poverty. DC Central Kitchen collects food waste and turns it into meals for home shelters, non-profit. In addition, Robert Egger used the opportunity to train unemployed adults in the culinary arts, eventually hiring them. Through his model, Robert Egger has prevented millions of pounds of food waste, whilst also battling hunger and unemployment. Since 2012, DC Central Kitchen has won several top national awards for healthy school innovation, including the Golden Carrot.

Timeline of Events

Date	Description of events
October 16th, 1945	The Food and Agriculture Organization of the United Nations is founded.
December, 2009	Feedback is founded and Tristram Stuart organises the first Feeding The 5000 event in London.
September 25th, 2015	The United Nations presents its Sustainable Development Goals.
March 31st, 2016	The European Commission publishes its paper, *Fusions: Estimates of European food waste levels.*

Relevant UN Treaties and Events

- Transforming our world: the 2030 Agenda for Sustainable Development, 25 September 2015 **(A/ RES/70/1)**

- Food Loss and Waste Accounting and Reporting Standard, June 2016

- Sustainable consumption and production, 23 May 2016 **(UNEP/EA.2/Res.8)**

Previous Attempts to solve the Issue

In developed countries, food waste along the early stages of the food supply chain has been somewhat solved through technological advancements and improved infrastructure. However, as most food waste in developed countries take place during retail and consumption, attempts at solving the issue are mainly targeted towards those stages. Restaurants like Al Maha Desert Resort in Dubai have taken initiatives to reduce food waste by incorporating uneaten items into later meals, such as serving breakfast pastries for lunch desert. Organisations such as Misfits seek out ugly vegetables from retailers which they later cook and serve at events they cater. Most initiatives in developed countries include campaigns educating the public about the faults of their eating habits, and saving ugly food from being wasted by retailers.

In developing countries, the main reason for food waste is a lack of appropriate technology and infrastructure, causing food waste to take place during the early stages of the food supply chain. As most food in developing countries is spoilt due to being exposed to heated temperatures, affordable cooling technology is essential. Luckily, U.S. farmer, Ron Kholsa, invented the CoolBot, which is a small machine that produces cool air through an air conditioner. The CoolBot is a less expensive alternative to buying a refrigeration unit. Therefore, Ron Kholsa started a small business named Store It Cold, LLC. Since then, the business has developed and is now playing an important role in reducing food waste in developing countries.

Possible Solutions

As the stages of food waste along the food supply chain differ between developed and developing countries, possible solutions must be area specific. In developing countries, possible solutions must focus on making technological advancements. Whilst it can be difficult for governments to buy new technology due to economic and political reasons, individuals such as Ron Kholsa should be encouraged to develop their ideas. Governments should also of course be encouraged to invest in their food production industry.

The solutions to food waste in developed countries are easier than in developing countries. Education and public awareness are key, as people throw away edible food due to the dates labelled on the products. Also, governments regulating the use of ´best-before` and ´use-by` labels should make it easier for people to determine whether or not the food is edible. Another incentive would be to make it more affordable to not waste food, or expensive to waste. Households in developed countries waste food because they can afford it. However, initiatives educating households about the large amounts of money thy could save by not wasting food could encourage more people to change their eating habits and not

waste. Finally, policy changes allowing for produce that does not meet the policy standards appearance-wise to be sold by retailers, possibly at a cheaper price, would massively reduce food waste.

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Appendix or Appendices

I.   **Food waste in developing and developed countries**
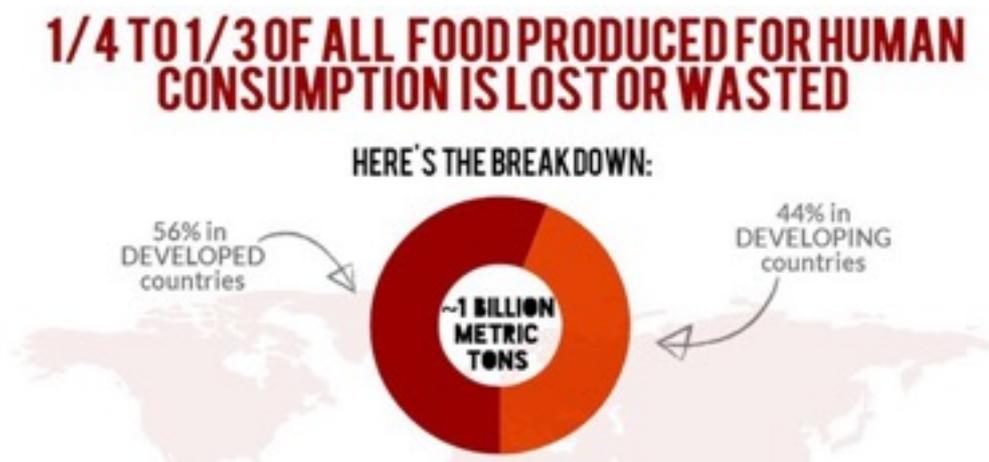
Forum:	Sustainable Development Sub-Commission 1
Issue:	Exploring the possible contribution of artificial intelligence (AI) to achieving the Sustainable Development Goals
Student Officer:	Naz Kayın
Position:	President

Introduction

Recently various academic studies and books have examined the potential of intelligent machines to disrupt labour markets, re-define social interaction and relations while even studying and stressing its potential threat to human existence.

Robots and other types of artificial intelligence machines have been a part of the human life for many years; in particular, humans have been exposed to the question of Artificial Intelligence (AI) for decades. However, automation benefits from the quantity of cheap computing power which is spreading software into new areas, like language processing.

While the question focuses on the potential repercussions of artificial intelligence on job opportunities, there are also other results in different fields. The improvement in the AI will significantly affect healthcare, education, employment, jobs, cyber security and energy. Considering the fact that with the growing technology, the future will allow machines to perform routine tasks and show creativity. This could indicate that Artificial Intelligence is likely to influence other areas such as education. The education system may shift to a system that teaches working in coordination with intelligent machines.

The future has the potential to improve efficiency with Artificial Intelligence and promoting environmental sustainability in this process. If we look it from another perspective, data-gathering and storage from the social media profiles raises concerns about privacy. Cyber security is also an area which carries great risk.

The influence of automatization and Artificial Intelligence is being felt primarily in the economies of the developed countries. Greater deployment of computers, along with other changes in production like the 3D printing, may show the virtue that emerging markets have had before.

Definition of Key Terms

Artificial Intelligence:

Artificial Intelligence (AI) as a branch of computer science which deals with the simulation of intelligent behavior in computers; the capability of a machine to imitate intelligent human behavior.

Sustainability:

Sustainability is *"the idea that goods and services should be produced in ways that do not use resources that cannot be replaced and that do not damage the environment."*

Simply put, sustainability is the principle of using a resource without preventing the next generation from using it. In that sense, all actions that don't harm a certain domain or deplete a certain resource are sustainable.

Sustainable Development:

Sustainable development is: *"the development of a country or region that does not use more natural resources than can be replaced and so does not harm the environment".*
In other words, sustainable development is the idea of integrating the principle of sustainability to development. In that sense, sustainable development can be environmental, economical or social (three pillars of sustainability). Through sustainable development, the developing world can achieve higher levels of economic growth without harming the environment as much and ensuring the country's prosperity for following generations.

Automation:

This term is defined as automatically controlled operation of an apparatus, process, or system by mechanical or electronic devices that take the place of human labour.

Structural Unemployment

This term is defined as unemployment resulting from industrial reorganization, typically due to technological change, rather than fluctuations in supply or demand.

Detailed Background of the Issue

Understanding Sustainable Development

As previously explained, sustainable development is the principle of growth without preventing the nature's ability to restore a certain resource. Of course, sustainable development sounds ideal. So, the primary objectives should be understanding the following: why it is needed it so urgently, what the challenges against achieving it and finally what is currently being done?

It should be kept in mind that the world is facing many challenges that pose threat to both individuals and societies. Environmental damage has started to affect everyday lives; evidence of climate change has became more evident than ever with changing weather patterns creating unprecedented storms, affecting agriculture and causing economic damage. If no action is taken to prevent climate change, average global temperatures will continue to rise and as a consequence, two thirds of living species are expected to go extinct and around 250 million people are expected to become 'environmental refugees', by 2050. With 97-98 percent of environmental scientists agreeing that climate change is caused by human activity, we bear the ultimate responsibility to take action.

On the other hand, there are also economic and social challenges. Today, according to the World Bank, 10.7 percent of the world is living under the poverty line, while 11.3 percent of the world is considered malnourished.

To solve all the mentioned problems, the principle of sustainable development is the most comprehensive and effective solution. In that sense, the United Nations unified efforts to achieve sustainable development under the Sustainable Development Goals. Sustainable Development Goals can be understood as the principle guide to achieve sustainable development.

In 2015, the Sustainable Development Goals were adopted by the United Nations General Assembly as the successor of the Millennium Development Goals. The Sustainable Development Goals are a set of seventeen goals that include eradicating hunger and poverty, aiming to make the world more sustainable, improving health and education, combating climate change, and ensuring gender equality. The Goals are part of the Post 2015 Development Agenda and are set to be achieved by 2030.

SDG #1: End poverty in all its forms everywhere

Around 836 million people currently live under the poverty line and approximately 20 percent of people in developing regions are living on "less than $1.25 per day". Through Artificial Intelligence, measures are currently being taken to "provide real-time resource allocation through satellite mapping and data analysis of poverty". By using AI, nations are able to find out specifically which places are in need of help, thereby targeting those regions and alleviating suffering on a wide scale. Especially for areas of conflict or more inaccessible places, the usage of AI is a beneficial resource.

SDG #2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture.

Food insecurity is an issue that is expected to be more significant in the future. According to the United Nations, "a profound change of the global food and agriculture system is needed if we are to nourish today's 795 million malnourished population and the additional 2 billion people expected by 2050". Therefore, Artificial Intelligence plays an important role in increasing agricultural productivity. This is currently attempting to be tackled by a "predicative analysis from imaging with automated drones and from satellites," similar to that of SDG #1.

SDG #3: Ensure healthy lives and promote well-being for all at all ages

"More than six million children die before their fifth birthday each year" and those born under the poverty line are "twice as likely to die". Maternal mortality is a prevalent issue especially in LEDCs (Less Economically Developed Countries). In fact, "only half of women in developing regions receive the recommended amount of health care they need". Considering the issue of providing healthy lives, Artificial Intelligence can play a role to improve these circumstances. Artificial Intelligence can analyze a vast amount of healthcare data, therefore leading to scientific breakthroughs. Currently, there are "8 billion mobile devices with smartphone cameras being used to diagnose heart, eye and blood disorders", with Artificial Intelligence this number can increase and help those in need.

SDG #4: Ensure inclusive and quality education for all and promote lifelong learning

Although primary school education has reached 91 percent of children in LEDCs, 57 million continue to be out of school. In fact, approximately 50% of these students are living in areas of conflict, therefore the sustainability of their education is constantly at risk. Many choose to prioritize safety over knowledge, which has led to 103 million youth lacking basic literacy skills with an overwhelming 60% who are women. Currently, education in many aspects is undergoing

a revolution, where more material is becoming "virtualized" and there are "intelligent mentors with responsive personalized learning" all online. For example, Coursera is a platform that uses "AI-produced granular information" and "big data analysis is improving graduation rates of low-income and first generation college students". This way, even students in the poorest areas, as well as those in conflict-affected areas, will be given a chance to an equal education and a chance at improving their lives.

SDG #5: Achieve gender equality and empower all women and girls

For developing regions, only approximately 2/3 have achieved gender parity in primary education. Even today, the continents of sub-Saharan Africa, Oceania, and Western Asia, still prevent girls from receiving an adequate education, thereby barring them from becoming socially mobile. Today, Artificial Intelligence can accurately identify gender bias, and lead the way of education for all, therefore this recognition will be important in "empowering women for growth and new opportunities".

SDG#6: Ensure access to water and sanitation for all

Having access to clean water is an essential part of the world Sustainable Development Goals are trying to create. According to research by many platforms, there is sufficient fresh water on the planet to achieve this goal. However, due to the economy of developing countries and poor infrastructure, millions of people, most of whom are children, die from diseases linked with inadequate water supply, water sanitation and hygiene. All of these diseases negatively impact food security, livelihood choices and educational opportunities for poor families across the world.

By 2050, at least one in four people is likely to live in a country affected by the shortages of fresh water. In order to prevent this from happening Artificial Intelligence can play an important role to detect the drinkable water supplies.

SDG#7: Ensure access to affordable, reliable, sustainable, and modern energy for all

Energy is a major factor that contributes to the overall economy of the world. For jobs, security, climate change, food production or increasing incomes, access to energy for all is essential.

Sustainable energy can be considered as an opportunity because it transforms lives, economies and as a result the planet. The former UN Secretary-General Ban Ki-moon is leading a Sustainable Energy for Artificial Intelligence initiative to ensure universal access to modern energy services, improve efficiency and increase use of renewable sources.

SDG#8: Promote inclusive and sustainable economic growth, employment, and decent work for all.

In many places around the world, you may live in poverty even if you have a job. Low cost labor is widespread all around the world. This makes the governments to rethink and recreate their economic policies about the eradication of poverty.

The lack of decent work opportunities with adequate income and job security, and under-consumption creates unstable economies all around the world. The creation of jobs that are sufficient will always remain to be a challenge for every political party and all economies in the future.

In order to have sustainable economic growth governments have to create the appropriate conditions that will allow people to have quality jobs for a better life. As a growing technology Artificial Intelligence is critical for employment opportunities. Since Artificial Intelligence is a part of an expensive field, it will always have the potential to create economic development for every country.

SDG#9: Build resilient infrastructure, promote sustainable industrialization and foster innovation.

Investments in infrastructure (transportation, clean water, sewage systems) are crucial to achieve sustainable development. The growth and development in incomes, and improvements in health and education are based infrastructure. Sustainable industrial development is an important source of income which increases the living standards in a country.

Technological improvements are important to achieve environmental objectives. If we don't improve and develop our technology, development will not happen in this century. Many countries like Japan and South Korea developed by investing on these technologies. Therefore, Artificial Intelligence is very crucial for developing economies and countries.

SDG#10: Goal 10: Reduce inequality within and among countries
UN, various NGO's and governments are trying to eradicate poverty for years. It's important to note that there has been significant improvements in the situation with the help of the international community. Many developing nations continue to work towards poverty reduction. However, wealth inequality still persists,

While income inequality in countries may have been reduced with income taxes and the efforts of many governments inequality within countries like the US and China has risen more rapidly in recent years. It is widely believed that economic development is no longer enough to reduce poverty, more measures must be taken.

SDG#11: Make cities inclusive, safe, resilient, and sustainable.
Population is rapidly rising all around the world which makes it extremely difficult to maintain cities which continue to create jobs. Due to this population increase, increase in employment, health and education opportunities is necessary to have a sustainable city.

There are some ways for the cities to continue to grow by using new advanced technologies while reducing pollution and poverty. Saudi Arabia and many oil rich countries are building new

cities with advanced technology and with access to all basic services like transportation and health. With the development of AI these basic services will be easy to provide. New technologies about health, education and transportation will be more widespread all around the world. The usage of AI in the future will help us create safe cities with sustainable development and job opportunities.

SDG#12: Ensure sustainable consumption and production patterns.

The implementation of sustainable consumption and production patterns helps to reduce poverty while improving the economic and environmental conditions of the country and its citizens.

Sustainable consumption and production means using resources which have a minimal impact on the environment so that other generations can use these resources in the future. It requires the cooperation of businesses, consumers, policy makers and many others. Policy makers have an important part in this process since they may pass legislations to achieve sustainable consumption in their country.

Raising awareness and education on this is also very important which provides information to the consumers. If the consumers use the amount they need, rather than using more and more, the problem can be solved by the people. The usage of Artificial Intelligence will support this goal because with the rising concept of Artificial Intelligence the companies from the developed countries who have their labour work taking place in developing countries with very low costs will take their companies back to their countries, this way the developing countries will go back to living off of their own local agricultural productions which will be both sustainable and more humane.

SDG#13: Take urgent action to combat climate change and its impacts

Climate change is a problem that every country in our world face right now. Deforestation destroy national economies of member states, as well as affecting their citizens' lives and harming the people, communities, and states majorly right now. Unfortunately, its consequences will further intensify in the future.

Some elements of climate change could be considered changing weather patterns, changes of the sea level, and extreme weather conditions. The greenhouse gas emissions which are increased by human activity further worsens the situation. Right now, it has the highest ratio that has been ever recorded and we all have been experiencing its impacts. Without implementing a solution, world's average temperature will be rising furtherly, surpassing 3 degrees Celsius. Various areas will warm more than others and those areas are likely to be the poorest and in need of help.

Affordable solutions are aiming to encourage countries to move into more hygienic, resilient economic systems. Climate change has threatened people to turn to renewable energy and several other measures to eliminate emissions.

Climate change is unfortunately a global challenge to face, regardless of territories. It is an international problem that requires international coordination and cooperation to help LEDCs to move towards a low-carbon economic system.

Countries have adopted the Paris Agreement in December 2015 to address deforestation. It has entered into force in November 2016. All countries have agreed to limit the global temperature rise, even to work for 1.5 degrees.

This agreement is truly essential and significant to be able to achieve Sustainable Development Goals, because it provides a guideline for possible solutions that would help with climate change such as reducing emissions and implementing climate resilience.

SDG#14: Conserve and sustainably use the oceans, seas, and marine resources.

The oceans of our world is actually what makes our Earth habitable for us with its chemistry, structure, currents, habitats, and temperature.

Weather and climate, food, oxygen that we breathe in, coastlines, water (drinking, rain) are all dependent on the sea and these are the aspects of them which make them essential. Oceans and seas are mediums for trading and transportation as well.

Therefore, management and preservation of this significant resource is highly important for a sustainable future.

SDG#15: Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss

Nearly thirty percent of our Earth's surface consist of forests. Not only that they provide food security and shelter but they are also essential in combating deforestation, maintaining biodiversity, and the homes of indigenous communities. 13 million hectares are lost every year because of degradation caused by drylands, also desertifying 3.6 billion hectares.

Human activity and climate change are the causes of deforestation and degradation, which create major challenges for SDGs. They constantly affect our lives dearly and livelihoods of the whole population in the fight against poverty. Efforts should be made to combat desertification and to preserve forests.

SDG#16: Promote just, peaceful and inclusive societies

Goal 16 of the SDGs aim to promote an inclusive, harmonized, productive society for a sustainable future. It encourages providing justice for the society and building affordable, effective institutions throughout the communities.

SDG#17: Revitalize the global partnership for sustainable development

A sustainable future also requires the cooperation and harmony of governments, private sector and civil society. Private and government resources should be taking action together and work for the achievement of sustainable development objectives. Long term investments including sustainable and renewable energy sources and infrastructure, transportation, information or well-managed communications technologies shall be implemented in LEDCs. Public sector should also participate to the work. The review and monitoring of regulations, structures, and framework must be attractive to any possible investments.

Major Countries and Organizations Involved

United States of America

According to the thirteenth Sustainable Development Goal, it is vital that the member nations sign and ratify the Paris Agreement. When we consider the fact that the United States of America withdrew its signature from the agreement, the United States comes to a risky situation. However, in terms of Artificial Intelligence the situation remains the same. This past year, the Trump administration released a proposed budget that would slash funding for a variety of government agencies that have traditionally backed Artificial Intelligence research. Consequently, the United States plan to start using Artificial Intelligence in its Air Force to analyze flow of information. This recent event shows that the United States had the technology and knowledge for Artificial Intelligence, but funding may become a problem in the future.

People's Republic of China

The balance of power in technology is shifting. China, which for years watched as the West invented the software and the chips powering today's digital age, has become a major player in Artificial Intelligence, what some think may be the most important technology of the future.

Beijing is backing its Artificial Intelligence push with vast sums of money. Having already spent billions on research programs, China is readying a new multibillion-dollar initiative to fund moonshot projects, start-ups and academic research, all with the aim of growing China's AI capabilities.

ILO (International Labour Organization)

The international labour organization has recently been releasing more information on machines and robots taking over jobs. They have primarily focused their research on developing countries rather than the developed countries. They believe that the rise of Artificial Intelligence will also lead to a phenomenon called "resourcing", where companies who have moved their operations overseas to

developing nations will now be moving them back to developed nations so that they can profit off of efficient Artificial Intelligence.

Microsoft

Recently, Microsoft has taken steps towards embracing the rise of artificial intelligence. They have developed a "machine-learning model that can analyze demographics, academic performance and historical data to predict which students were at risk of dropping out and prompting early intervention".

Google

Currently, Google has implemented artificial intelligence software – DeepMind – which is a data hub that responds immediately to increased usage or changing weather that helps to optimize energy efficiency. By doing so, Artificial Intelligence is able to reduce the energy consumption of the data center by 15 percent. As a result, they can help be massively implemented for more sustainable energy.

Timeline of Events

Date	Description of event
2004	Space rovers Spirit and Opportunity by NASA autonomously navigated Mars' surface
2015	Hawking, Musk, Wozniak + 3000 researchers in the Artificial Intelligence and robotics field wrote an open letter to ban the development and use of autonomous weapons

Relevant Treaties and UN Resolutions

- The Paris Agreement (22, April 2016)

Previous Attempts to Solve the Issue

Although both Artificial Intelligence (2015) and the Sustainable Development Goals (2016) are very new concepts, before Sustainable Development Goals there were Millenium Development Goals (MDGs). MDGs were set of eight goals ranging from halving extreme poverty rates to halting the spread of HIV/AIDS and providing universal primary education. These goals were set to be achieved by 2015 with the agreement by all member states and the world's leading development institutions. There are disagreements whether the goals were successful or not, the following shows whether each goal was achieved, or at least how successful they were.

The following is extracted from an analysis conducted by *The Guardian*:

"**MDG 1:** The number of people living on less than $1.25 a day has been reduced from 1.9 billion in 1990 to 836 million in 2015, although the target of halving the proportion of people suffering from hunger was narrowly missed.

MDG 2: Primary school enrolment figures have shown an impressive rise, but the goal of achieving universal primary education has just been missed, with the net enrolment rate increasing from 83% in 2000 to 91% this year.

MDG 3: About two-thirds of developing countries have achieved gender parity in primary education.

MDG 4: The child mortality rate has reduced by more than half over the past 25 years – falling from 90 to 43 deaths per 1,000 live births – but it has failed to meet the MDG target of a drop of two-thirds.

MDG 5: The global maternal mortality ratio has fallen by nearly half – short of the two-thirds reduction the MDGs aimed for.

MDG 6: The target of halting and beginning to reverse the spread of HIV/Aids by 2015 has not been met, although the number of new HIV infections fell by around 40% between 2000 and 2013.

MDG 7: Some 2.6 billion people have gained access to improved drinking water since 1990, so the target of halving the proportion of people without access to improved sources of water was achieved in 2010 – five years ahead of schedule. However, 663 million people across the world still do not have access to improved drinking water.

MDG 8: Between 2000 and 2014, overseas development assistance from rich nations to developing countries increased by 66% in real terms, and in 2013 reached the record figure of $134.8bn (£80.3bn). "

Possible Solutions

The introduction of robotics in the workplace, especially for low skill labour, is imminent so humans, similar to technology, must also evolve. For developing nations, low-wage labour will no longer be enough to sustain a viable economy, therefore these nations must evolve. Policy makers must create an environment for their citizen that leads to greater human capital investment, high-value production, and greater research and development. These nations need to focus on the training of workers with skills that will allow them to evolve and adapt to new industries. Education must further focus on having strong technical skills to understand and handle newer technologies and work efficiently with such machines.

The newer generation of workers must be able to cope and expect the technological changes that face them.

While governments should invest in changing the educational system for a new generation, policy makers should also prepare for structural unemployment caused by technology, in the current time. The government can prepare and provide different labour training programs for workers that are in the economically active age group so that they too can find work after being replaced by machines.

On the other hand, nations are considering blocking the existence of robots in the workplace in general, hoping that this will stifle the disappearance of jobs in the labour market. This can be effective, however, not in the long run as this might lead to inefficiency and allow the nation to become less efficient and competitive in comparison to other nations.

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Appendix or Appendices

I.   https://www.itu.int/en/itunews/Documents/2017/2017-01/2017_ITUNews01-en.pdf

II.   http://www.un.org/millenniumgoals/bkgd.shtml