SUSTAINABLE DEVELOPMENT AND THE GREEK PHARMACEUTICAL INDUSTRY

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Abstract
The purpose of this paper is to investigate the contribution of the Greek Pharmaceutical Industry to sustainable development in Greece.
According to the United Nations (https://unric.org/en/united-nations-sustainable-development-goals/) the 2030 Agenda unanimously adopted in 2015 by world leaders includes the following 17 Sustainable Development Goals:
1. No poverty, 2. Zero hunger, 3. Good health and well-being, 4. Quality education, 5. Gender equality, 6. Clean water and sanitation, 7. Affordable and clean energy, 8. Decent work and economic growth 9. Industry innovation and infrastructure 10. Reduced inequalities, 11. Sustainable cities and communities 12. Responsible consumption and production, 13. Climate action, 14. Life below water, 15. Life on land, 16. Peace, Justice and strong institutions, 17. Partnerships for the goals.

In this study, the contribution of the Greek Pharmaceutical Industry to the implementation of the 17 goals of Sustainable Development was examined. For this purpose, a bibliographic study was carried out from which important conclusions are drawn regarding the role that the Greek pharmaceutical industry must play in the sustainable development in the Greek areaand especially in the field of good health and well-being, in decent work and economic development, in the field of innovation, in responsible consumption and production.

In addition to the main conclusions, the paper proposes prospects for the development of the Greek Pharmaceutical Industry when it comes to maximizing the contribution to Sustainable Development in Greece as well as global competitiveness.A further but equally important goal would be the development of the Greek Pharmaceutical Industry in the context of reducing the environmental footprint in the present but also the establishment of better living conditions, as well as a more promising future, for next generations.

Key words: *Greek pharmaceutical industry, sustainable development*

Introduction

The Greek Pharmaceutical Industry is a constantly growing sector of the Greek Industry. (Golna et al, 2013). Its presence in Greece is truly dynamic and actively intertwined with the social challenges and ongoing health needs of the population.(Tsakanikas & Moustakas, 2020,Simopoulou, 2022).

It is called upon to face many challenges such as:

- The increase in life expectancy and therefore the need to address chronic health problems

- Addressing problems due to changes in urban environments. The accretive air pollution is a great factor of many respiratory- related diseases and even some cancer cases. Moreover, the pressing lifestyle often leads to the increasing levels of mental diseases such as anxiety and depression that the industry has to deal with.

- Addressing pandemics. The covid19 pandemic is a great example of an unforeseen issue that the pharmaceutical industry in general had to deal with. The need for an immediate solution was great and due to the fast action that was taken, in just a short amount of time, not only was a vaccine created, but also a medicine.

- Tackling addiction problems. Dealing with detoxication is a huge issue that the industry has to handle. For the patients are mostly hard to comply with any sort of medication, the industry has to find a way to minimalize the withdraw symptoms that such treatments often cause, for they are the main reason why patients fail to continue the detoxication process.

- Tackling problems stemming from lifestyle changes (sedentary life, obesity). The extremely exhausting every day routine often leads to uncontrollable food consumption and lack of will to exercise. Such factors are amongst the main ones that lead to cardiological issues, diabetes, and other diseases that affect the majority of the population.

- Need to create new effective vaccines. Due to the constant mutations happening in both bacteria and viruses, the constant need of new vaccines in order to deal with the new immune microorganisms is great.

- Need to create new effective antibiotics. The lack of effective antibiotics is one of the biggest challenges that the industry has to face. For the bacteria keep getting immune to the already existed medications, the fear of eventually running out of drastic antibiotics is a major issue that bothers all scientists globally. For such reason, the need to create new, effective antibiotics is great.

- Need to treat cancer. Cancer has always been a huge challenge in the field of pharmacy. Not only is the cause hardly known, but the ways to treat it are also limited and most of the times not really effective. Research is constantly focusing on finding more innovative ideas to treat such a disease, while also minimalizing the side- effects, and in some cases process has already been made, but the industry has a long way to go, until it can effectively treat cancer. (Economic & Industrial Research Foundation, 2020)

Sustainable development

Sustainable development is a type of development that secures one's needs in the present but also ensures that future generations will likewise be given the same opportunities in meeting their needs.

The whole concept of sustainable development was formed in the late twentieth century for the impact of the human activity on the natural enviroment was threatening during those times. (European Environment Agency, 2020, Lampard, 1965). For such reason, the need of establishing ways of reducing waste, minimalizing the use of raw materials, as well as adopting eco friendly methods when it comes to production was great. (Adams et al, 2020, Broughton 2005, Alcayna et al, 2023).

Sustainable development timeline

In 1962, the impact of the human activity on human health and animal species was brought up by Rachel Carson, an American marine biologist, who presented her research on toxicology, ecology and epidemiology, in her book ‘Silent Spring’.

In 1967, the use of DDT, used for killing mosquitoes, is forbidden by law, due to the formation of the Environmental Defense Fund (EDF), which pursues legal solutions to the environmental damage. The EDF takes legal means in order to stop the DDT spraying on Long Island’s marshes.

In 1968, Paul Ehrlich, a German physician and scientist published “the population bomb”, a book about mass starvation due to our impact on the enviroment. At the same time,

the concept of ecological sustainable development was mentioned in the Biosphere (Intergovernmental Conference for Rational Use and Conservation of the Biosphere)

In 1969, Cuyahoga River in Ohio (United States) catches on fire due to the great oil pollution that was happening at the time. This event brings attention to the matter of water pollution and leads tothe Clean Water Act, the Great Lakes Water Quality Agreement and the creation of the United States Environmental Protection Agency—one of the first national departments of the environment in the world

In 1971, Greenpeace was founded in Canada in order to stop nuclear weapon test and tries to promote environmental care through civil protest.

In 1972, the United Nations Conference on the Environment was organized. The Stockholm Conference was the incubator for the establishment of many National Organizations for the protection of the environment as well as the establishment of the United Nations Environment Program (UNEP). Also, the Club of Rome publishes the controversial limits to growth

In 1973, the United States of America passed a law on endangered plant and animal species, thus contributing to the preservation of species and the balance on the planet and in the ecosystem. The CHIPKO movement is also born by women in India, which aims to preserve the sustainability and development of forests as well as the broader preservation of the environment, leading, among other things, to the establishment of the role of women in environmental issues.

In 1974, with the publication of Rowland and Molina in the Journal Nature, on the negative effects of chlorofluorocarbons (CFCs) on the ozone layer, a major debate was opened about finding ways to avoid the destruction of the ozone layer and protect the earth's atmosphere.

In 1975, the Worldwatch Institute was founded in the United States of America with the aim of raising public awareness of environmental threats and growing environmental problems, which led to the establishment of the annual publication of the State of the World since 1984. Furthermore, the CITES convention on trade in endangered species of animals and plants was established, promoting the protection of endangered species of flora and fauna.

In 1976, Habitat, a United Nations conference on human settlement, was organized, marking the first time that human settlement and its connection to environmental problems were linked at a global conference.

In 1977, a United Nations conference was held on Desertification, a phenomenon that can cause various environmental, as well as ecological and economic problems. The green belt movement also begins in Kenya with the aim of promoting tree planting and preventing and reversing desertification.

In 1978, The Organization for Economic Co-operation and Development (OECD) began to explore the links between the environment and the economy, which laid the foundation for the publication of the 1987 report, Our Common Future.

In 1979, a convention on long-range transboundary pollution of the environment is established.

In 1980, the World Conservation Strategy was published by the International Union for Conservation of Nature (IUCN). The publication includes a section called "Towards Sustainable Development", which analyses problems related to habitat destruction, social inequalities, excessive population growth and the resulting problems and end up seeking to adopt a strategy to address the problems and inequalities. The World Report 2000 is also published, recognizing the importance of preserving biodiversity and diversity as well as preventing species extinction.

In 1982, the World Resources Institute was founded with the aim of finding solutions related to human health, environmental sustainability. In the same year, the law of the sea was

established, regarding finding solutions and establishing rules regarding the pollution of marine ecosystems. In the same year, the UN World Charter for Nature advocates the principles of respect for all forms of life and the need to maintain environmental balance.

In 1984, a great chemical disaster happened in India, when one of the factories in Bhopal had an enormous number of methyl isocyanate gas leakage. This led to instant death of four thousand people and up to twenty thousand deaths in general. Those who survived, suffered with great respiratory problems and blindness. This incident established the need for environmental safety. During the same time, almost a million people died from starvation in Ethiopia due to drought.

In 1985, the Antarctic ozone hole was discovered by British and American scientists. Moreover the world meteorological society and the international council of scientific Unions predicted global warming, by measuring the levels of carbon dioxide and other gases in the atmosphere.

In 1986, one of the greatest chemical incidents and environmental crises took place, when the Chernobyl nuclear station exploded. The radiation level where not only deathly for work members and civilians that were exposed to it, but also for the enviroment. Those who survived the explosion died later from several cancer cases. The soil, air and water remained polluted and so the natural ecosystem as well as the agriculture was set back.

In 1987, the Montreal protocol was established. This agreement regulated the production and consumption of those gases that were worsening the greenhouse effect. Such gases, when exposed to the atmosphere damage the protective ozone layer leading to higher percentages of radiation.

In 1988, the Intergovernmental Panel on Climate Change (IPCC) is established to evaluate andassess environmental data.

In 1989, the Stockholm Environmental Institute is founded to conduct local and international studies on the environment.

In 1990, The International Institute for Sustainable Development (IISD) is founded in Canada and the publication of the journal Earth Negotiations Bulletin begins in 1992.

In 1991, the Global Environment Facility was established, which, after its restructuring in 1994, proceeded to provide financial assistance to developing countries to adopt changes related to climate change, water and pollutant management.

In 1992, the Business Council for Sustainable Development published Changing Course with the aim of promoting the correlation between Sustainable Development and entrepreneurship, thereby promoting Sustainable Development. Also in the same year, the Earth Summit, the United Nations Conference on Environment and Development (UNCED) was held in Rio de Janeiro, where important agreements were signed such as: Agenda 21 Action Plan, Rio Declaration, Non-Binding Principles on Forests and also the foundations were laid for agreements such as the conservation of biodiversity, climate change, the fight against desertification.

In 1993, The first meeting of the United Nations Commission on Sustainable Development takes place.

In 1994, China's Agenda 21 is published, which is a white paper related to environmental issues as well as population issues.

In 1995, the World Trade Organization (WTO) was established, recognizing links between trade routes and environmental impacts.

In 1996, To ISO 14001 is established as a voluntary environmental standard to ensure environmental safeguards.

In 1998, A controversy begins over genetically modified organisms and international concerns are raised about the safety of these products.

In 2000, Millennium Development Goals. Agreement between a large number of leaders at the global level and the adoption of goals that must be met by 2015 regarding issues of environmental pollution, discrimination against women, poverty, etc.

In 2002, The World Summit on Sustainable Development takes place in Johannesburg

In 2004, Delhi is mandating the use of natural gas in buses and cars in an effort to control environmental pollution.

In 2005, The Kyoto Protocol, which concerns legal commitments by developed countries to control and reduce greenhouse gases and to establish a clean development mechanism, enters into force.

In 2007, Montreal Protocol on chlorofluorocarbons (CFCs) responsible for the destruction of the planet's ozone layer.

In 2009, The Summit G20, is held in Pittsburgh with guidelines for sustainable development in the 21st century as well as for limiting the consumption of fossil fuels that pollute the environment.

In 2010, agreement of nations on the equitable distribution of resources.

In 2015, United Nations approval of the global agenda to achieve 17 Sustainable Development Goals by 2030

The sustainable development of the pharmaceutical industry has a significant impact on human lives and society in general, since its development is equivalent to improving people's health and quality of life.

Additionally, it can contribute to achieving the goals of the UNITED NATIONS, the 2030 Agenda unanimously adopted in 2015 by world leaders includes the following 17 Sustainable Development Goals, especially in the areas of good health and well-being, Industry innovation and infrastructure (International institute for sustainable development, 2012).

Sustainable development goals

According to the United Nations, the 2030 Agenda unanimously adopted in 2015 by world leaders includes the following 17 Sustainable Development Goals:

1.No poverty,
2.Zero hunger,
3.Good health and well-being,
4.Quality education,
5.Gender equality,
6.Clean water and sanitation,
7.Affordable and clean energy,
8.Decent work and economic growth
9.Industry innovation and infrastructure
10.Reduced inequalities,
11. Sustainable cities and communities
12. Responsible consumption and production,
13. Climate action,
14. Life below water,
15. Life on land,
16. Peace, Justice and strong institutions,
17. Partnerships for the goals.

The establishment of those goals by 2030, will not only lay the foundation for a more sustainable future, but also ensure better life conditions for both present and future (United Nations, 2015).

Methodology

A bibliographic study was carried out and the contribution of the Greek Pharmaceutical Industry to the implementation of the 17 goals of Sustainable Development was examined. More specifically, the study focused on the role that the Greek pharmaceutical industry must play, in the sustainable development in the Greek area and especially in the field of good health and well-being, in decent work and economic development, in the field of innovation and also in responsible consumption and production.

Nowadays, there is a growing awareness of the development of the pharmaceutical industry in the context of adopting manufacturing practices that ensure environmentally friendly processes(Evangelinos, 2014), saving raw materials and water, waste reduction strategies and recycling.(Batsouli, 2022). For the natural resources are limited and the use of those for both experimental and medical purposes is great, the need of adopting more green methods, as well as working with raw materials sparingly is of great value. (Milanesi et al, 2020).

The Pharmaceutical Industry provides services of research, production and sale of pharmaceutical products necessary for human health. Taking into account the increasingly aging population and the need to deal with serious diseases that afflict humans, the development of the pharmaceutical industry should be considered granted. The role of the industry should be to design new and improved molecules, in order to treat a greater range of diseases, including resistant pathogens and also orphan diseases. In order to achieve such goal, a great number of experiments and protocols are to take place and a greater number of resources is to be used. So not only does the industry have to look for the best ways to save raw materials but also spare water and energy.

A.According to the Sustainable Development Goals, 2030 for Greece (Hellenic Statistical Authority, 2024):

1. Regarding the goal of good health and well-being:

It is stated in the Agenda that:

"3.2 By 2030, end preventable deaths of newborns and children under the age of five, with all countries aiming to reduce neonatal mortality to 12 deaths per 1,000 births and child under-five mortality to 25 deaths per 1,000 births

3.4 By 2030, reduce premature mortality from noncontagious diseases by one third through prevention and treatment and promote mental health and well-being'

What the pharmaceutical industry can do:

In order to achieve such goals in the field of good health and well-being the pharmaceutical industry should focus on improving people's health by researching for the safest and most effective drugs possible and with the aim of treating diseases of a greater range and of all kind, no matter the number of patients affected by them. For such purpose, the use of high-quality raw materials in the drug production and adoption of safest techniques and adequate protocols must also be implemented. So, the industry should start:

1. Investing in research for safer and more effective medicines. In order to achieve that, it would be of great value to establish stronger linkages with university institutions to enrich knowledge. The University could become a breeding ground for young scientists so that knowledge can be transferred and transformed into innovative medicines. Moreover, it could be useful to focus on funding research programs in collaboration with universities and scientific organizations and also extensive clinical studies and collaboration with foreign organizations.

2. Finding funds to invest in research for "orphan drugs", drugs aimed at patients suffering from rare diseases. One of the greatest problems that the healthcare system has to face and deal with is the treatment of the so called “orphan disease”. Those diseases affect only a small number of patients around the world and so the pathological causes are mostly unknown, due to the lack of research that stems from the inadequate fundings. The outcome of such lack is that those patients do not take specific medication and so the symptoms get worse due to the non-targeted treatment.

3. Using high-quality raw materials. Collaboration with reliable suppliers who adhere to international quality standards and comply with good management practices for environmental safety and available resources, within the framework of sustainable development.

4. Adopting developed safety systems for production techniques and methods.

5. Encourage the patients to mention any possibly side-effect. Clinical test might take place, but given the fact that the number of volunteers is only a small percentage of the general population, unknown side effects might appear. Clients should be kindly requested to write down any medicine-related effect that might occur, in order to help the industry improve.

The Greek Pharmaceutical Industry is a reliable and rapidly growing sector that produces reliable pharmaceutical preparations, but there is always roomfor improvement in order to contribute to the achievement of the goals of the 2030 agenda.

According to the Association of Pharmaceutical Companies in Greece, a focused pharmaceutical policy is essential:

- An increase in state pharmaceutical subsidies is required (Chimonas, 2024).
- Rationalization of pharmaceutical spending and effective management of available health funds by promoting control mechanisms through the strengthening of digital reforms as well as the adoption of necessary therapeutic protocols. (Chimonas, 2024).
- Promoting investments in research and innovation sectors in order to make the environment more attractive for investments in clinical studies with the ultimate aim of promoting the health of citizens. (Chimonas, 2024).

B. According to the Sustainable Development Goals, 2030 for Greece (Hellenic Statistical Authority, 2024)

2. Regarding decent work and economic development:

It is stated in the Agenda that:

"8.5 By 2030, achieving full and productive employment and
decent jobs for all women and men,
including young people and people with disabilities, and ensuring equal pay for work of equal value'

What the pharmaceutical industry can do:

The Pharmaceutical Industry should contribute to equal employment opportunitiesby establishing equal payments and also equal development prospects for both genders. Moreover, the industry must not exclude people with special need and disabilities but focus on finding ways to make work more accessible and to also provide a more welcoming enviroment. Lastly, when it comes to better working conditions, the pharmaceutical industry is obligated to provide a safe enviroment with well tested machineries and safety protocols that are to be followed by anyone.

1. Recognition of the different capabilities of each employee regardless of gender or special characteristics(Taylor, 2021): The pharmaceutical industry should ensure that there will be equal representation of both genders and no racial inequalities. Each person should be

evaluated for their mind and will of providing not only for the company but also for the society and should be rewarded equally for the outcome and effort that they make.

2. Formation of special conditions for serving people with special needs in the workplace(Vasquez, 2024): Like many other industries, the pharmaceutical industry lacks of inclusion of people with special needs and disabilities. For such reason, great minds fail to adapt to the already set conditions of the working enviroment. The industry should form new conditions and prospects for people with special needs.

In order to achieve a more accessible lab the industry can start by using height-adjustable workbenches and wheelchair accessible sinks. Moreover, the safety measures, such as the lab's emergency shower and eyewash station should be accessible by everyone.

3. Continuous checks on the safety of workplaces and machinery and use of special safety protocols: In order for the pharmaceutical industry to achieve a stable and health working enviroment, safety protocols should be established and followed so as to minimalize the hazardous factors. The machinery and equipment should be regularly tested and every member present, especially in the laboratory section should be careful of their actions.

The Greek Pharmaceutical Industry is a reliable and rapidly growing sector that promotes occupational safety with respect for human rights, but there is always room for improvement in order to contribute to the achievement of the goals of the 2030 agenda.

C. According to the Sustainable Development Goals, 2030 for Greece (Hellenic Statistical Authority, 2024)

3. Regarding the field of innovation:

Regarding the Industry sector, innovation and infrastructure

It is stated in the Agenda that:

"9.4 Until 2030, upgrade infrastructure and retrofit industries in order

to make them sustainable, increasing the efficient use of resources and encouraging the adoption of more clean and environmentally sound technologies and industrial methods, with all countries taking action in this direction, according to their respective capabilities.

9.5 Strengthening scientific research, upgrading the technological capabilities of the industrial sector in all countries, and especially in developing countries, including, by 2030, the encouragement of innovation and the substantial increase in the number of workers in research and development by 1 million, as well as the increase in spending on research and development in the public and private sectors"

What the pharmaceutical industry can do:

The Greek Pharmaceutical Industry is a reliable and rapidly growing sector that promotes innovation, but there is always room for improvement in order to contribute to the achievement of the goals of the 2030 agenda.

The pharmaceutical industry should invest in new innovative ideas and practices that will improve the drug production and preservation. In order to achieve that, not only must the industry be more open to adopting new methods and protocols, adapting the already existed ones and even changing the facilities and machinery, but to also include younger scientists with innovative ideas and great will of providing to the society. Such new ideas must be well heard and not downgraded, for they are the future of the development of the medical field. So, the industry should start (Kavvatha, 2024):

1. Investing in innovative ideas and practices
2. Investing in innovative production methods
3. Investing in innovative machinery

4. Collaborations with universities with the aim of collaborating with young scientists with innovative ideas and visions for a promising tomorrow in the pharmaceutical industry and in the medicines produced.
5. Investing in innovation means investing in promoting people's health and better living conditions

According to the European Green Deal (European Council of Europe, 2019), the goal for Europe is to reduce pollution and restore the balance of ecosystems in nature by 2050. The main objectives of the European Green Deal are:

1. Climate neutrality
2. Circular Economy
3. Clean Industry
4. Healthier environment
5. More sustainable agriculture
6. Climate Justice and Equity

Especially in the field of "Clean Industry", the goal is to promote cleaner, more sustainable and more energy-efficient industries.(Mitoula & Oikonomou, 2010, Karytsas & Theodoropoulou, 2014).

One goal could be to find ways to reduce energy consumption.(Bhutani & Kakatkar, 2024, Talbi, 2017).

According to Industry, Plant Team Editorial Team, Garakis, 2021, ways to achieve the desired energy reduction in Industries are proposed:

1. Special skylights with glass blocks could be used which would allow natural light to penetrate them and the space to be naturally illuminated without requiring energy consumption.

2. It would possibly help to structure working hours so that natural lighting sources are used as much as possible, and to a lesser extent energy-intensive sources.

3. Investing in energy systems that use green energy sources, using photovoltaic energy production systems.

4. Using lighting systems with lighting and motion sensors, in order to avoid unnecessary energy consumption at times when it is not required, for example, the periods of time when natural lighting is sufficient to meet work needs or for example, activating lighting with motion when the presence of people in the space is detected, such as in the restrooms.

5. Use of eco-friendly energy-saving lamps

6. Use of smart elevators with energy-saving systems and materials.

D. According to the Sustainable Development Goals, 2030 for Greece (Hellenic Statistical Authority, 2024)

4. Regarding the field of Responsible consumption and production (target 12)

It is stated in the Agenda that:

"12.2 By 2030, achieving sustainable management and adequate use of natural resources"

What the pharmaceutical industry can do:

The pharmaceutical industry should invest in green methods with respect for the conservation of natural resources, playing its role in providing for the future of the next generations(Stefanopoulos, et al. 2009). In order to achieve that, the industry must collect raw materials in the smallest amounts possible for research purposes, while also minding for the natural enviroment, the maintenance of the flora and fauna of each ecosystem and the ethical aspect of such experiments.

A great alternative would be to invest in finding ways of creating artificial substances so as to reduce the collection of natural resources that would be used as raw materials. Since the very beginning of medication and drug design process has of course been made. Not too long ago, people were still using natural sources, such as plants and animal parts as remedies. That led to a big number of ecosystems destroyed in order for the treatments to continue. Nowadays, plants are still a great source of natural resources, but thanks to the development of the synthetic chemistry, most drugs are artificial.

When it comes to the solvent selection, the pharmaceutical industry should adopt safer and more sustainable solvents that will have minimum impact on the enviroment. For such purpose, water, carbon dioxide, or other environmentally friendly solvents should replace the traditional organic solvents.

A great way of reducing raw material is taking advantage of catalysts, substances that increase the rate of a chemical reaction and reduce the amount of a reagent needed in order to achieve a higher efficiency.

In order to reduce waste, the pharmaceutical laboratories should establish methods to reuse raw material and take advantage of biodegradable resources. Moreover, they should focus on minimalizing the steps of a chemical reaction, and also make good use of as many final products as possible. This would lead to fewer unused byproducts that would otherwise be considered waste.

An important goal could be to find ways to reduce water consumption, using know-how to improve the ways of manufacturing and using devices and reagents, so that we can lead to lower water consumption or to the use of technologies that use water recycling, thus leading to the reduction of the waste of our planet's water resources, (Pantazopoulos, 2023).

An important goal could be to find ways to reduce waste generated both during the industrial production process and during the subsequent use of products by consumers.

1. Use of recyclable materials in packaging materials. The packaging itself should be made out of recycling materials and expired drugs should be collected separately in order to be recycled or destroyed in an ecofriendly way(Kostakis, 2015).
2. Use of Laser techniques to replace labels on packaging. This action might seem small, but given the amount of medicine produced annually, such a small difference could really help in minimalizing the plastic waste.
3. Use of water-soluble or biodegradable packaging. Creating packaging out of biodegradable materials could help with the recycling process.
4. Recycling at all stages of the production process.
5. Use just as many medicine products as needed. A great problem that the Greek pharmaceutical industry faces is the number of unused and expired drugs that go down the drain annually. The reason why, is the already pre-existed and pre-packaged medicine that may be more than what the patient might need. That could mean, more pills of a specific drug that one would need for treatment, and so, the extra number of pills would be unused. A good solution would be a mass production of the same drug without it being commercially packaged. In such way, the patient would only ask the pharmacists for a standard number of medicine and there would be zero waste.

Conclusions

Sustainable development is of great value for it provides a more promising future for the next generations. The pharmaceutical industry can play a great role in such a development given the fact that it can upgrade the well-being and health condition, establish a welcoming and fair working enviroment and achieve sustainable use of natural resourses.

Regarding the health conditions, the pharmaceutical industry plays a great role in minimalizing diseases through safe and well tested medicine. (Milanesi et al,2020). In order to achieve that, research programs must be funded and collaborations with other organizations and even universities must be ensured. The raw materials that are used for the drug synthesis should be clean of toxic byproducts and safe to use and the origin of them, especially when it come to natural resources should be verified.

All safety protocols should be followed by everyone and the machinery, as well as the equipment should be regularly tested, in order to minimalize the hazardous factors and ensure the safest working enviroment possible. In the field of safety, toxic, organic solvents are encouraged to be replaced by eco friendly ones, such as water, or carbon dioxide so as to reduce water and air pollution and also establish healthier working conditions.

The pharmaceutical industry should be open to diversity and include both genders and all races equally. Work of equal value should be rewarded likewise and development prospects should be open to everyone. People with special needs and disabilities should be treated equally and should be welcomed in the industry. For such thing to happen however, changes must be made, such as altering the laboratory equipment in order to make it more approachable.

In the field of innovation, it would be beneficial for the industry to be more open to younger people and encourage their members to think outside of the box. Such innovation could range from creating artificial reagents, so as to minimalize the use of natural resources, to finding clever ways of saving energy. Moreover, new, innovative technics could be useful for a better drug absorption and bioavailability.

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