RESEARCH FOCUS

Volume 4, Issue 1, 2022

RESEARCH FOCUS
An International Open-Access Scientific Journal for Students and Graduates Research

ISSN: 2668-4675

www.researchfocus.org

CONTENTS

Vol. 4, Issue 1, December 2022

The Libyan Economy and Growth Prospects **2**
Ahmed SWESSI

Female Leaders Dealing with an Unexpected Global Pandemic COVID-19 **8**
Diana Laura HERRERA MARTÍNEZ

The Aviation of the Future and Its Challenges **14**
Jordan SUAREZ

The Textile Industry Environmental Impact: Is It Possible that the Carbon Footprint of the Textile Industry Is Zero? **27**
Leïla LAPORTE

Freedom of the Press: Theory of a 4th Government Power, the Press **40**
Yousri AMALOU

The Libyan Economy and Growth Prospects

Ahmed SWESSI

Romanian-American University, Romania

Abstract

During the 10 years that followed the February 17 revolution, Libya, which has the largest oil reserves in Africa, has suffered from war and division, as a result of competition for power and governance between its western and eastern parts and the spread of weapons among militias. Its economy collapsed, as most of its population turned into poor and refugees in the countries of the world.

Although those years were heavy on the level of political and social transformations, they were carriers of real opportunities to establish an economic development path that would be a lever for the advancement of other vital sectors, such as education, health and technology, which were marginalized by the Gaddafi regime for decades in exchange for its dependence on oil rent revenues as a primary source of state finance.

Keywords: finance, Lybia, developing economies

Introduction

The Libyan economy shares the developing economies in its suffering from a heavy legacy of structural imbalances that resulted from the dominance of the oil sector on the main contribution to the gross domestic product and the volume of exports, at the expense of the relative underdevelopment in other productive activities, especially industry, and the weak productive efficiency of the labor component (the scarcity of skilled labor). This weakness in the industrial

sector provided the opportunity for the service sector to absorb the bulk of the workers in marginal activities that are low or no production (ESCWA, 2020).

In this research paper, we will tackle the subject of the economic growth of the Libyan economy and the effects the "Arab spring" had on the economic system, we will try to determine to which level the economy has been effected and also to tackle the hypothesis saying that the Libyan economy can be saved after more than 11 years of constant conflicts.

Why is Libya Classified as a Developing Country and on What Basis?

Economists and experts classify developing countries as those countries that depend for their economy on a single sector as a source of domestic product or national income. exports and that this commodity is greatly affected by changes in its prices in the global market, and it is known that oil is the main commodity in Libya, which constitutes 70-75% of total exports, in addition to the low standard of living of the individual, which is reflected in the decline in the average per capita income, which is the most important measure In the classification of countries between developing and developed (Coface, 2022).

The Economy of Libya and the Gaddafi Regime

The economy of any country is linked to the existing political system in it. Libya has suffered for 42 years from a dictatorial and arrogant political system that has led to the deterioration of its economic situation among the rest of the oil-producing countries, and the wheel of development in it has been delayed even if it achieved periods of growth and economic recovery due to the adoption of a methodology that made it depend on one main commodity, namely Oil as a source of income, in addition to the marginalization of economic resources that can generate income for the state and contribute to the development process, such as manufacturing industries and human resources.

At the end of the seventies, the Libyan economy relied on socialism and the policy of state domination of economic life directly, as it is the main controller of production and distribution, and the public sector dominated economic and social development projects. The development was delayed until the General People's Committee (Prime Minister) announced in 2003 a decision to

privatize more than 360 public sector companies as of January 1, 2004, which is a major economic transformation for the Libyan state. Despite these radical changes, Libya remained behind economically and is attributed This is due to the low standard of living and the low level of public services, as well as the weakness of the administrative peace, the spread of administrative and financial corruption in state institutions, the high rates of unemployment and disguised unemployment. However, this legacy has accumulated many economic problems that brought economic activity to a state of paralysis that had the greatest impact on the poor living conditions For citizens during and after the fall of the Gaddafi regime (Fitzgerald, 2021).

Post-Revolution Libya's Economy

In 2010, oil in Libya constituted about 94% of Libya's foreign exchange earnings, 60% of government revenues, and 30% of GDP. Libya was producing 1.65 million barrels per day from a reserve rate of 41.5 billion barrels, and in the 2011 plan it intended to increase productivity by about 3 million barrels per day, and the average per capita income in that period was 4400 dinars. But what happened in February 2011 exceeded expectations. At the beginning of the revolution, the Libyans dreamed of a prosperous future and a luxurious economic life, but in light of the trends that erupted before the killing of Gaddafi, which had an impact on the production of the oil sector, which was disrupted for months, which led to the deterioration of living conditions and a lack of liquidity in banks. However, this situation changed after the killing of Gaddafi and the control of the revolutionary forces over the oil ports in the east of the country. After the killing of Gaddafi and the declaration of liberation, Libyan oil exports returned to levels close to the pre-war period by the third quarter of 2012, and the authorities spent that time on post-war reconstruction and health care. For war-affected revolutionaries, wages, salaries, and public sector support were raised, but the government's budget doubled in the first three years.

In early September 2014, Al-Thinni's government under the authority of Parliament dismissed the Governor of the Central Bank of Libya, Al-Siddiq Al-Kabir and replaced him with Ali Al-Hibri. By the parliaments and the two governments, while al-Thani deals with the federal militias to keep the eastern ports open, and this was a mutual benefit. For the House of Representatives and al-Thani's government, this enabled them to obtain funding requests, and for the Central Bank of

Libya and the National Oil Corporation, this enabled them to increase oil revenues from the eastern fields. However, this arrangement did not last long. By October 2014, three interrelated factors contributed to the escalation of control over the three Libyan institutions:

- First: The Central Bank refused to disburse the required funds, except for salaries and direct support to the government in the east, which prompted Al-Thani's government to search for alternative ways, including establishing a new administration for the Central Bank of Libya independent of Tripoli, but it did not succeed in controlling bank balances. Meanwhile, Al-Thani's government began to Borrowing from commercial banks in the East.
- Second: Al-Thinni's government called for a change in the management of the Libyan Investment Corporation and appointed board member Hassan Bu Hadi to replace Ben Yaza, and the Tripoli government considered this illegal, and thus a parallel conflict erupted over the institution that led to a legal battle for the exchange of accusations between two governments and two administrations.
- Third: The Supreme Court ruling in favor of the Tripoli Conference that the 2014 elections were illegal, and thus the conference considered that Parliament is illegitimate and does not have the right to control these institutions.

From the steel grip of Gaddafi, Libya fell into the arms of political chaos and field conflict between military militias and extremist organizations, which were the internal enemy that opposed the development of the state, achieving the goals of prosperity and economic growth, and destroying the aspirations of the Libyan people. And accelerating to witness a decline of about 307 billion dinars in 2016 after it was 770 billion dinars in 2011, during which inflation rates jumped from 9.5% to 24% during the same period. All of these factors contributed mainly to the deterioration of the economic situation and the suspension of most economic activities, especially industry. The manufacturing sector, the agricultural sector, the building and construction sector, the tourism sector, the deterioration of the education and health sector, as well as the deterioration of the level of oil production, which resulted in a sharp decline in total exports and the erosion of foreign reserves. It lost a large part of its value against foreign currencies, and the lack of liquidity in banks and banks and merchants resorting to trading also contributed. This in turn led to the revival of the black market, the decline in the purchasing power of the consumer and the disappearance of a large

part of the goods in the market, which negatively affected the living conditions of citizens, especially from the middle-class groups, which carried. It owes a lot of debt, which threatens most of this group with poverty and bankruptcy, as well as the bad humanitarian situation in the country, which makes a murky view of future economic prospects in the medium term, with the circumstances surrounding the country. A strategy to renounce violence, disarm, spread peace, and reform the defense and security sector, in addition to the agreement and political reform of a country that is on the verge of collapse. The situation that Libya is going through today is far from falsification, deception and illusory policies to solve its economic and financial crisis, which the dual government is trying to promote (Mezran, 2013).

Exiting the political, economic and social tunnel that Libya entered after the fall of Gaddafi requires doing the following:

1. Unifying the political and military administration of the country.
2. Increasing oil production and speeding up its export to raise the level of revenues.
3. Increasing revenue from taxes.
4. Take rational measures to solve the problem of financial liquidity.

Conclusion

The magical solution to the state of the Libyan economy cannot be summed up in a set of instructions or waiting for a stage to follow the current stage, that the civil war and conflict made the rebuilding of the economic system a matter that requires a real popular will and political will from all grass,

The process of rebuilding the banking and economic infrastructure will be one of the challenges that the conflicting Libyan governments must find a solution to.

References

Coface. (2022, February). Economic-Studies-and-Country-Risks/Libya. Retrieved 03 20, 2022, from Coface: https://www.coface.com/Economic-Studies-and-Country-Risks/Libya

ESCWA, (2020). Economic cost of the Libyan conflict. United Nations House.

Fitzgerald, M. (2021, March 16). Libya, a decade after Gaddafi's fall. Manara Magazine.

Mezran, M.K. (2013). The Libyan Economy after the. Beirut: Rafik Hariri Center for the Middle East.

Female Leaders Dealing with an Unexpected Global Pandemic COVID-19

Diana Laura Herrera MARTÍNEZ

Romanian-American University, Romania

Abstract

The recent pandemic COVID-19 brings to the world new knowledge, teachings, and a shake to whom was "comfortable in their chair" and showed us how the best economies of the world get in crisis due to the uncertain future, also showed us mistakes and successes of world leaders dealing with an unexpected pandemic. I focused this research on powerful female leaders which made a great good dealing with Coronavirus pandemic, plenty of countries with male leaders show his leadership and good results also, however in my research I highlighted the good practices and leadership of the new and current woman leaders in the world.

Keywords: leadership, women, pandemics, public health

Introduction

In the following research is to highlight the leadership of woman around the world during an historical success in the humanity named COVID-19 that affected the world market and uncountable deaths shaking the entire world an unexpected pandemic that in fact represented a challenge for world leaders, in the present are listed the most praised action taken not only from prime minister also for health experts taken as models to rest of the world due the effectiveness achieving reduce or controlling successfully the spread of the coronavirus in their countries in the short term reducing the deaths; these powerful woman demonstrated resilience, progressive ideas and inspiration.

Sanna Marin, Prime Minister of Finland

Sanna Marin was sworn prime minister of Finlandia in December 2019, Marin leads a coalition government in which all five parties are women, she first entered Finnish parliament in 2015 as a member of Social Democratic party (Forbes, 2021) and currently is the youngest prime minister of the world, she affronts his first big challenge just few weeks after taking office when in January 30th of 2020 the OPS declared a public health emergency international due to a global pandemic called COVID-19.

Sanna was named progressive person of the year 2020 in Europe after implement policies tactics that aimed to prevent the spread of the virus that helped to keep one-fifth one of them is that she implemented a lockdown in March prohibiting travels in parts of the country.

Finlandia registered 5 cases for each 100,000 citizens the lowest rate of UE according with the OPS. Nowadays the technology is part of our lives and definitely is an important factor to handle our day to day, Finlandia demonstrated that technology can be used to our favor and that the current generations are ready to adapt to any new app, “Corona Blinker” is an app developed to help government to control coronavirus cases and Kirsi Varhila, secretary at the Ministry of Social Affairs and Health mentioned that consist in a fully data secured based on a Bluetooth technology that no not reveal identity of citizens of authorities and help to trace contacts that have long enough nearby a person who later test positive to COVID-19 a user who gets a positive COVID-19 test result can choose whether or not they send an exposure alert to their earlier contacts and those who receive the alert will not know who the alert is coming from or where and when the exposure took place.

"We have a society that is based on trust. People trust the government, they trust the democratic order", Sanna Marin (2020).

To finish I would say that I consider as the three actions mentioned before were a key to keep low numbers in new cases and deceases.

The numbers of Finland in deceases are 50,3/100k citizens and 2783/5,53M= 0,05%.

Jacinda Ardern, Prime Minister of New Zealand

Jacinda Ardern with 39 years became in prime minister of New Zealand in October 2017 with 39 years, one of the secrets and strengths is her kindnesses and approach to citizens with emotional video messages from his house and her insistence and take care of their families, neighborhoods and sacrifices for the common welfare also won the admiration while her emphasis on shared responsibility as united country.

The Prime minister imposed a 14-day quarantine on anyone entered in the country in March 2020 and implemented a strict lockdown two weeks later, in April 2020 New Zealand had only 18 deaths four moths afterwards the OPS declared COVID-19 as a pandemic, public trust of Ardern government is 80%.

The numbers of New Zealand deceases are 3,07/100k citizens and 156/5,08M=0,0031%.

Tsai Ing-wen, President of the Republic of China, Taiwan

One of key to the success in keep under control the cases of COVID-19 of Tsai Ing-wen government was the fast response and immediate actioning early January 2020 according with an article from the magazine "Time" Tsai Ing-Wen shared a message: Taiwan is an island of resilience. Centuries of hardship have compelled our society to cope, adapt, and survive trying circumstances. We have found ways to persevere through difficult times together as a nation, and the COVID-19 pandemic is no different. Despite the virus's highly infectious nature and our proximity to its source, we have prevented a major outbreak. As of April 14, we have had fewer than 400 confirmed cases. Taiwan is a country located in East Asia and considering the location we could expect a major outbreak in cases, however the president Tsai demonstrates that keep under control the spread of COVID-19 depends mainly of government policies, respect restrictions, recommendations and finally but not less important "citizens resilient" which is interesting, considering that Taiwan is closer from the country where the virus was originated (China) if people do not trust probably everything could be worst and get decontrolled.

Listing Taiwan's president quick turn actions, we can found the activation of the country central pandemic command center early January and introducing travel restrictions and quarantine, mass public hygiene measures as sanitizing public areas, Taiwan made a fully lockdown only with less

of 10 deceases reported, other prompt and preventive action implemented was dispatching face masks with the cooperation of private companies and the ministry of economic affairs Taiwan coordinate additional production lines for surgical masks, increasing production capacity to distribute in the country, when indicators of a contagious of aa new respiratory illness began in China, Taiwan start monitoring Wuhan incoming passengers, introduce travel restrictions and quarantine protocols, also track traveler and contact history patient to isolate and prevent a mass contagion.

The numbers of Taiwan confirmed deceases are 853.

Jeong Eun-kyeong, South Korean Infectious Disease and Public Health Expert

Finally with a non-national leader however Jeong Eun was dubbed "the world's best virus hunter" for their excellence serving South Korea in the battle against COVID-19, she become famous in South Korea after overseeing a "test, trace, contain" strategy that has made the country the world's coronavirus role-model, with death toll of less than 250.

South Korea government focused resources on elderly and vulnerable, the government was praised due to the effectiveness of mass and testing, and aggressive contact tracing will the population even if the infected persons were young, currently the strategy of Jeon has change with focus in the vulnerable ones.

We are planning to transition toward an antivirus strategy that´s concentrated on maintaining essential social functions while dealing with huge numbers of infections and people placed under quarantine, said Jeong.

The reality is that the strategies implemented by the government and the leadership of Jeong Eun take the country to avoid the famous national lockdown through the pandemic which helped to have the highest annual growth in more than a decade.

Conclusions

The key actions implemented by female leadership that in my perspective assure the success in control the pandemic in the countries is trust of citizens in the government, Taiwan, Finland, and New Zealand demonstrates their citizens have plenty of confidence in government politics and contribute with the measures suggested to avoid the spread of COVID-19; government based in trust to their citizens and promote collective efforts to afront emergencies; immediate actioning and strict restrictions, all governments implemented strict restrictions after the first case was diagnosed, closer monitoring of new cases, kept their country informed avoiding misinformation and panic; progressive ideas and use of technology and finally do not obligated based on force and punishment, just suggest with eloquent arguments and trust.

My favorites coronavirus fighter is Jacinda Arden which demonstrate empathic skills and quick actioning and the well use of technology and platforms as Facebook which majority of people have an active account or can access specially the youngest which in my opinion are the ones that should have reliable information to avoid national panic. Sanna Marin demonstrate been an inspirational leader with progressive ideas and positive results using technology and fresh ideas taking advantage of platforms and every resource to avoid and spread of coronavirus becoming in one of the youngest and capable leaders and an inspiration to current and upcoming female leaders.

References

Henley, N., Roy, E.A. (2020). Are female leaders more successful at managing the coronavirus crisis? The Guardian, 3.

Law Library of Congress. (2020). Government Eases Restrictions Related to COVID-19 Pandemic. 2020, de Law Library of Congress site web: https://www.loc.gov/item/global-legal-monitor/2020-05-14/france-government-eases-restrictions-related-to-COVID-19-pandemic/

Nhu, X.H. (2022). President of Taiwan: How My Country Prevented a Major Outbreak of COVID-19. Time, 3, 3.

(COVID monitoring: https://koronakartet.no/es/muertos)

(https://time.com/collection/finding-hope-coronavirus-pandemic/5820596/taiwan-coronavirus-lessons/)

(https://www.forbes.com/profile/sanna-marin/?sh=106771991428)

The Aviation of the Future and Its Challenges

Jordan SUAREZ

Economics and International Business, Romanian-American University, Romania

Abstract

While all sectors are transforming to be more environmentally friendly. What about the future of aviation? Aviation is one of the most polluting sectors, and with the expected growth in air traffic, there is an urgent need to make this sector more environmentally friendly. Companies are trying to innovate with new projects with the aim of reducing the carbon footprint of their aircraft. This paper examines two projects, their challenges, and issues.

Keywords: ecology, aeronautics, hydrogen, Bio jet fuel

Introduction

In 2020, 1.8 billion passengers flew, the same level as in 2003, which represents a 60.2% decrease compared to the 4.5 billion who flew in 2019. The aviation sector has been particularly affected by the Covid-19 pandemic. Industry experts estimate a return to 2019 levels by late 2023, early 2024. And then reach 5.6 billion passengers by the end of the decade, with annual growth of 3.9% between 2025 and 2030.

For some years now, with forecasts of fairly significant growth in terms of traffic and therefore, in fine, of the carbon footprint, many questions have been raised about the compatibility between aeronautics and ecology. To better understand these questions, we will look at the example of France.

Air transport is responsible for 7.3% of France's carbon footprint and is increasing. Without major changes, emissions from the aviation sector will continue to grow, even though national and

international commitments require a drastic reduction in greenhouse gas emissions. The entire effort needed to bring France onto the carbon neutrality trajectory would be destroyed by the aviation sector if it were to continue to grow.

Emissions from the aviation sector would represent the equivalent of France's carbon budget established by the National Low Carbon Strategy in 2050. “The only credible way to maintain a reasonable trajectory from a climate point of view is to reduce air traffic”. In order to comply with the Paris Agreement and not exceed 2°C of climate change, a decrease in passenger numbers of between 2.5% and 4% per year is necessary. In other words, the number of annual passengers should be halved within a maximum of 20 years.

So, we can ask ourselves whether growth and carbon footprint are achievable simultaneously? In view of certain reports and people, we can think that no, "Air travel is sad, but it should no longer be a child's dream today" Léonore Moncond'huy.

We don't know how to anticipate innovation. All projections and quantitative analyses that are made under the assumption don’t anticipate innovations. So yes, if we assume that there are zero innovations, whether in industrial processes and/or in terms of technology, we won't be able to have more flights, so people should stop flying.

But then, is there a future for aviation? And if so, is the aviation of the future exclusively ecological?

To answer these questions, we will study a concept from Airbus as well as biofuel with algae. This paper will present a new vision of these two projects and a new perspective for biofuel with algae. A survey was also conducted to better understand the expectations of passengers for the aviation of the future.

ZEROe Concept Aircraft

Manufacturers are setting up new and innovative projects, most of which attempt to address environmental issues. One of the most popular projects is that of Airbus.

Airbus carried out several studies to choose the best energy between methane, butane, ethanol, methanol, ammonia, and other energies. They concluded that hydrogen was the most promising

energy. So, in 2020 they presented three concepts for aircraft using hydrogen: the Turboprop, the Turbofan, and the Blended-Wing Body.

The Airbus hydrogen aircraft project would operate via 2 systems:

- Fuel cell: The fuel cell reacts hydrogen with oxygen to produce electricity and power the aircraft's electric motor, then the heat from the fuel cell must be managed. At a certain power level, it becomes difficult to manage the removal of this heat. The fuel cell is therefore more suitable for small aircraft (figure 1).

- Hydrogen engine: A cryogenic tank and an air compressor are used to supply the engine with air, which is then burnt to produce water and heat, which is used to propel the aircraft (figure 2).

Figure 1. Fuel cell

(https://www.youtube.com/watch?v=1wZ6HcjGR3s&t=3s)

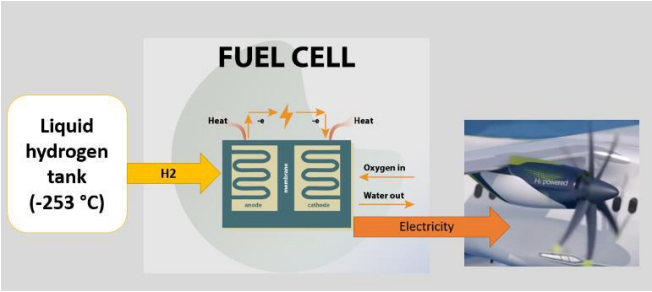
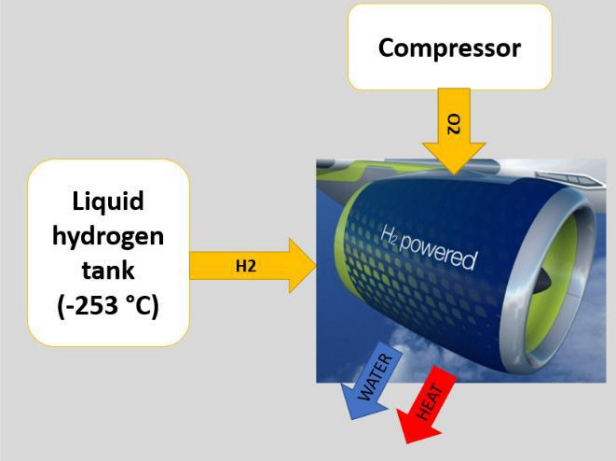


Figure 2. Hydrogen engine

(https://www.youtube.com/watch?v=1wZ6HcjGR3s&t=3s)



Hydrogen powered aircraft is technically possible, and the Tupolev Tu-155 is proof of this. The test flight on 15 April 1988 with three engines, one of which ran on liquid hydrogen, was a success, but the fall of the Soviet Union in 1991 put the project to rest.

As we have seen, hydrogen is possible and would present real advantages in terms of meeting the ecological challenge, since hydrogen-powered aircraft don’t emit any pollutants into the atmosphere. However, several constraints cast doubt on the idea that hydrogen aircraft will replace the current fleet of aircraft for several reasons:

Hydrogen takes up much more volume (4x more) than jet fuel, which implies supply and storage difficulties. To be stored in liquid form, hydrogen must be cooled to -253°C. Storing such a large volume of hydrogen at -253°C and maintaining it at this temperature will require the use of a cryogenic system, new materials that don’t exist today and a liner that is tight enough to prevent the hydrogen from leaking". The main problem concerns the structure of the hydrogen tank: "it will have to combine three properties, including static strength at low temperatures, thermal insulation and resistance to vibration and shock". Taken separately, these properties have been mastered. "The challenge is to combine them in a single material to be invented". Cryogenic tanks must also be cylindrical or spherical in shape to withstand the pressure, which makes their integration more complex.

Europe is not starting from scratch. With the space engines of the Ariane launchers, it has experienced the hydrogen fuel chain in the space sector, including refuelling and tanks. But specialists in the commercial aviation and transport sector are more nuanced. Luis Le Moyne, director of the higher institute of automobile and transport, explains that, as it stands, the "technology is not mature enough to be used in commercial aircraft" (Decourt, 2020). The development of a hydrogen engine, "whether it is a fuel cell that produces the electricity needed to drive a propeller or one that burns hydrogen in a turbojet engine", faces several technical and hydrogen production problems "requiring a massive increase in the production of wind and solar energy".

While the idea of flying a carbon-neutral commercial aircraft in 2035 seems feasible, there is also the question of the economic model that we wish to apply to this type of commercial aircraft. However, with oil being cheap and likely to remain so for a long time to come at very competitive

levels, hydrogen looks like a fairly expensive fuel to manufacture, especially as all the stages of its production will have to be decarbonised. All of this is more complicated than pumping oil and refining it.

In terms of GHG emissions, hydrogen will not avoid all the non-CO2 effects, although it does contribute to them. More worryingly, the vast majority (96%) of hydrogen manufactured today is produced by steam reforming of hydrocarbons: an extremely emissive process since to obtain one tonne of hydrogen, 10 to 11 tonnes of CO2 are produced and generally emitted into the atmosphere. Thus, although CO2 is not emitted during the flight phases, it is emitted upstream.

The reason for the interest in hydrogen is that it is possible to obtain hydrogen by electrolysis of water (green hydrogen). Thus, the production of hydrogen consumes electricity, which is a great opportunity from a climatic point of view, particularly for France, whose energy mix is decarbonised.

A democratisation of hydrogen requires a significant production of electricity in addition to the current use of electricity. This would require the installation of additional capacity to produce electricity dedicated to the electrolysis of water, either by increasing the current nuclear fleet or by developing numerous new renewable electricity production facilities. This solution requires a lot of energy. A team of researchers in Toulouse has estimated that it would take between 10 and 18,000 wind turbines (or 5,000 km^2), 1,000 km^2 of solar panels or 16 nuclear reactors to replace the jet fuel at Paris-Charles-de-Gaulle airport alone (representing about 37% of traffic in France).

These figures raise the question of the feasibility of the energy transition of the aviation sector, especially in a context where the sector is expected to double every 15 years.

We are touching on another sensitive point for the future of air transport, namely the competition with other sectors for available resources. It will certainly not be possible in the next 20 years to develop the electrical capacities that will allow us to maintain the use of electricity that we currently have in our way of life and at the same time to switch all transport (rolling, flying and even floating) to electric. For example, the energy demand of a decarbonised aviation sector using hydrogen is estimated at 21,000 TW·h in 2050, or 84% of the renewable energy available in 2040 according to the best scenario for renewable energy development in the World Energy Outlook 2019 (25,000 TW·h). Therefore, if hydrogen were to be used in air transport in the next 20 years, the fuel used

would come primarily from the steam reformation of hydrocarbons. And even if we Assume that enough green hydrogen can be produced, by electrolysis of water with renewable electricity. Filling the hydrogen tanks is a problem. The hydrogen still must be liquefied, which is a costly and energy-intensive operation. Then transporting it in a liquid state to airports by rail or truck would be an economic and energy disaster: a 38-tonne truck only carries 4 tonnes of liquid hydrogen! Knowing that in 2050, the hydrogen needs for aviation would amount to 40-50 million tons per year. "We could deliver the compressed hydrogen by pipeline or produce it by electrolysis and liquefy it on site at the airport. Then fill the tanks slowly, keeping the temperature incredibly low and avoiding boiling. But, of course, this will have to be done away from the public and in the open air, as any leakage in an enclosed space represents a major risk, as hydrogen can explode at low concentrations.

Airports should therefore have sufficient storage space to supply aircraft with paraffin and hydrogen. Hydrogen tanks can be up to 100 times more expensive than tanks for other gases. So, the economic equation is not yet solved.

It should also be noted that today, these zero-emission aircraft would only have a range of 3,500 km at best. Hydrogen is not being studied for long-haul flights, which account for about 48% of France's CO_2 emissions. It would a priori be a substitute solution restricted to short- and medium-haul flights.

There is also the problem of the average life span of aircraft (around 18 years), which means that this technology could not be sufficiently widespread to become significant before 2050.

While Airbus plans to launch its first hydrogen-powered commercial aircraft as early as 2035, the materials, tanks, distribution systems and air conditioning are all uncertainties that need to be resolved, as everything must work with hydrogen and not jet fuel.

We have here an ambitious project, which theoretically would work, but realistically this project and all that it implies is likely to be very complicated to implement soon.

Combining aviation and ecology a utopia or is it realistic?

Alternatives, algo fuel the best solution?

As we have seen, to be able to truly propose a solution that is feasible, sustainable, and integrated into our lives, the project must meet both ecological and economic needs.

The most promising solution, in my opinion, is the bio jet fuel solution.

Aviation biofuel could help decarbonize medium- and long-haul air travel generating most emissions and could extend the life of older aircraft types by lowering their carbon footprint. Biofuels are biomass-derived fuels, from plants or waste; depending on which type of biomass is used, they could lower CO_2 emissions by 20–98% compared to conventional jet fuel. The first test flight using blended biofuel was in 2008, and in 2011 blended fuels with 50% biofuels were allowed in commercial flights. Aviation biofuel can be produced from plant sources like Jatropha, algae, tallows, waste oils, palm oil…

So, we have an alternative, with biofuel that has already been working since 2008. In 2010, Airbus managed to get a plane off the ground using fuel derived entirely from algae. Algae offer promising possibilities for CO_2-neutral flights. They release as much dioxin as they absorb during their development phase. 100 kilos of algae are needed to produce 21 litres of biofuel and at the same time absorb 182 kg of CO_2.

According to an expert from Total, biofuels could account for 45% of global consumption by 2050. The solution could well be found in algo fuels, because of their excellent energy and ecological efficiency throughout their life cycle.

However, to impose biofuels, manufacturers must reduce their cost. This remains the main obstacle to the development of biofuels. Production costs are currently between three and ten times higher than for jet fuel. But mass production would reduce this gap.

Here too we have a project that is feasible and promising, but the financial aspect is a barrier to its widespread use.

Even Airbus says: "the ideal solution is to recycle the CO_2 emitted by industry in order to accelerate the growth of algae for conversion into biofuel" (Brimont, 2019).

What if economics were a lever rather than a barrier?

If companies were to grow algae, they could have an extraordinary biological balance sheet as it would create ecological niches for fish as well as ultimately allowing them to fly on biofuel.

Owning these algae crops for a company would be very relevant. Obviously, this would have a cost for the companies, but with the cultivation of algae other sources of income could be envisaged. With seaweed we can now make alginates, fisheries and many other activities that can be derived from seaweed cultivation, cultivating bivalves like scallops whose shells can be transformed into bioplastic and whose flesh can be eaten.

This is what Gunter Pauli explains through the Blue Economy, called the cascading value chain. The Blue Economy allows everything that is produced while manufacturing to be reused. Thus, what could be considered as waste becomes a source of energy to produce something else. It is opposed to the current economic model which produces a lot of waste and recycles very little.

With the cultivation of algae for biofuel and everything else we can do with algae we have a cascading value chain. Algae fuel could even be "FTP" Free to produce for companies. Understand that the algo fuel business from algae would cover the expenses, this may be optimistic but even if this were not the case the cost of their algae biofuel would be very affordable. Obviously, we still need to innovate on large scale industrial processes, realistically this solution is possible faster than the hydrogen aircraft because we already have enough knowledge to exploit this model.

At a time when we have already successfully flown 100% biofuel aircraft, or biofuel aircraft have received the international certification required for commercial flights. The hydrogen aircraft project is still in the conceptual phase, Airbus will not conduct any tests before 2025 and the objective is to launch its first aircraft on the market only in 2035. Algo fuel has a real advantage here.

Investments? Yes

When a €800 million "France 2030 plan" was developed to develop the aircraft of the future. When we see that the state has helped Air France to the tune of 4 billion euros, but that nothing has been done to allow biofuels and algae to be developed on a large scale, we can ask ourselves if we are really going in the right direction because the bio jet fuel project needs investment. So yes, in the long term, hydrogen-powered aircraft will be able to replace current aircraft, but given the need to reduce CO_2 emissions now, it is unfortunately not enough.

According to the IPCC's 2022 report, by 2050 about one billion people could be living in coastal areas threatened by rising sea levels and marine submersion during storms.

The report by UN climate experts (IPCC) "is a compendium of human suffering and a damning indictment of the failure of leaders to tackle climate change said Mr Guterres (UN Secretary-General)" (Climat: les experts du GIEC s'alarment des conséquences énormes d'une planète en péril, 2022). Any "further delay" in tackling climate change will miss the small chance of securing a "liveable future" for humanity, the UN's climate experts (IPCC) have warned. "The mounting scientific evidence is unequivocal: climate change is a threat to human well-being and the health of the planet" (Climat: les experts du GIEC s'alarment des conséquences énormes d'une planète en péril, 2022), underlining the need to act both to reduce greenhouse gas emissions and to prepare for further disasters. The need to reduce emissions by almost 50% by 2030 in order not to exceed +1.5°C.

So, I ask you the question, this hydrogen aircraft project which will only see the light of day from 2035. That between 2021 and 2040 Airbus estimate to build about 35,000 aircraft (a320 family) with a production of about 600 aircraft per year (considering an increase in productivity in future years). Understand that even if the hydrogen aircraft is a success, launched in 2035 it will be in insufficient quantity to allow the aviation sector to achieve its objectives in terms of ecology. Is this hydrogen aircraft project sufficient to reduce the effects of global warming?

My answer is no! It is too late because we must act now! Solutions while waiting for the hydrogen planes of the future have not been taken. There is nothing to prevent us from seeing a near future with planes running on bio jet fuel gradually taking the place of traditional paraffin planes and in a more distant future seeing the aircraft fleet shared between these two solutions, i.e., algo fuel planes and hydrogen planes.

Conclusions

To the question, do you think aeroplanes and ecology are compatible? 70.6% answered yes and 28.4% answered no. This percentage shows that about a third of the respondents doubt or think that we cannot reconcile the two. This is therefore a question that one has every right to ask

Even if we have focused exclusively on aviation from the point of view of ecology, the aviation of the future must also face different challenges and must address the concerns and expectations of passengers. For more than 60% the first concern when they fly is safety, followed by reliability and comfort. Ecology is the least chosen answer (no one chose ecology as a first concern). Yet 43.1% of people expect the plane of the future to be more ecological. The rest are divided between faster (25.5%), safer (11.8%), more connected (9.8%) and more comfortable (7.8%). One might think that these results are rather paradoxical, as ecology is the last expectation of passengers, but they see the plane of the future as more ecological. However, these results make sense on the one hand because ecology is a subject that is being discussed more and more and when we research or talk about the aeronautics of the future, we only find results on solutions, on projects that make this sector more ecological. So, it is normal that people have come to terms with the idea that the aircraft of the future will be more ecological. However, 58.8% have never heard of biofuel for aircraft or hydrogen aircraft, only 41.2% have heard of at least one of these two projects. Why is it that more than one in two people are not aware of these projects, is it due to a lack of information on these projects? Is it due to a lack of interest in the aviation sector or in the ecology? This is a question that makes sense because when 82.4% answer that they don't think about their carbon footprint when they fly, we can wonder if people are sufficiently aware and informed.

In conclusion, it is important to be interested in the aviation of the future and we need to understand the issues and the projects but also their consequences. As we have seen, a project must not only reconcile the ecological aspect but must also be organised so that it is economically viable but also respond to the time constraint.

In this article we are interested in the two projects that I think are the most ambitious and feasible: the Airbus hydrogen aircraft project and the algae biofuel project. There are other projects such as Boeing's Sugar Freeze aircraft or TU Delft's Flying-V.

These projects will provide greener aviation, which will contribute to the fight against climate change, which is now a major objective. However, as we have seen, although the Airbus project is interesting from every point of view, the production of green hydrogen will not be sufficient, which raises questions about the relevance of the project. While bio jet fuel via algae is already a technology and a process that we know and master, certainly there is still a lack of investment and

innovation in this sector, but this project is more quickly accessible, in a certain precariousness of the environment that accelerates from day to day, month to month, year to year it is fundamental to act as quickly as possible.

References

aeronewstv, (2021, March 4). Retrieved from Youtube: https://www.youtube.com/watch?v=V3zVOxHchqU

Airbus teste des moteurs d'avions à hydrogène. (2022, February 22). Retrieved from Capital: https://www.capital.fr/entreprises-marches/airbus-teste-des-moteurs-davions-a-hydrogene-1429213

Avion à hydrogène: les deux possibilités. (2021, August 31). Retrieved from https://www.youtube.com/watch?v=1wZ6HcjGR3s&t=3s

Bouveret, T. (2013, April). Retrieved from https://www.larevuedelenergie.com/wp-content/uploads/2019/03/Micro-algues-energie-propre-XXIe.pdf

Brimont, G. (2019). Le biocarburant dans le secteur aérien : vers des vols plus verts ? Retrieved from TransportShaker: transportshaker-wavestone.com/le-biocarburant-dans-le-secteur-aerien-vers-des-vols-plus-verts/

Climat: les experts du GIEC s'alarment des conséquences énormes d'une planète en péril. (2022, February 28). Retrieved from nations unies: https://news.un.org/fr/story/2022/02/1115262

DÉCARBONER L'AVIATION. (n.d.). Retrieved from Corac: https://aerorecherchecorac.com/decarboner/avion-du-futur/

Decourt, R. (2020, June 24). Les Airbus de demain voleront-ils à l'hydrogène? Retrieved from yahoo finance: https://fr.finance.yahoo.com/actualites/airbus-demain-voleront-%C3%A0-l-073000041.html

echos, L. (2020, October 12). L'hydrogène va-t-il révolutionner l'énergie? Retrieved from Youtube: https://www.youtube.com/watch?v=2N6GwxEDmEQ

EMISSIONS DU TRANSPORT AÉRIEN : LA FAUTE AU LONG-COURRIER. (2021, February 17). Retrieved from Air Journal: https://www.air-journal.fr/2021-02-17-emissions-du-transport-aerien-la-faute-au-long-courrier-5226055.html

Feuvre, P.L. (2019, March 18). Are aviation biofuels ready for take off? Retrieved from iae: https://www.iea.org/commentaries/are-aviation-biofuels-ready-for-take-off

Flying-V. (n.d.). Retrieved from tuDelft: https://www.tudelft.nl/lr/flying-v

Fortin, P. (2021, April 26). AVEC ZEROAVIA L'AVION À HYDROGÈNE PREND SON ENVOL. Retrieved from Les echos planete: https://planete.lesechos.fr/solutions/avec-zeroavia-lavion-a-hydrogene-prend-son-envol-8920/

Gliszczynski, F. (2020, January 14). Airbus table sur une production record d'A320 dès 2023! Retrieved from La tribune: https://www.latribune.fr/entreprises-finance/industrie/aeronautique-defense/airbus-table-sur-une-production-record-d-a320-des-2023-871966.html

Global Market Forecast. (n.d.). Retrieved from Airbus: https://www.airbus.com/en/products-services/commercial-aircraft/market/global-market-forecast

L'AVION À HYDROGÈNE, NÉCESSAIRE MAIS PAS SUFFISANT POUR DÉCARBONER L'AVIATION. (2022, January 26). Retrieved from bfmtv: https://www.bfmtv.com/economie/entreprises/transports/l-avion-a-hydrogene-necessaire-mais-pas-suffisant-pour-decarboner-l-aviation_AD-202201260020.html

L'avion à hydrogène, nécessaire mais pas suffisant pour décarboner l'aviation, selon une étude. (2022, January 26). Retrieved from Geo: https://www.geo.fr/environnement/lavion-a-hydrogene-necessaire-mais-pas-suffisant-pour-decarboner-laviation-selon-une-etude-208081

Le nombre de passagers aériens retrouvera son niveau d'avant-crise en 2023. (2021, May 26). Retrieved from La presse: https://www.lapresse.ca/affaires/economie/2021-05-26/estimation-de-l-iata/le-nombre-de-passagers-aeriens-retrouvera-son-niveau-d-avant-crise-en-2023.php#:~:text=Sur%20le%20long%20terme%20(2019,passager%2Dkilom%C3%A8tre%2C%20sera%20moindre

Les biocarburants peuvent-ils vraiment améliorer le bilan écologique des avions ? (2021, June 24). Retrieved from le monde: https://www.lemonde.fr/les-decodeurs/article/2021/06/24/les-

biocarburants-peuvent-ils-vraiment-ameliorer-le-bilan-ecologique-des-avions_6085511_4355770.html

Michaut, C. (2021, February 2). Biofuels, an alternative that is still too expensive. Retrieved from Polytechnique insights: https://www.polytechnique-insights.com/en/braincamps/planet/zero-carbon-aviation/biofuels-an-alternative-that-is-still-too-expensive/

PLAN FRANCE 2030: 800 MILLIONS D'EUROS POUR DÉVELOPPER L'AVION DU FUTUR. (2022, March 15). Retrieved from bfmtv: https://www.bfmtv.com/economie/entreprises/industries/plan-france-2030-800-millions-d-euros-pour-developper-l-avion-du-futur_AD-202203150079.html

Réchauffement climatique: ce qu'il faut retenir du dernier rapport du GIEC. (2022, February 28). Retrieved from Geo: https://www.geo.fr/environnement/rechauffement-climatique-le-giec-sort-un-nouveau-rapport-208564

Tamburelli, L. (2020, September 27). The Tupolev which flew on hydrogen 32 years ago. Retrieved from Private jets blog: http://blog.privatejetfinder.com/tu-155-hydrogen/

Thouverez, P. (2020, December 15). L’hydrogène sauvera-t-il le secteur aérien ? Retrieved from Techniques de l'ingenieur: https://www.techniques-ingenieur.fr/actualite/articles/airbus-hydrogene-emissions-86095/

Transport aérien, voyageurs transportés. (n.d.). Retrieved from La banque mondiale: https://donnees.banquemondiale.org/indicator/IS.AIR.PSGR?end=2020&start=1970&view=chart

UAF/FA. (n.d.). Retrieved from https://www.aeroport.fr/uploads/documents/rapport_2019.pdf.pdf

Zhao, S.S. (2020, July 10). Bio-aviation Fuel: A Comprehensive Review and Analysis of the Supply Chain Components. Retrieved from Frontiers in energy research: https://www.frontiersin.org/articles/10.3389/fenrg.2020.00110/full

The Textile Industry Environmental Impact: Is It Possible that the Carbon Footprint of the Textile Industry Is Zero?

Leïla LAPORTE

Romanian-American University, Romania

Abstract

The textile industry is known to be the second most polluting industrial sector in the world. According to studies, this sector represents 3 to 10% of global carbon emissions. This article presents the current situation and the causes that led to such an ecological disaster. Also, the article explains why it is important to reduce your carbon footprint and what the consequences are for the environment.

Keywords: textile industry, environment, carbon emissions, pollution.

Introduction

In 2022, ecology is at the heart of the concerns of the modern world. Climate change, pollution of the oceans and the countless tons of waste in the world worry humanity. The cause of these disasters is linked to the industrial world and the massive exploitation of planetary resources. Excessive production and the use of chemicals are gradually destroying nature.

Today I would be interested in one of these sectors which contribute to the destruction of the Earth. This is the textile industry, known to be the second most polluting industrial sector in the world. According to studies, this sector represents 3 to 10% of global carbon emissions. And if we look at the report of the Ellen MacArthur Foundation "A new textiles economy: Redesigning fashion's future" have for comparison, it is higher than all the emissions of international maritime and air transport combined. Given the current situation, these figures are impressive, and it is time to act.

I will start this article with a presentation of the current situation and the causes that led to such an ecological disaster. I also explain why it is important to reduce your carbon footprint and what the consequences are for the environment.

I will detail in a second point the methods known to reduce the carbon footprint of this industry. I also explain why certain textile manufacturing steps cannot be depolluted. I will deal with the research and development part that would push the textile industry to have a neutral carbon footprint.

Finally, I will evaluate the pollution share of each step and compare them to each other to prioritize the actions to be taken.

The Textile Industry: What Is the Current Situation?

1. What Is a Carbon Footprint?

According to the dictionary, the carbon footprint is an indicator that aims to measure the impact of an activity on the environment, and more particularly the greenhouse gas emissions linked to this activity. Therefore, the carbon footprint (measured in kilograms of CO_2 equivalent) is the amount of greenhouse gases emitted by the system under study.

Today, we see greenhouse gas emissions as a major source of change in our environment and in the functioning of the planet. They reinforce global warming and the resulting ecological disasters. This situation presents many risks to humans and all other life forms on Earth. We can mention here the melting of the ice, the increase in the level of the oceans and the strong heat waves which multiply each year.

The production of greenhouse gases and therefore a danger for humanity, animals, plants: the entire planet. This gas production has increased considerably in recent years due to the strong industrialization brought by men. We are witnessing, today, the terrible consequences of this industrial revolution. At the time, we used resources and we consumed excessively without worrying about sustainable development and what could happen tomorrow. This awareness was realized at the beginning of the 21st century and continues to grow. In 2022, the environment is increasingly at the heart of the news, and everyone must be aware of it.

Admittedly, manufacturers are on the front line and must deal with more and more ecological constraints created to reduce pollution and make a correct climate prosper.

2. The Role of the Textile Industry in the Environment

When we look at the carbon footprint of a company or an industry, we look at several criteria such as freshwater consumption, the energy used from fossil resources, the imbalance of aquatic environments because of toxic discharges (chemicals), the toxicological impact in humans and many more.

To measure the environmental impact of the textile industry, it is important to divide this industry into several stages and to look at each stage at which polluting activities are involved.

Always relying on the last report of the Ellen Mc Arthur Foundation of 2017. We note that at each stage related to the textile industry, we can realize the ecological scourge of its activities. First in the footsteps of its non-renewable resources, then at the stage of landfilling or incineration of non-recyclable waste, obviously passing through the intensive use of consumer laundry.

It should also be considered that the textile industry works in a very linear way. Recycling is not the most developed, which leads to the following consumption pattern: I produce - I consume - I throw away. There is no concept of a cycle that would make it possible not to constantly produce more.

In the following explanatory diagram, Circular Fiber Initiative Analysis details the share of non-recycled waste. They find that 73% of waste from this industry will be buried or incinerated. Thus, ¾ of the waste emitted would not be recycled or reused (figure 1).

Circular Fiber Initiative Analysis brings together key industry players to build a circular economy for textiles, starting with apparel. This group is trying to create a new system for textiles based on the principles of a circular economy while phasing out waste and pollution.

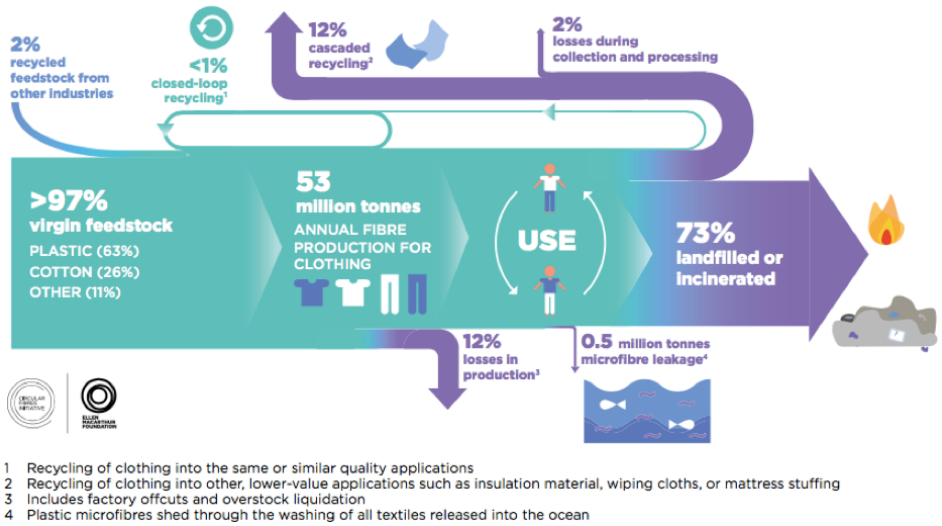
3. Why Does the Textile Industry Always Increase Its Production?

As we saw in the previous point, the textile industry is a linear industry that leaves little room for recycling. This linear pattern results in ever-increasing mass production. Moreover, today in a world where everything is always going very fast because of the media and social networks, fashion is more and more ephemeral. The consumer always seeks to have what is most trendy and

fashionable. This pushes the brands to release more and more collections each year, which multiplies the references.

Figure 1. Global material flows for clothing

(Circular Fibres Initiative analysis – Appendix B)



1 Recycling of clothing into the same or similar quality applications
2 Recycling of clothing into other, lower-value applications such as insulation material, wiping cloths, or mattress stuffing
3 Includes factory offcuts and overstock liquidation
4 Plastic microfibres shed through the washing of all textiles released into the ocean

The consumer seeks to have inexpensive products because he knows that he will only wear them for a short time. The clothes are of less and less good quality because we must produce more and more quickly. According to Greenpeace, we buy on average 60% more clothes than 15 years ago, which feeds the empires of the textile industry.

In the Western world, therefore, price and quantity are favored over quality. Companies are looking for cheaper materials to drive down prices like polyester. It is an abbreviated name for a man-made synthetic polymer, more commonly referred to as the polyethylene terephthalate (PET) type. It is made by mixing ethylene glycol and terephthalic acid. It is therefore, more vulgarly, a product like plastic.

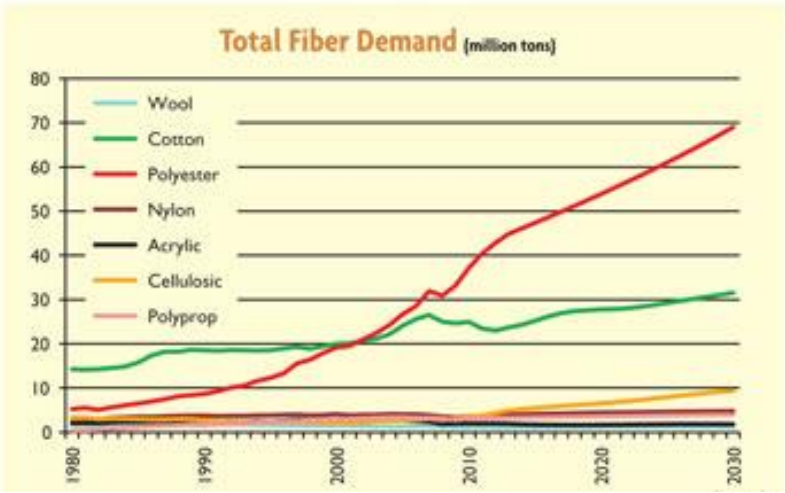
This material became a popular choice for clothing in the 1970s because polyester fibers are thermoplastic or heat sensitive. This means that 100% polyester fabrics can have permanent creases as well as decorative shapes and patterns. Plus, they're highly stain-resistant, making them great for cleaning.

However, from an environmental point of view, during its manufacture, polyester is molded and treated with many dangerous chemical elements. The polyester is soaked in a mixture of chemical compounds, including caustic soda (sodium hydroxide) and sodium hydrosulphite, which releases a toxic gas (sulphur dioxide) on contact with water. The dye itself is very irritating. The process is also energy-intensive, as fixing can only be done in ovens above 100°C. The fumes released are toxic and polluting for the human body.

Thus, as the following graph shows, the demand for polyester overtook that of cotton in the early 2000s and needs to increase in the same way as the digitalization of fashion (figure 2).

Figure 2. Total Fiber Demand (million tons)

(England-based PCI Fibers)



The message is clear that polyester is an important part of all other fibers (man-made and natural). Anyone in the fiber industry should be aware that polyester producers will always be looking to see if market share of other fibers can be taken. It is then difficult to face this new fabric giant.

To sum up this first part, we are facing a major problem which is the increase in textile production, the increase in the market for polyester and an industry with an almost 100% linear pattern. We must now see what solutions and methods are in place today to reduce pollution in this sector.

Methods and Solutions Implemented to Reduce the Carbon Footprint of the Textile Industry

In this paragraph, I will deal with the environmental solutions put in place at each stage of the process from the extraction of the raw material to consumption.

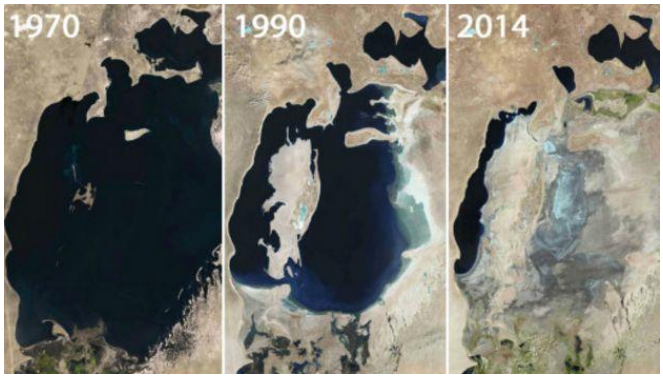
1. Management of Raw Materials

As seen in the previous paragraph, raw materials can be synthetic or natural.

On the one hand, about the cultivation of natural fibers, their harvest consumes a large volume of water and involves the use of insecticides. For example, cotton (37% of the world production of textile fibers) consumes 5,000 and 17,000 liters of water per kilogram. According to the Ellen MacArthur Foundation, 4% of the drinking water available in the world is used to produce clothing. The massive consumption of water causes natural disasters such as the disappearance of certain Aral Sea which leads to a disruption of biodiversity (figure 3).

Figure 3. The evolution of the Aral Sea for 44 years

(https://www.nationalgeographic.fr/environnement/2014/10/disparition-de-la-mer-daral-les-causes-dun-desastre-ecologique)



Cotton plantations also pose the problem of monoculture. Crops will be planted on large surfaces that will occupy all the surrounding space and thus generate the replacement of the biodiversity initially present. The soils are then depleted from year to year, linked to the lack of nutrients provided by this biodiversity. Thus, to overcome this problem of soil depletion, farmers use

chemical fertilizers that are dangerous for the environment. These are short-term solutions that only delay the problems associated with intensive production that further degrades our planet.

On the other side, when it comes to synthetic fibers. The exploitation of fossil oil resources does not correspond to a sustainable development approach. It is estimated that more than 70 million barrels per year are used for the manufacture of synthetic textiles alone.

The proposed solutions to the above problems consist in turning to more sustainable materials such as linen which consumes little water for example, or recycled plastic. This implies less damage on nature. Although techniques are modernizing, there are few or no solutions that would meet the current massive demand. It is up to the consumer to become aware of the climate cause and to direct their demand towards materials that are less destructive to the environment.

2. Manufacture and Processing

When spinning and designing garments, many power-hungry machines are used. They consume a lot of electricity and run constantly in some countries. However, the worst does not lie in the power consumption but rather in the composition of the fabric treatments.

Spinning, which transforms the material into yarn, requires the use of highly polluting lubricating chemical agents to prepare the fibers. Also, during weaving, the grease used to make the threads more resistant is very polluting because it is produced from petroleum.

Once weaved, the fabrics are first bleached before applying any color, so they then have dyes in the compositions are very chemical. But this does not end here. There is a whole other processing suite for the fabrics to be commercialized. They are treated so that the colors do not fade, to waterproof them, to change their texture, to prevent them from igniting too easily, to fight against stains and to finish for dry cleaning. This chain of treatment involves chemical processes that make the fabric a very polluting product if left in nature.

Once again, water consumption is still high, especially in the sanding stage. This step consists of removing the indigo pigmentation from the denim fabric by propelling a jet of sand under high pressure.

To reduce the carbon footprint of this step, new techniques make it possible to limit water consumption and pollution. First, there is ozone washing, which is an eco-responsible alternative

to sandblasting. By replacing the water in this sandblasting with ozone, the quantity of water needed for washing is reduced by 50%. Similarly, CO2 dyeing makes it possible to dye polyester without water, additives or drying.

From a legal point of view, Europe has implemented a 2007 REACH regulation which aims to secure the manufacture and use of chemical substances in industry.

According to me, the solution here would simply be not to consume new products but to turn to products that have already been woven, and to reuse them to make new clothes, for example. This would avoid reprocessing the fabric and rethreading bobbins.

3. Distribution and Transportation

According to ADEME (the French Environment and Energy Management Agency), jeans travel an average of 65,000 km before arriving at their destination, which represents 1.5 times around the earth. Its transport would be carried out mainly by plane and boat, a major consumer of oil energy. The relocation of manufacturing plants is the main cause of the increase in journeys. Indeed, the textile industry is in Asian countries mainly where labor is cheaper far from its Western consumers. The solutions for this problem are very simple. We must buy closer to reduce the distance between the manufacturer and the consumer. It seems physically easy to relocate a manufacturing plant unlike a mining field. It is then on the manufacture that it is necessary to act.

4. Use and maintenance

Although oil extraction in the marine environment pollutes the water, washing it in a washing machine also pollutes. Washing our synthetic clothes in the washing machine releases 500,000 tones of plastic microparticles each year into the ocean, which corresponds to 50 billion plastic bottles. Evacuated in wastewater, they largely pass through the mesh of treatment plants and end up in the ocean. They will take thousands of years to degrade.

These microparticles harm marine flora and fauna and disrupt the proper functioning of marine biodiversity. This problem is serious, according to WWF, the plastic microparticles released by the domestic washing of clothes constitute the 3rd source of plastic pollution in the oceans.

To deal with this increasingly worrying problem, many scientists are looking into the subject, such as Richard Thompson, director of the Marine Institute at the University of Plymouth. He advocates the use of filters intended to retain microparticles in washing machines. The researcher took part in a study that assessed the effectiveness of existing models. It shows that the best performer

manages to stop nearly 80% of the microfibers. This technology would be a major effort against pollution.

In addition, the use of organic detergent and washing products is preferable to chemical products marketed in most supermarkets.

5. End of Life

In France, current figures indicate that an inhabitant consumes 29.2 kg per year and only recycles 23.2 kg by selling it, or by giving it to collection centers for example (Source: Rad Canada). The remaining 6kg are often thrown away with household waste and then burned or buried in public dumps. As we had previously, the toxic molecules of the fabric will end up in nature and in the same way as other waste will disturb the surrounding biodiversity.

In my opinion, when you want to get rid of fabric, you must first find out why you no longer want the fabric. If it is because it is damaged, then we can try to repair it or give it another function. If we simply don't like it anymore, then we can try to sell it and give it a second life. Otherwise, there are special textile bins, where companies come to collect their entire bags of fabric to recycle them. This makes it possible not to produce again. It is important to understand that there is already enough tissue on Earth and there is no need to produce more and more. Just look and be interested in what we already have available.

Summary Table of the Global Environmental Impact of Each Phase of the Textile Life Cycle

An analysis of the share of pollution in each stage of the textile life cycle was carried out by Elise Beurrier, founder of the French brand Youkan.

Table 1 makes us aware that the most polluting steps are those related to the use of chemicals. This implies that micro-particles are a real threat to the environment. It is on this main point on which we must act.

Pollution linked to microparticles is difficult to understand because it is an element that cannot be seen with the naked eye. Its size is comparable to 1/30 the diameter of a human hair. Their real impact is still little known. We now just know that these particles are found throughout the

environment, are ingested by animals and by humans. The smallest micro plastics could end up in our cells.

Table 1: Global Environmental Impact of Each Phase of the Textile Life Cycle

(Source: Elise Beurrier, founder of the French brand Youkan)

Phase	Share of pollution	Main impacts
Raw material management	44%	Large spaces and large quantities of water for irrigation, use of GMOs, fertilizers, and pesticides
Manufacturing and processing	14%	Many steps requiring energy, water, and chemicals
Distribution and Transport	4%	Numerous transports over long distances with polluting vehicles, in particular the plane
Use and maintenance	38%	Use of energy, water, and chemicals for washing, drying, and ironing
End of life	0.1%	Transport, incineration, storage

The seas and oceans would be the most affected because of wastewater discharges. These particles break down very slowly and their ratio to other debris will continue to increase. Currently, they form around 80% of marine litter.

However, it is not just the oceans that are affected. Microplastics have reached the deepest abysses but also the summits of our planet: 11 snow samples and 8 water samples taken from the streams downstream of Mount Everest in the spring of 2019 were examined in the laboratory by the University of Plymouth, which identified microparticles of all kinds such as polyester, acrylic, nylon, and polypropylene.

These molecules are almost always textile fibers. The researchers suspect that they come from the wear and tear of the clothes worn by the climbers, the wind blowing through them and of course the evaporation of the oceans which fall as snow or rain to Earth. The water cycle involves massive transport of these microparticles.

Conclusion and my Opinion About the Future

In this article we try above all to show whether the textile industry could have a neutral carbon footprint. Unfortunately, that seems far from the case. My development has assured us that no step in the textile industrialization process has a neutral carbon footprint. However, nothing is lost and there are solutions to reduce the environmental impact of each step.

Although industrial methods are questioned, the real source of the problem comes from consumer demand. The sales made and the quantities produced show enormous figures. It is mass production that has a heavy impact on the planet. If demand were reduced, manufacturers would not need to exceed capacity using polluting methods.

In the 21st century, our way of life, our mores, our habits are geared towards consumerism and convenience. According to the European Environment Agency (EEA), the amount of clothing purchased in the European Union increased by 40% between 1996 and 2012 and each person keeps an item for half as long on average. And indeed, for each stage of the industrial process, we have seen that the consumer can act to reduce the carbon footprint. So, consumers are the key.

As Mrs. Gro Harlem Brundtland, Prime Minister of Norway stated in 1987, development that meets the needs of the present without compromising the ability of future generations to meet theirs is sustainable development". For the textile sector, a common awareness of the environmental situation is necessary.

I then offer you solutions applied to the consumer to reduce the carbon footprint of the textile industry to 0:

- First, it is obvious to limit our consumption. It would be enough to buy better and, in less quantity, to concentrate on the essentials. the manufacturer would reduce their production volume and therefore their pollution impact.
- Secondly, we must use what already exists. The second-hand market is increasingly developing and offers those who have little means or who want to bring textiles back to life to obtain items at low cost. This system combines economy and ecology. This second-hand market, which was at 21.2 billion euros in 2018, represents 45 billion euros in 2021 according to an American study. An approach that gives hope for the planet.

- Third, clothing recycling centers are prioritized when disposing of fabric. In France and in many Western countries, there are collection points for clothing. They are maintained by organizations that salvage the clothing to make new items or donate to people in need. To recycle clothes, it is also possible to seek to repair them or offer them another use.
- Fourth, the consumer can buy ecological. Not to mention greenwashing and the whole green wave on which brands are surfing, there are more and more brands that are really committed. They seek to make their clothing as neutral as possible in terms of carbon footprint. Clothing can be made from recycled materials or natural organic plant fibers. Some brands also offer local manufacturing to reduce transport.

You still must realize that this last solution is generally more expensive, and it is not accessible to everyone.

To conclude, although ecology is not at the heart of everyone's concerns. The pollution emitted by the textile industry is directly caused by the consumer and it is up to him to act for himself and for others. As previously developed, there are simple solutions accessible to all to bring the carbon footprint of the sector towards 0.

References

(https://www.lemonde.fr/idees/article/2021/01/20/industrie-textile-il-ne-suffit-pas-de-planter-des-arbres-il-faut-repenser-radicalement-le-c-ur-du-metier_6066875_3232.html)

(https://www.polytechnique.edu/fondation/content/les-textiles-intelligents-au-service-de-l’environnement)

(https://www.wwf.ch/fr/nos-objectifs/rapport-du-wwf-sur-lindustrie-de-lhabillement-et-des-textiles)

(https://inis.iaea.org/search/searchsinglerecord.aspx?recordsFor=SingleRecord&RN=41077948)

(https://www.gayaskin.fr/2018/03/19/le-textile-deuxieme-industrie-polluante-mais-pourquoi/

(https://www.nationalgeographic.fr/environnement/2014/10/disparition-de-la-mer-daral-les-causes-dun-desastre-ecologique)

(https://grand-est.ademe.fr/sites/default/files/revers-look-h2.pdf)

(https://maisonbrunon.fr/danger-du-polyester)

(https://www.clear-fashion.com/blog/l-industrie-de-la-mode-la-pollution-de-l-eau)

(https://www.thegoodgoods.fr/societe/microfibres-plastiques-vetements-oceans/)

(https://www.nationalgeographic.fr/environnement/2020/11/les-oceans-pollues-par-le-lavage-de-nos-vetements)

(https://pubmed.ncbi.nlm.nih.gov/32682545/#affiliation-1)

(https://rc.rad.ca/recyclagetexile)

(https://www.youtube.com/watch?v=3DdU7c66E9g)

(https://www.youtube.com/watch?v=1XmhVgTr4Y0)

(https://www.ecoconso.be/fr/content/comment-les-microplastiques-polluent-ils-lenvironnement)

(https://www.geo.fr/environnement/pollution-aux-micro-particules-3-4-des-pays-touches-malgre-la-baisse-due-au-covid-rapport-204068)

Freedom of the Press: Theory of a 4th Government Power, the Press

Yousri AMALOU

Romanian-American University, Romania

Abstract

Freedom of press and media through the different ways of communication, whether it is printed or electronic is a right and has to be exercised with liberty. Since the press is a major threat to these regimes, its access is basically controlled and reflects the importance of their existence. News organizations are state-run, therefore the information given out through the ways of communication is mostly propaganda. However, with the advance of social media and the internet, these cases are often reported and studied to judge the caliber of press freedom in each country.

Keywords: ethics, freedom, press, news, social media

Introduction

The freedom of press, one of the most essential pillars for a democracy to exist, is consecrated in every constitution of any country. It makes its appearance in chart declarations as in the Universal Declaration of Human Rights and in many more important ones since the 19th century. But due to certain drifts and infringements to fundamental freedoms, we should consider that the matter of the right to the information that every citizen possesses is in fact in danger.

Freedom of press and media through the different ways of communication, whether it is printed or electronic is a right and has to be exercised with liberty. It implicitly insinuates non-interference from any state and of course preserved by the constitution and many other legitimate documents and charts. Another point is the government information that cannot be shared due to security reasons and its relevance. A state can then distinguish the materials and whether they should be

public or forbidden from public disclosure. This can only happen for two reasons: the information might be sensitive, secret or in the matter of national interest and its impact.

We might as well encounter states that are subject to sunshine laws of information legislation, used to define the level of national interest and which enables the citizens of that state to request access to any information that is held by the regime.

In 1948, the United Nations put in place the Universal Declaration of Human Rights which quotes: "Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference, and to seek, receive, and impart information and conceptions through any media regardless of frontiers".

This brings us to the idea of freedoms given to anyone, to share and receive information but also to the freedom of speech and to express ourselves whenever we feel the need to and to also have opinions on any matter. This is mostly applied in democracies around the world but when it comes to authoritarian regimes, these freedoms are disregarded, sometimes mentioned in the country's constitution but not so much respected.

Freedom of speech is very often covered by the same laws that are covering the press and giving equal treatment to spoken and published expressions. Historically, the first country to adopt the freedom of the press into its constitution was Sweden, with the Freedom of Press Act of 1766. A few years later, the Founding Fathers of the United States of America drafted the U.S Constitution, with the First Amendment mentioning the freedom of speech, which relates to the press as well as the opinion. France didn't include it until 1881.

A free and independent press is often characterized as the key mechanism of a functioning and salubrious democracy. This is the case for all countries that have had an authoritarian or totalitarian regime antecedently and have broken out towards democracy.

Eastern European countries like Romania, Poland that were a component of the Eastern Soviet Bloc or Spain under Franco's regime are all examples of incipient democracies and giving way to freedoms, such as the press.

When censorship is absent in a state, journalism is present and subsists as a watchdog for private and regime action, mostly providing information and maintaining an apprised population.

Therefore, regime efforts to endeavor and influence any published or broadcasted news content, whether it is by media control or by inflicting self-censorship represents a great threat to the access of consequential and indispensable information and of course, affects the quality of the democracy in place. Independence of the press is a way to increase political erudition, participation and voter turnout and acts as a consequential and essential driver of civic participation in all matters regarding the country.

With all of this being said, we can indeed notice that there is a certain power here. The press can shape opinions, give new ideas and new ways of thinking to the masses. We might as well say that the press is a weapon to direct people. And with the current situation that we live in, with the presence of fake news, propaganda in some authoritarian countries and the hard job that a journalist has to bring out the truth, the press nowadays is embodied in our daily lives and will be for as long as we exist. It makes the subject of the study an important topic that must be understood and analyzed.

However, we do find irregularities in certain cases which we will bring up, that have marked history and made regimes rethink how to loosen the prehension of the press and give it its consummate freedom. We will be defining the model of press liberation and what it consists of to determinately be able to answer whether we can consider that the media has taken a more sizably voluminous impact in our society in the past 50 years and if we can definitely, consider it as a 4th power to be included or not.

Freedom of Press Around the World

Based on Reporters Without Borders, we can estimate that a third of the world population lives in countries where the freedom of press does not exist. These countries either have no democratic regimes or have major deficiencies in their democratic process. One of the reasons for these deficiencies can be corruption or a divided regime in which a part of it does not want to proceed in the democratization.

Countries that first come to our mind are North Korea, China and Russia. The first two are amongst the last countries to have the one-party system with the Communist Party ruling. In Russia, Putin's authoritarian regime restricts freedoms in order to hold on to power and not lose grip over the

country he has been president of since 1999. But many other countries remain in the same situation as the first three, mostly found in Africa, Asia and Latin and South America. These countries are located in war zones, conflict areas, suffer from civil wars or armed rebel groups and may have encountered precedently and may still be military regimes.

Since the press is a major threat to these regimes, its access is basically controlled and reflects the importance of their existence. News organizations are state-run, therefore the information given out through the ways of communication is mostly propaganda. Negative aspects will be hidden behind the some positive or made-to-be positive aspects of the regime.

For example, North Korea would only showcase what a strong army it has, with military parades on TV and daily news about what Kim Jong Un, the leader of the country has done.

To keep everything under control and the political base, brutal ways are used by the government: police, military and agencies keep journalists from challenging them on the different political, economical and social issues of the society. Intimidation is very common accompanied by threats, jail sentences and blacklisting. Other serious cases included torture, kidnapping which may lead to death in many known stories.

Several famous stories about journalists being abducted and murdered are The Lira Baysetova case in Kazakhstan and the Georgiy R. Gongadze case in Ukraine. Many more have followed in the last 10 years, including during the Arab Spring or the famous Jamal Khashoggi case. For simply using the wrong word in Nepal, Eritrea, and mainland China, journalists may spend years in confinement, labour camps and jail.

However, with the advance of social media and the internet, these cases are often reported and studied to judge the caliber of press freedom in each country. ONG's like Reporters Without Borders studies in each of these countries the numbers that come up, including deaths, jail sentences, harrassements and expulsions. State monopoly on the means of communications are also an important factor to study, which would automatically indicate to us that there is censorship and difficulties encountered by journalists to perform their duty.

The CPJ, Committee to Protect Journalists tracks down all of these injustices too, using its correspondents and local journalists. It later shared the amassed information to international press organizations such as the network of the International Freedom of Expression Exchange. Every incident is studied and investigated with a full report to know the story and finally denounce any mistreatments and breaches of freedoms.

Freedom House, another independent organization, studies the political and economical spheres of the countries in question to have a report on whether journalists are obstructed and how freedoms are neglected. After making the assessments, three categories are given: free, partly free or not free press.

Although all of these organizations are working everyday to denounce what happens around the globe, it remains a hard mission. With the help of journalists, activists and social media which mostly shares pictures and depictions of the dangers of being a journalist and reporting the truth in authoritarian regimes, change is being made as people now are aware of the breaches of freedoms. But these breaches and infractions continue to rise, as the danger of reporting is as well.

These regimes will not tolerate the loss and cannot risk giving out journalists the freedom to exercise their duty to the detriment of what they hold in tight hands, which is their power and their so-called legitimacy, broadcasted on state-run news.

In their case, the holding back of the power of the press and what it can actually prove to denounce them and ridicule them is a very important key to their survival and continuity.

In the developed countries, it is the complete opposite where freedoms are sacred and cannot be disposed of, as proven by their history and fight for freedoms.

The Perception of the Press in Recent Years

Press freedom continues to be in decline in the world, as well as in democratic countries for the last few years. According to the World Press Freedom Index by Reporters Without Borders, the number of countries where the freedom of press is respected has gone down drastically and journalists are meeting more obstacles in doing their job, making it less safe than it was before.

The press freedom in the U.S was declared as problematic, a first in its history. Concerns are increasing in other parts of the world about the threats and hate against journalists.

This is mainly fuelled by politicians, who use extreme language in debates, accusing them of scapegoats and liars. Consequently, this ignites violence against journalists which they meet in their everyday professional lives.

Authoritarian regimes continue to hold a large hand on their local media based on Freedom Index reports. Europe continues to be the first continent that guarantees press freedom even though it is also decreasing. Reports are coming where journalists are obstructed from doing their work, being the targets of pressure and intimidation.

A phenomenon grew in Europe, precisely in France where politicians threaten and insult journalists. Jean-Luc Melenchon, leader of La France Insoumise (France Unbowed), stated that it was healthy and just to hate journalists.

According to the World Press Freedom Index, out of 180 countries, 140 made journalist's presence and freedom difficult and problematic and only 30 with good media presence.

Of the countries that saw their ranks drop are the U.S, Venezuela, Brazil, Iran and China. The last one is found to be problematic, since their government interferes massively on the local and international level with propaganda.

The U.S found itself with these countries that dropped ranks due to the attack on the Capital Gazette paper in Maryland, where five members of the paper's staff were shot down by a man. Again, we can also talk about the fact that Trump, just like President Jair Bolsonaro of Brazil, characterizes any information that criticizes them as misinformation and fake news.

Saudi Arabia also finds itself in the bottom after the killing of Jamal Khashoggi. A Washington Post columnist and longtime critic of the regime, he was killed in October 2018 at the Saudi Arabia embassy in Istanbul. This resulted in the ignition of global concerns over deteriorating press freedom in the country. Political leaders repeatedly take down and criticize the work of journalists, assuming that the media is just pushing an agenda whenever they hear something that displeases them.

Les Nouveaux Chiens de La Garde by Serge Halimi, published in 1997 and updated in 2005, deals with modern journalism with the same reverence in front of their bosses, money and power. Today, press, television and radio journalists comply with politicians, large industrial groups or even the market. As the author emphasizes, they are dependent on it, almost all the major private television or radio news channels from Le Monde and TF1 are run and subsidized by large industrial groups. meaning that almost all these media must bow to their shareholders to hope to exist for a while. But it is not only a question of money. And it's hard to believe in the objectivity and critical thinking of a journalist who feels important and powerful when backed by politicians as depicted in the book.

The market also plays its part and creates a journalistic world of unique thought, all of us repeating the same often derisory information, the same opinion, a kind of national manipulation.

Serge Halimi presents his analysis of what he considers to be a collusion between media, political and economic powers. He also intends to dismantle the sometimes partial and obliging treatment of certain French media towards the companies which are their shareholders. He also explains the lack of attention that he says is made of social movements, and the preponderant place of various facts in television news. He takes up the thesis according to which the news is a diversion.

In 2020, Reporters Without Borders have declared that 50 journalists have died this year as a result of their work, a number which has been in decline for 10 years. But although this seems like good news, 50 is still a consequent number and is aggravated by the global decline of press freedom. And behind this number, we can conclude that two-thirds of these journalists died in countries which are not engaged at war with other countries.

For the case of Mexico, it remains with the highest tally, having 8 dead journalists, a consequence of the war on drugs and cartel conflicts along with internal issues.

But if we look at Syria, the country has taken more than 600 journalists and correspondents alone, making it one the deadliest areas for them in this last decade according to the Syrian Network for Human Rights.

Conclusion

During the Corona pandemic that struck the globe, many countries passed emergency laws that consequently limited temporarily press freedom. Some were added in common law, and therefore limiting press freedom.

Emprisonnement wise, 387 journalists were jailed in 2020 with 117 from China alone. It is a direct result of the whistleblowing when the Corona pandemic started in the country, the Ouigours controversy but also the Hong Kong protests.

The consequence of these death tolls and restrictions to journalists to perform their duty safely weakens the right to information but not the power of the press. They actually reflect that there is something that needs to be done in order to avoid these numbers and manage the flow of free press around the globe. 2020 has seen how much information is valuable to the world.

References

Rudenstine, D. (1996). Day the Presses Stopped: A History of the Pentagon Papers Case. University of California Press; First Edition.

Thompson, J.B. (2000). Political Scandal: Power and Visibility in the Media Age. Polity Press.

(https://cpj.org/reports/2020/12/record-number-journalists-jailed-imprisoned/, article by CPJ about the record of imprisoned Journalists in 2020)

(https://rsf.org/en/ranking)

Research Focus

An International Open-Access Scientific Journal for Students and Graduates Research

Vol. 4, Issue 1, 2022

Editors:

Ovidiu Folcut

Victoria Folea

ISSN: 2668-4675

www.researchfocus.org