الاتحاد العربي للنقابات

ARAB TRADE UNION CONFEDERATION

The Impact of Climate Change on Labour Market in the Arab Region

Moving Towards a Just Transition

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Abreviations

AFED	Arab Forum for Environment and Development
COP21	Paris Conference of the Parties
COP22	Marrakech Conference of the Parties
CSP	Concentrated Solar Power
ETUC	European Trade Union Confederation
EU	European Union
GCC	Gulf Cooperation Council
GHG	Greenhouse Gases
GDP	Gross domestic product
ILO	International Labour Organization
ITUC	International Trade Union Confederation
MDGs	Millennium Development Goals
MENA	Middle East North Africa
NDCs	The Nationally Determined Contributions
SDGs	Sustainable Development Goals
UN	United Nations
UN- ESCWA	United Nations Economic and Social Commission for Western Asia
VNR	Voluntary National Reviews

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EXECUTIVE SUMMARY

Executive Summary

1.1 Background

This study presents the findings of preliminary investigation into the impact of the climate change on labour and labour market in the Arab region. The study was conducted by Manafeth Consulting and Training, on behalf the Arab Trade Union Confederation (ATUC), with the support of the International Labour Organization (ILO). The study has an important caveat as it attempts to shed light on climate change implications in relation to labour in the Arab region, where data is scarce, unavailable, or outdated. Moreover, it is hoped that this study will pave the way for further research investigations in this important field of inquiry to enable workers' organizations such as ATUC, and their members, the effectively participate in social dialogues, particularly those relating to workers and their "Just Transition" to green low carbon economies.

1.2 Setting the Stage

Climate change will have a significant impact on the Arab world in the future.

High temperatures, hazards to coastal areas, increasing drought severity and desertification, and water shortages are only a few of the negative consequences. Although the total emissions in the Arab region are relatively low in comparison to large and advanced, industrialised economies, the region's domestic carbon footprint is on the rise, particularly in the GCC economics (e.g., Qatar). Furthermore, the temperature in several Arab countries is rising at a faster rate than the world average. Extreme heat waves, for example, have been documented throughout the Arab world, with Kuwait recording the world›s highest temperature.

The impact of heat extremes on incomes and food access in the Middle East North Africa (MENA) region has the potential to diminish labour activity and harm vital economic sectors if temperatures continue to rise.

Between 2010 and 2030, the percentage of the workforce in most MENA countries is expected to be particularly affected by declining productivity estimated between %20-10. The situation in the Arabian Peninsula is even worse, where the rate is predicted to reach %40-15.

Temperature extremes will have the greatest impact on manual workers. This might lead to lower productivity (about a %60 drop), especially in coastal areas where heat stress is expected to increase across the Arab region.

As a direct effect of climate change, the Arabian Peninsula, in particular, might see temperatures climb beyond human tolerance in some regions.

Working-hour losses are another factor to consider when it comes to heat stress and its impact on productivity.

Heat stress is expected to have a greater impact in the future, with predictions that %1 of total working hours will be missed owing to heat stress in 2030, corresponding to roughly 618,000 full-time jobs. Even if adequate climate change mitigation measures are taken, it is anticipated that a rise in temperatures induced by climate change will result in the loss of 72 million full-time jobs by 2030 due to heat stress.

Climate change has far-reaching negative effects that are disproportionately affecting women. Women are more exposed to the consequences of climate change, which can limit their ability to adapt, leading to greater gender disparities. As a result of natural disasters or conflicts, this impact could, for example, increase maternal mortality connected to heat stress and gender-based violence.

Climate change has numerous economic ramifications.
The economic impact is predominantly concentrated in industries that employ considerable numbers of outdoor workers operating in moderate to heavy jobs or non-climate-controlled environments such as offices and factories. The impact is also measured from a macro-level perspective using gross domestic production (GDP) indicators.

Among the challenges that Arab countries confront in addressing climate change is the lack of or limited nature of systematic observation of climate-related variables. Another issue is a lack of knowledge or awareness of effective activities and climate change resilience-building strategies among national leaders and the general population.

The importance of trade union participation in the governance of the policy-making process has been emphasised in policy and research agendas all around the world (e.g., Paris Agreement preamble).
However, in reality, the role of trade unions is yet to gain traction and requires further improvement. The degree of trade union engagement (e.g., in consultations on climate changes), which is usually linked to the national culture of social discourse and might vary depending on the political context and accompanying circumstances, can explain some of the limits that trade unions encounter.

While climate change is well-known worldwide, the concept of a Just Transition is only now gaining traction.
One of the initial challenges for trade unions in many developing countries is explaining to workers what Just Transition is, how it can be achieved, and what benefits it delivers, especially when good, organised jobs are at stake. Moreover, although being aware of climate change, several trade unions have yet to prioritise transitions among their primary priorities.

When examining the issue of just transition, a number of challenges are regarded barriers to just transition. These include: lack of or limited social dialogue, systematic violations of fundamental human and labour rights and lack of an enabling environment for social dialogue, high unemployment and informality, and lack of social protection. **The challenge for the Arab region is even greater. Ranked as the worst-affected region in the world for workers' rights in 2021, the Middle East North Africa (MENA) region, face a host of systematic barriers such as establishing or joining trade unions, or even the right to strike. Such issues have the potential to undermine trade unions efforts to address climate change and hinder its path to progress towards just transition.**

1.3 Key Recommendations

The following proposed strategies, drawn from ILO and trade unions literature, represent ways in which the Arab Trade Union Confederation could utilise in promoting just transition:

- Develop and support capacity-building initiatives to enhance knowledge in the areas of just transition and climate change-related issues. ATUC members must possess the necessary knowledge and expertise to ensure full and active participation in social dialogue. In this regard, ATUC could work closely with development actors in countries where they operate to apply for or increase capacity building programmes (whether in-person or online), such as training, on just transition and climate change issues, including programmes that strengthen negotiation skills. Moreover, training topics could also focus on key sectors relevant to the Arab region such as energy, agriculture, ecotourism and waste management. Additionally, it is recommended to devise training programmes and initiatives that deals with gender equality to enable women to move from low-skilled and entry-level occupations to high-skilled jobs, thereby improving their livelihoods and independence.

- **Call for incorporation of just transition strategies in national environmental agenda and climate change action plans.** Supporting the inclusion of a just transition provisions in policies and plans that that aim to achieve Sustainable Development Goals, including NDCs, means lobbying for policies that incorporate social, economic, and environmental considerations into the development of GHG emission reduction strategies.

- **Form alliances with organisations (national and international) with shared objectives, including with environmental organisations.** Trade union alliances, such as those with environmental organisations, have shown to be fruitful. To address the complexity of climate change, it is vital for ATUC to find common ground and perform joint analyses from various perspectives. For example, as Human Rights Due Diligence is gaining traction and popularity, it could be used as a tool for mapping supply chain improvement requirements, particularly those linked to environmental impact reduction. Setting measurable goals that incorporate human rights and environmental standards could be a useful tool for charting progress in just transition. Such activities could be coordinated with a variety of in civil society players, including external research institutes and think tanks.

- **Conduct country-specific studies on green jobs in the Arab region.** Given the fact that each country has its own unique challenges and needs to address the most affected key sectors and skills needed for the transition to green economy, specialised studies on green jobs are required. Unfortunately, in the Arab region there is a scarcity of information on green jobs in the region. For example, the ILO produced 22 studies on skills for green jobs , of which, the only country examined in the Arab region was Egypt. Hence, there is a need for ITUC to collaborate with ILO to include other countries in the region.

The list of country studies can be found at https://www.ilo.org/skills/inst/WCMS_144268/lang--en/index.htm

INTRODUCTION

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2 Introduction

2.1 Background

Climate change, defined as **the shift in climate patterns mostly by greenhouse gas emissions from both natural systems and man-made activities**, poses substantial challenges to long-term development, with considerable repercussions on economic growth, employment, health, and livelihoods. Infrastructure will be harmed, business activity will be disrupted, and jobs and livelihoods will be lost on an unprecedented scale due to uncontrolled climate consequences. Nevertheless, transitioning to a low-carbon, environmentally sustainable economy and society, on the other hand, can be a powerful driver of job creation, employment upgrading, social justice and poverty alleviation, paving the way for climate-resilient economic growth and sustainable development. As such, there is mounting evidence that the number and quality of new jobs will compensate for the number of job losses resulting from the transition. Yet, to ensure a positive impact in the labour market, there is a need to define and implement specific policies for job creation, skills development and upgrade, long-term sustainable enterprise development, social protection, workplace rights, and social dialogue.

According to ILO, there are at least three crucial aspects to consider when attempting to understand the relationship between work and climate change:

- **Jobs rely on ecosystem services both directly and indirectly** (e.g., jobs in agriculture, fisheries, forestry and tourism). Many of these essential services (for example, freshwater supplies, biodiversity, storm protection, and stock renewal) are threatened by climate change, which harms the economic activities and jobs that rely on them. A decrease in labour productivity is one of the negative consequences.

- **Jobs and good working conditions largely depends on the absence of environmental risks** (e.g., storms and air pollution) and the safeguarding of environmental stability (e.g., ensure temperatures stay within a specific range and predictable precipitation patterns). The rising temperature and variability in rainfall as a result of climate change, could make entire regions unproductive and workplaces unbearably hot, resulting in climate-induced migration (i.e., People shift as a result of rapid or gradual changes in the weather or climate), the rapid increase of precarious employment (e.g., jobs of limited duration and low wages) and informal work, and proliferation in unemployment.

- **The risks and hazards linked with environmental deterioration are likely to affect vulnerable workers the most.** These include women, migrant workers, people in poverty, indigenous and tribal peoples, persons with disabilities, and other disadvantaged populations vary by country or region, creating and perpetuating inequality.

ILO. (March 2017). Addressing the Impact of Climate Change on Labour. P.1
ILO. (2018). The employment impact of climate change adaptation. Input Document for the G20 Climate Sustainability Working Group. P.14

Climate change carries a variety of threats, including economic and social losses, health and labour productivity losses, and forced labour migration. The interrelation of these and other forms of risks creates enormous challenges for decent work and social justice. Climate change has a significant influence on jobs in sectors with high levels of informality and a lack of quality work. Additionally, indigenous and tribal groups, residents of rural and coastal areas, women, and youth are all at higher risk.

Long-term climate change could diminish well-being by an amount corresponding to a global fall in per capita consumption of between %5 and %20 under a business-as-usual scenario. Tourism, agriculture, construction, forestry, energy, transportation, fisheries, and biodiversity are among the economic sectors most affected by climate change. **Collectively, they employ over half of the world's workforce. Agriculture alone employs 1.3 billion people, or about %40 of the global workforce, the majority of whom are poor.**

When examining occupational safety and health, climate change will directly impact, for example, due to temperature change. Excessive workplace heat is a case point and is regarded as an example of an occupational health threat. High body temperature or dehydration can result in heat exhaustion, heatstroke, or in the worst-case scenario, can cause death. **Climate change alone is expected to be causing hundreds of more extremely hot days for more than 1 billion workers per year.**

The transition towards a low-carbon economy will impact every facet of making goods, providing services, travelling, and consuming. Paris Conference of the Parties (COP21) was a watershed moment in history. Nations pledged to change their development paths to keep global warming to 1.5 to 2 degrees Celsius over pre-industrial levels by 2100. These pledges are set out by each country's Nationally Determined Contributions (NDCs), which countries are required to submit every fifth year, as part of a mechanism to raise the ambition levels of their GHG emissions, including the United Nations Sustainable Development Goals 2030 Agenda (SDGs). These developments are significant to the Arab world, a region defined as the world's most water-scarce and food-import dependent region. Climate change (notably droughts) is causing even more socioeconomic vulnerability.

2.2 Problem Statement

Even though climate change and its mitigation strategies will undoubtedly impact the production process and thus on employment, research inquiry into this particular area is limited. While much research has been done on technology solutions and macro assessments of the effects of environmental policies on employment, trade unions have been largely neglected as one of the most critical social players in the production process. Additionally, studies on the environment have generally overlooked labour issues, whereas climate change issues have received minimal attention in labour studies.

ILO. (March 2017). Addressing the Impact of Climate Change on Labour. P.1
Ibid. P.1
Ibid. P.1
Ibid. P.1
Ibid. P.1

Within the context of the Arab region, although climate change and environmental sustainability directly impact labours and their well-being, these issues received scant attention from various actors in the region, such as the Arab Trade Unions. In this regard, the unions have not devoted enough effort to identify and understand the labour›s underlying challenges due to climate change.

2.3 Purpose of the Report

The study has two-fold objectives: it investigates the impact of climate change on the labour market in the Arab region. It examines the potential role of Arab Trade Unions in promoting awareness and mitigating the effects of climate change on workers› lives. In doing so, the following questions guided the study:

- In which ways climate change affects workers and the labour market?
- How are the economic sectors in the Arab region affected by climate change?
- How can raising awareness of these issues be better promoted among unions at the regional level?
- What can unions do to minimise the negative impacts of these challenges on the lives of workers?

2.4 Methodology

The research in this study is primarily based on extensive literature review of several relevant studies and report on climate change from sources that include the United Nations (UN), International Labour Organizations, journal articles, and reports produced by the international trade unions.

2.5 Study Limitations

The study's limitations include the fact that climate change data on the Arab region is either old or scarce, particularly when examining the impact of climate change on labour in the region, including studies on "just transition," and green jobs. The implications of such limitations may hinder the ability of trade unions in the Arab region to understand of dynamics of climate change and how to respond from a worker's perspective accordingly.

2.6 Structure of the Study

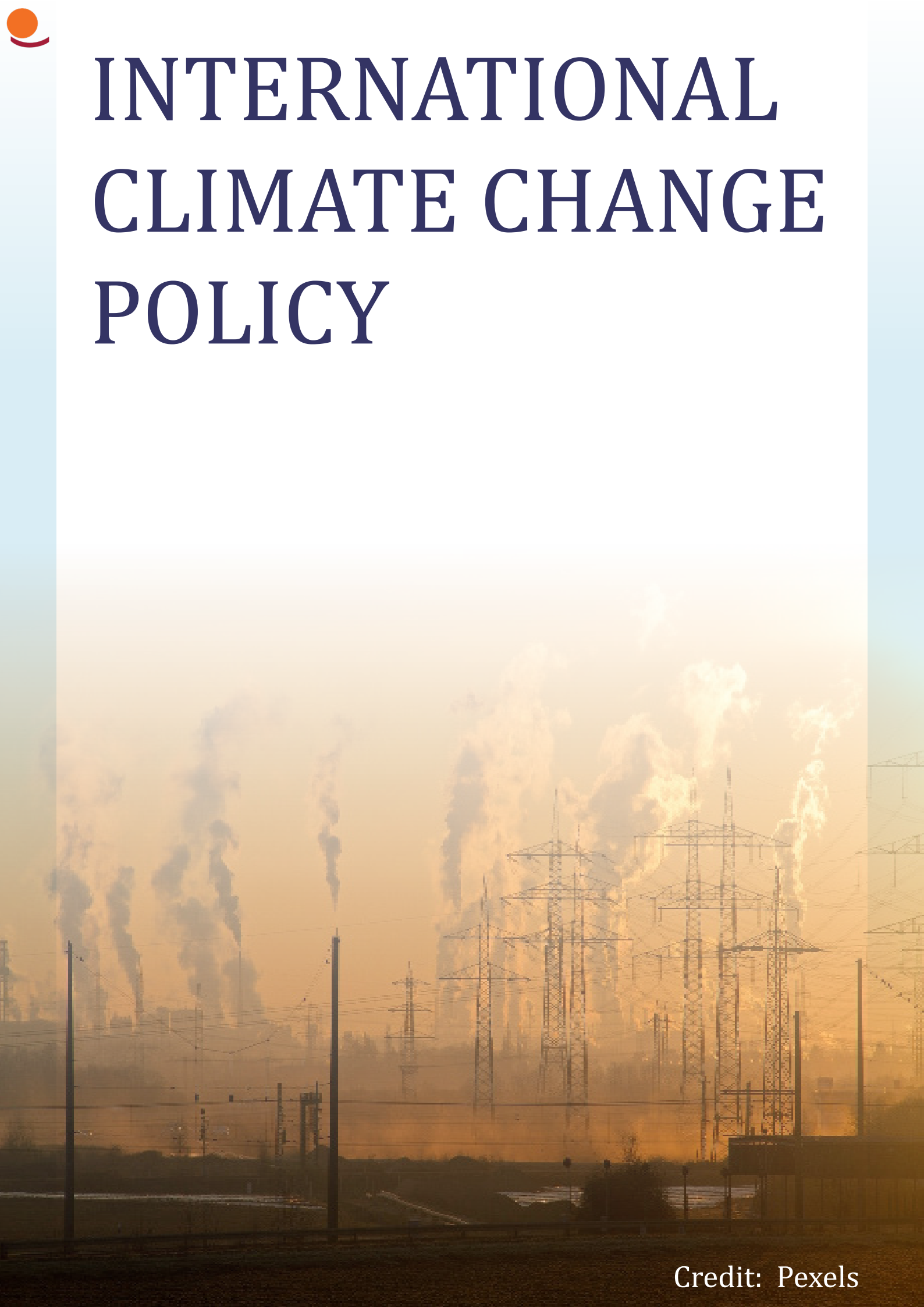
The study is structured along with four main chapters: The first chapter, following the introduction, examines the international climate change policy by offering some background information on the Paris Agreement (COP21), the Marrakech Agreement (COP22), and the United Nations Sustainable Development Goals 2030 Agenda (SDGs). The second chapter looks into two key concepts related to climate change and labour which are "Just Transition" and "Green Jobs." While in the third chapter, the study will investigate the impact of climate on the Arab region in terms of labour and affected economic sectors. Finally, in the fourth chapter, the study explores relationship between trade unions and climate change.

For the purpose of this study, the Arab region is defined as Algeria, Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, United Arab Emirates, West Bank and Gaza, and Yemen.

Rothwell, N., & Ouzel, D. (2011). Trade unions and climate change: The jobs versus environment dilemma. Global Environmental Change, 1223-1215 ,(4)21. P. 1215

Ibid. P. 1215

INTERNATIONAL CLIMATE CHANGE POLICY



Credit: Pexels

3 International Climate Change Policy

3.1 Introduction

It is vital to look at the world›s interest in workers› rights and the green economy to understand how climate change affects the labour market and how to create sustainable green work. In this section, two specific policy frameworks will be presented: the Paris Agreement (COP21), the Marrakech Conference (COP22), and the United Nations Sustainable Development Goals 2030 Agenda (SDGs). However, before examining the two frameworks, a brief introduction about the importance of climate change and labour rights will be presented.

3.2 Historical Background

In the nineteenth century, the international community took significant action in the field of labour rights by establishing 188 conventions to protect the rights of all workers. The rights covered equality, non-discrimination-based gender, and rights concerning climate change. The latter aspect, for example, covered themes such as environmental pollution and hazardous substances that cause various health, social and ecological adverse effects. In addition, the conventions covered a range of issues that included working with dangerous substances such as chemicals, radiation, asbestos, fuels, and wool contaminated with anthrax in different work environments (e.g., sea, agriculture, industry, construction, etc…). For instance, the conventions banned white lead in paint and limited working hours in coal mines and mining areas. Additionally, countries addressed the required social policy and economic development to achieve social welfare and set standards to protect workers' rights in formalising, organising, and joining associations.

is that most NDCs adopt a technical approach, focusing on identifying climate policy goals, with only a passing mention of "just transition", if at all. Even for a detailed presentation such as the European Union's NDC, this aspect is only included under the heading "creating an enabling environment" with labour challenges referred to as "skills agenda."

ILO. (1985). C111 - Discrimination (Employment and Occupation) Convention, 1958 (No. 111).
ILO. (1986). C162 - Asbestos Convention, 1986 (No. 162).
ILO. (1919). R003 - Anthrax Prevention Recommendation, 1919 (No. 3).
ILO. (1921). C013 - White Lead (Painting) Convention, 1921 (No. 13).
ILO. (1931). C031 - Hours of Work (Coal Mines) Convention, 1931 (No. 31).
ILO. (1947). C082 - Social Policy (Non-Metropolitan Territories) Convention, 1947 (No. 82).
ILO. (1984). C087 - Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87).

3.3 The Paris Agreement and the Nationally Determined Contributions (NDCs)

The 2015 Paris Conference, reached at COP21 is a legally binding international agreement on climate change adopted by 196 parties. Its primary goal is to keep global warming considerably below 2, ideally to 1.5 degrees Celsius, in comparison to pre-industrial levels. To this end, countries aim to attain a global peaking of greenhouse gas emissions to establish a climate-neutral planet by mid-century. The agreement is regarded as a "landmark" in the history of the UN climate change multilateral negotiations. It brings all nations together for the first time in a binding pact to undertake ambitious efforts to mitigate climate change and adapt to its consequences.

The Paris Agreement affirms the need for a response that considers "the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities." In practice, this means that responses to climate change should prioritise the creation of decent jobs and provide social safety to everybody. Climate change negotiators are deliberating this aspect as part of the "improved forum on response measures," which investigates the impact of climate-change policy on challenges as employment.

The Paris Agreement and the accomplishment of its long-term targets are embodied in the Nationally determined contributions (NDCs). The NDCs represent each country's efforts to decrease national emissions and "adapt" to climate change effects. Governments decided in Paris to evaluate their efforts for the first time in 2018 and then use that evaluation to help them develop more ambitious NDCs by 2020, followed by a worldwide stocktake to be conducted every five years, starting in 2023. However, **an interesting observation made by the International Labour Organization (ILO)**

3.4 The Marrakech Conference of the Parties (COP22)

COP22, held in 2016 in Morocco, focused on the implementation of the Paris Agreement. The primary outcome document, the "Marrakech Action Proclamation: for Our Climate and Sustainable Development," sent a strong message of commitment for action on climate change and sustainable development, calling "for the highest political commitment to combat climate change, as a matter of urgent priority." Accordingly, countries such as Canada, Germany, Mexico and the United States declared long-term climate strategies up to 2050, intending to achieve climate neutrality and a low-carbon economy in the second half of the century.

From workers› perspective, the International Trade Union Confederation (ITUC) outlined its three top priorities for trade unions on international climate governance for COP22. The priority areas comprised of: (1) boost ambition and harness climate action's job-creating; (2) deliver on climate financing while supporting the most vulnerable; and (3) ensure that workers and their communities have a just transition. These priorities embody ITUC's global call, which affirmed that "unions demand of their governments and employers the dialogue that will see a national plan for decarbonisation, clean energy and jobs – a plan that includes commitments to ensure a just transition for all."

UNFCCC. (2020). The Paris Agreement. https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement

United Nations. (2015). Paris Agreement. P.2

International Labour Organization. (2018). Just transition towards environmentally sustainable economies and societies for all. P.4

United Nations Climate Change. Nationally Determined Contributions (NDCs). https://bit.ly/3BXzgq

ILO. (2018). Just transition towards environmentally sustainable economies and societies for all. P.4

Ibid. P.4

Ibid. P.4

3.5 Climate Change Impacts on Work and The United Nations Sustainable Development Goals 2030 Agenda (SDGs)

Work is an essential aspect of social and economic development at all levels: at home, in the neighbourhood, in the country, in the region, and across the globe. Through policies and actions in families, communities, and businesses, global development objectives provide an opportunity to examine and investigate the connections between work and other development concerns. For example, the 2015-2005 Millennium Development Goals (MDGs) incorporated labour productivity as a measure of progress for extreme poverty (MDG1). However, the main poverty lag zones, which also correlate to the regions most impacted by climate change of labour, showed extremely minimal progress in achieving the MDG1 labour productivity indicator.

Despite the fact that the United Nations 17 new Sustainable Development Goals (SDGs), adopted in 2015, represent the international community's primary development objectives, according to the United Nations Development Programme (UNDP), the impact of rising workplace temperature will continue to post multi-faceted challenges for many of the new global SDG goals, particularly the eight goals related directly to incomes, family health and nutrition, inequalities and jobs, community sustainability and climate change. Table 1 presented below highlights the critical challenges for each of these goals.

UNFCCC. (2016). Marrakech Action Proclamation: Our Climate and Sustainable Development. https://bit.ly/3E9OnPh

ILO. (2018). Just transition towards environmentally sustainable economies and societies for all. P.5

ITUC. (2016). Trade Unions and Climate Change ITUC Contribution to UNFCCC COP22.

ITUC. (2015). ITUC Response to Paris Climate Summit Conclusions. https://www.ituc-csi.org/ituc-response-to-paris-climate

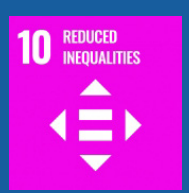
United Nations Development Programme. (2017). Climate Change and Labor: Impacts of Heat in the Workplace. https://www.undp.org/publications/climate-change-and-labor-impacts-heat-workplace. P. 23

Ibid. P. 23

Ibid. P. 23

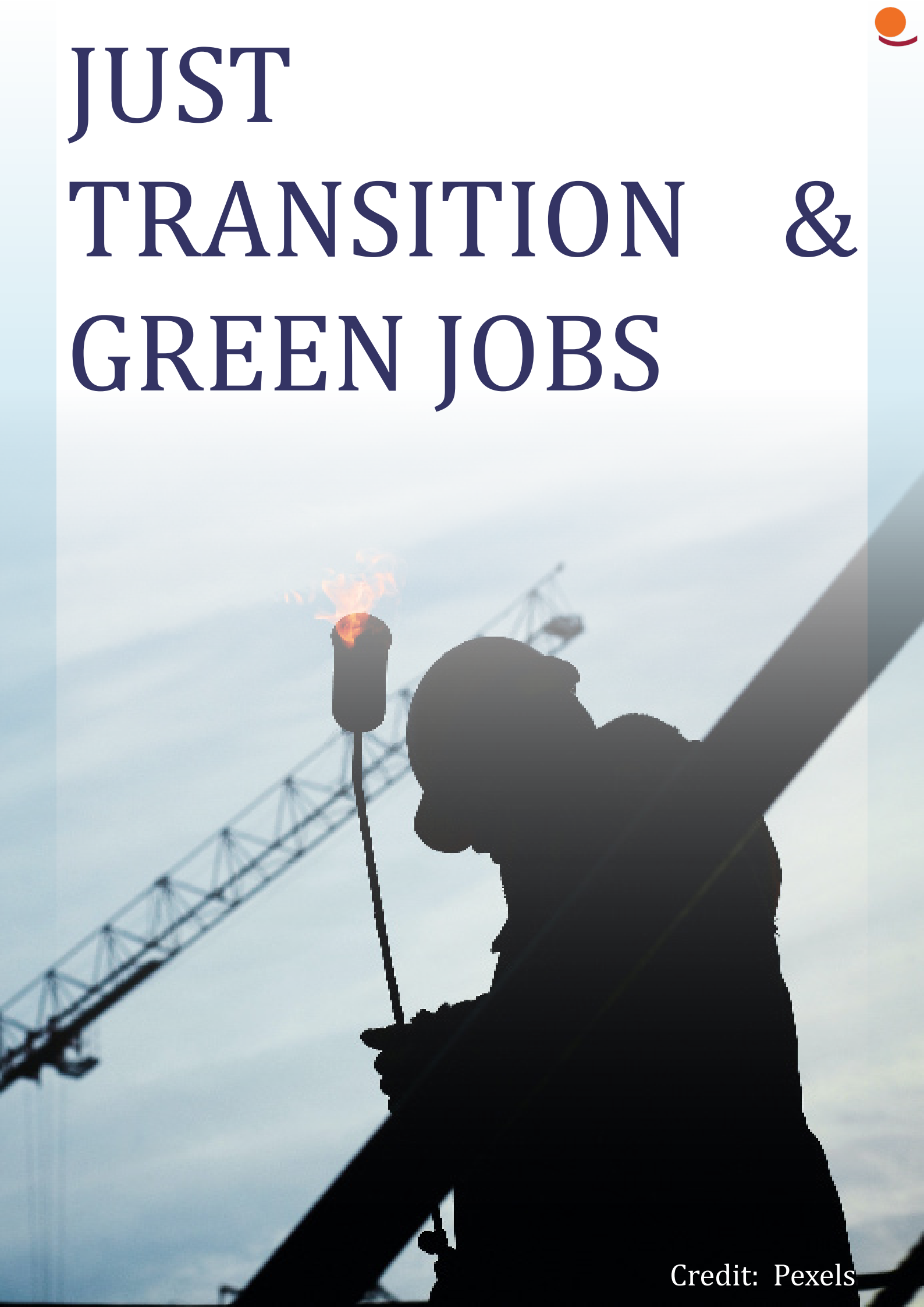
Ibid. P. 23

Table 1: Climate Change Impacts on Work and SDGs

Goal	Climate Change Rising Workplace Heat Impact
	The lowest-income groups, particularly agricultural sector workers and small-scale and subsistence farmers, are worst affected in tropical and sub-tropical developing countries.
	Impacts for small-scale and subsistence farmers curtailing available work hours and outputs will likely affect household food security.
	Large-scale exposure to heat injury and health risks such as heat stroke, exhaustion and even death will frustrate efforts to improve health. Migrants can be especially vulnerable to health risks as they may not have access to health care and occupational safety and health services in their destination country.
	Heat-exposed students and teachers are less likely to access and provide quality education and learning.
	Many heat-exposed occupational functions involve women, especially in developing countries, and pregnancy risks heat exposure. Men and boys are at risk as they often perform the heaviest loaded outdoor work in industries like agriculture and construction.
	New heat extremes make it more difficult for international standards and guidelines for occupational health and safety of workers to be respected, and economic consequences are enormous in scale.
	High-income temperate regions are much less affected than tropical and sub-tropical developing regions, which counteracts global improvement efforts.
	Heat extremes will challenge the built environment (houses and workplaces) and its sustainability, while heatwaves are most intense in urban areas.
	The impact of climate change on labour presents a large-scale challenge to climate resilience that has yet to be effectively recognised or addressed by international and national measures.

Source: Adapted from UNDP. (2016). P.24

JUST TRANSITION & GREEN JOBS



Credit: Pexels

4 Just Transition and Green Jobs

4.1 Climate Change and Just Transition

The term "just transition" was coined in the 1980s by international trade unions. The term, which refers to "a fair and equitable process of moving towards a post-carbon society," became a call to action for promoting green jobs as a curial of the fossil-fuel transition, which entails the complete shutdown of several related industries (e.g., mining) and introducing green employment opportunities in sectors that include the energy sector. In this context, for both developed and developing countries, the approach must strive for fairness and equity regarding key global justice issues such as race, income and gender. Thus, the concept entails the creation of ideas, methods, and agreements to ensure all individuals and communities have a fair and equitable transition.

However, despite global efforts to address just transition, the reality remains far more complex. For example, several challenges persist in realising gender equality. In this respect, climate change-related issues, including actions that discriminate against women, can exacerbate such challenges. Women currently face enormous barriers to obtaining decent work, particularly while gender inequality between women and men remains evident in global labour markets regarding opportunities, treatment, and outcomes. According to the International Labour Organization's (ILO) estimates, women earn %77 of what men earn globally, and closing the wage gap will take up to 70 years if current trends continue. In the same vein, gender disparities in terms of the number and quality of jobs continue to be exacerbated by sectoral and occupational segregation.

McCauley, D., & Heffron, R. (2018). Just transition: Integrating climate, energy and environmental justice. Energy Policy, 7-1 ,119. P.1
Ibid. P.2
Ibid. P.1
Ibid. P.2
Ibid. P.2
ILO. (2016). Gender, labour and a just transition towards environmentally sustainable economies and societies for all. P.1
Ibid. P.1
Ibid. P.2

4.2 Climate Change and Green Economy

In the perspective of environmental sustainability, development involves shifting to a green economy, or one in which the potential to meet tomorrow›s demands is not constrained by today›s resource use, emissions, or waste. Accordingly, **a green economy is an economy that aims to improve human well-being and social justice while considerably decreasing environmental degradation and ecosystem decline.** Thus, it has a minimal carbon footprint, is resource-efficient and socially inclusive, defined by ecological stewardship and decent work. A green economy exemplifies the Sustainable Development Goals (SDGs) by promoting climate action, safeguarding life on land and below water, offering affordable and clean energy and advancing decent work and economic growth, among other aspects.

How employment will be affected by greening?

From a conceptual standpoint, as the economy is geared toward higher sustainability, employment will be impacted in at least four ways:

- Jobs will be created in some specific cases such in when pollution-control systems are added to existing manufacturing equipment.
- Some jobs will be replaced, such as switching from fossil fuels to renewables, or switching from truck manufacture to rail car production, or switching from landfilling and waste incineration to recycling.
- Certain employment may be lost without being directly replaced, such as when packaging materials are discouraged or forbidden, and production ceases.
- As day-to-day skill sets, work practices, and profiles are greened, it appears that many existing jobs (particularly those of plumbers, electricians, metal workers, and construction workers) will simply be transformed and redefined.

From a macroeconomic perspective, the transition to a low-carbon economy is predicated on having a minor but net beneficial effect on employment and economic growth in the medium to longer-term, following an initial cost. In this regard, many economic sectors will be affected, and new jobs will be created, particularly for firms working in the environmental field that will benefit from this transition.

ILO. (2018). World Employment and Social Outlook – Trends 2018. P38
Ibid. P.38
Ibid. P.38
Ibid. P.38
Renner, M., Sweeney, S., & Kubit, J. (2008). Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World: Report for United Nations Environment Programme. P.3
European Trade Union Confederation. (2018). Involving trade unions in climate action to build a just transition.P.16

For example, supporting investments in renewable energy and energy efficiency projects is anticipated to create jobs in industries that include basic manufacturing, engineering, transportation equipment, utilities, construction, and supply chains that support them. At the European Union (EU) level, the overall employment in "eco-industries" is projected to comprise %2-1 of total employment (equivalent to 4.2 million jobs). Furthermore, for a sector like renewable energies , the total employment globally (both directly and indirectly) in 2019 was estimated to be approximately 11.5 million people.

When looking at the Arab region, it could be observed that some priority sectors and occupations identified by ILO will be affected by the transition to a green economy. For instance, for the following table, based on ILO's study on green jobs , shows Egypt as an example from the Arab region, where key industries such as renewable, agriculture and manufacturing were identified as priority sectors to be affected by the green transition.

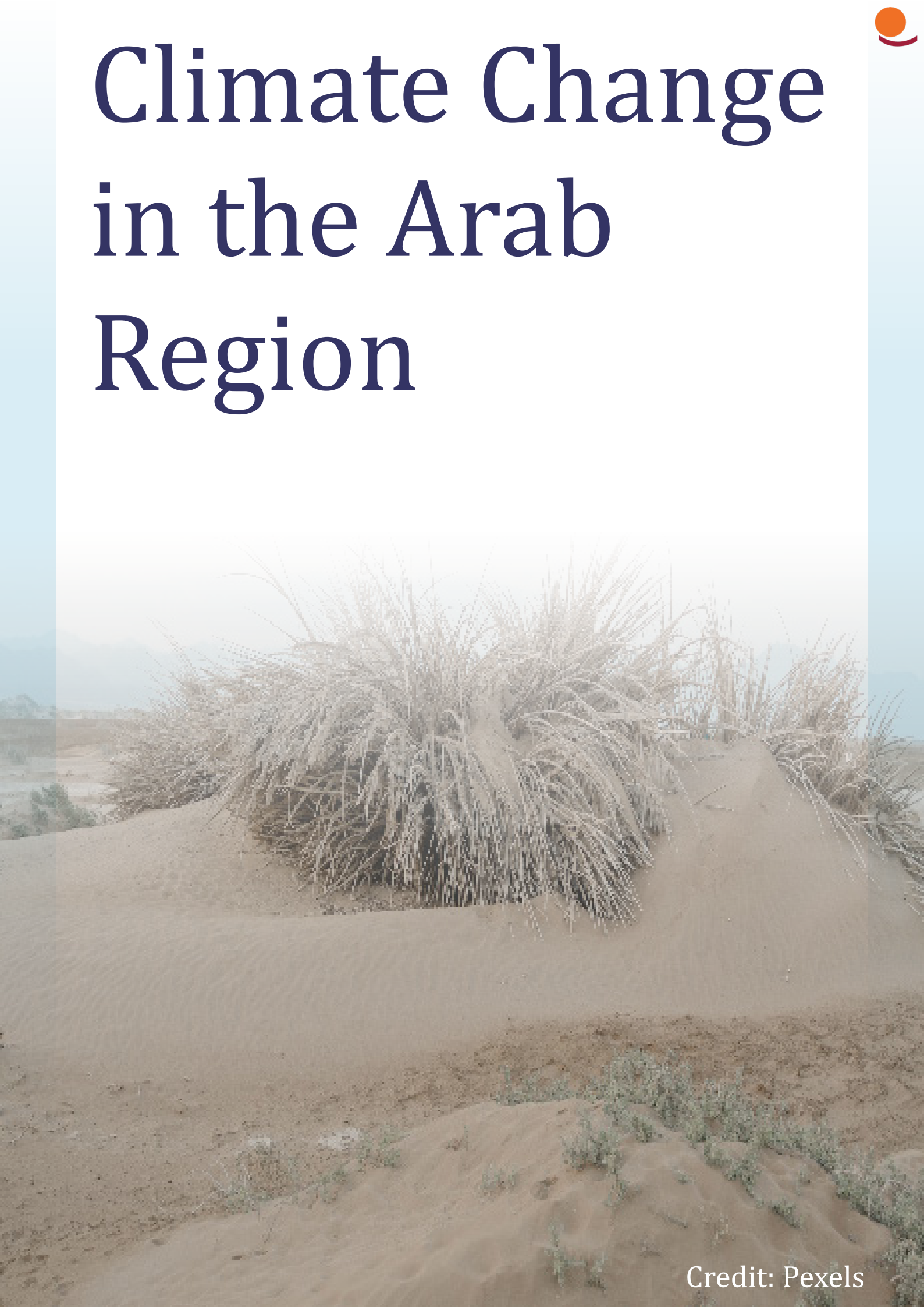
Table 2: Priority sectors and occupations affected by the transition to a green economy (Egypt)

Country	Sectors most relevant for the green transition	New occupations identified/ greening of old occupations (examples)
Egypt	Renewable energy/solar and wind energy, energy efficiency, waste management, agriculture, manufacturing/ leather	Solar installers, solar service technicians, solar plant managers, electricians with solar expertise, plumbers, HV AC technicians, wind turbine technicians, wind plant managers, quality engineers, energy efficiency managers, energy efficiency auditors, plant managers for cleaner production, CP auditors, technicians, supervisors, waste management specialists, organic farm auditors and certifiers, pesticide operators, machine operators (bio-fuel generators).

Source: ILO.(2018).P.136

Ibid. P1
Ibid. P.17
Ibid. P.17
These include technologies such as Solar Photovoltaic, Liquid Biofuels, Hydropower, Wind Energy…etc.
International Renewable Energy Agency: Annual Review. (2020). P.6
ILO. (2018). World Employment and Social Outlook 2018 – Greening with jobs. P. 136

Climate Change in the Arab Region



Credit: Pexels

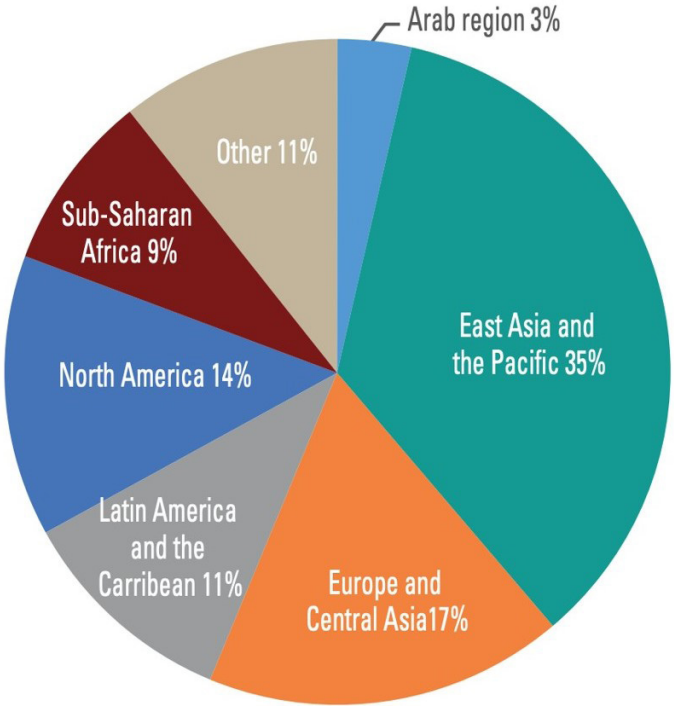
5 Climate Change in the Arab Region

5.1 Introduction

The Arab region is highly vulnerable to future effects of climate change. These negative impacts include high temperatures, risks to coastal areas, the rise of drought severity and desertification, and shortages of water resources. The over arid, arid, and semi-arid regions make up most of the Arab region. Water scarcity is vital in 19 of 22 Arab countries, while desertification and land degradation impact 17 countries. Additionally, the increasing urbanisation and population growth add further pressure on the region's deteriorating natural resources. The population of the Arab countries, which is currently estimated at around 407 million, with 100 million people living in poverty, is expected to grow to about 635 million people by 2050.

From the climate change perspective, although the total emissions in the Arab region are relatively low (see figure 1) in comparison to large and advanced, industrialised economies, the region's domestic carbon footprint is on the rise. For example, when examining the per capita emission rates, the GCC economies are classified among the highest per capita emitters globally, primarily due to their massive energy industry. Qatar is a case in point. The country, considered one of the region's largest emitters of GHGs, has experienced significant growth of over %800 in the total amount of methane emitted since 1990, owing to this to its considerable natural gas industry.

Figure 1:Total Greenhouse Gas Emissions by World Regions, 2012



Source: Adapted from ESCWA. (2019). P.104

United Nations Human Settlements Programme. (2019). Local Climate Action in the Arab Region: Lessons Learned and Way Forward. P.5
Ibid. P.5
Ibid. P. 7
United Nations Development Programme. (July 2018). Climate Change Adaptation in the Arab States: Best Practices and Lessons Learned. P.10
Ibid. P.10
ESCWA. (2019). Tracking SDG 7: Energy Progress Report 2019 – Arab Region. P. 104
Ibid. P.104
Ibid. P.104

5.2 Projected Change in Climate

In some countries of the Arab region, the temperature is rising more quickly than the global average. For example, extreme heat waves have been recorded across the Arab region, with Kuwait recording the world's warmest temperature. Furthermore, according to future forecasts, temperatures are expected to soar throughout the Arab region in this current century under a business-as-usual scenario. Climate model **projections suggest that temperatures in the Arab region are expected to rise by 1.9 °C–2.6 °C by 2065-2046 and 2.3 °C– 4.8 °C by 2100-2081.** In terms of the annual precipitation rates (i.e., any type of liquid or solid water particles falling from the sky), by the end of the century, the Arab region will be primarily affected by a decrease in average flows by 120-90 mm in coastal areas, primarily in the Atlas Mountains and upper Euphrates and Tigris basins. Nonetheless, according to the same projections, other regions, such as the south-eastern Arabian Peninsula and parts of the Sahel, will be experiencing increasing precipitation patterns. The projections also show that, in recent history, the highest recorded temperatures on the hottest days were around 43 °C on average, but this might rise to about 47–° 46 ° by 2065-2046 and approximately 50 °C by the end of the century.

5.3 Climate Change and SGDs in the Arab Region

Leaders in the Arab region attempt to restore stability and put the region back on a development path despite the risks posed by climate change and natural disasters. These constitute significant impediments towards achieving the SDGs, and the 2030 Agenda for Sustainable Development and its associated SDGs mark a watershed moment in global and regional development. Hence, realising the SDGs in an age of climate disruption is unattainable without countries and communities anticipating, shaping and adapting to this new paradigm shift.

5.4 Labour Market in the Arab Region and Impact of Climate Change

5.4.1 Labour Market Trends

In 1995, the Arab States employed around 20.4 million people, accounting for about %1 of the worldwide workforce. This percentage is expected to rise in the coming years, with more than 60 million workers accounting for %2 of the worldwide workforce by 2030. The following figure demonstrates the distribution of workers by major employment sectors (agriculture, construction, industry, and services) from 1995 through 2030.

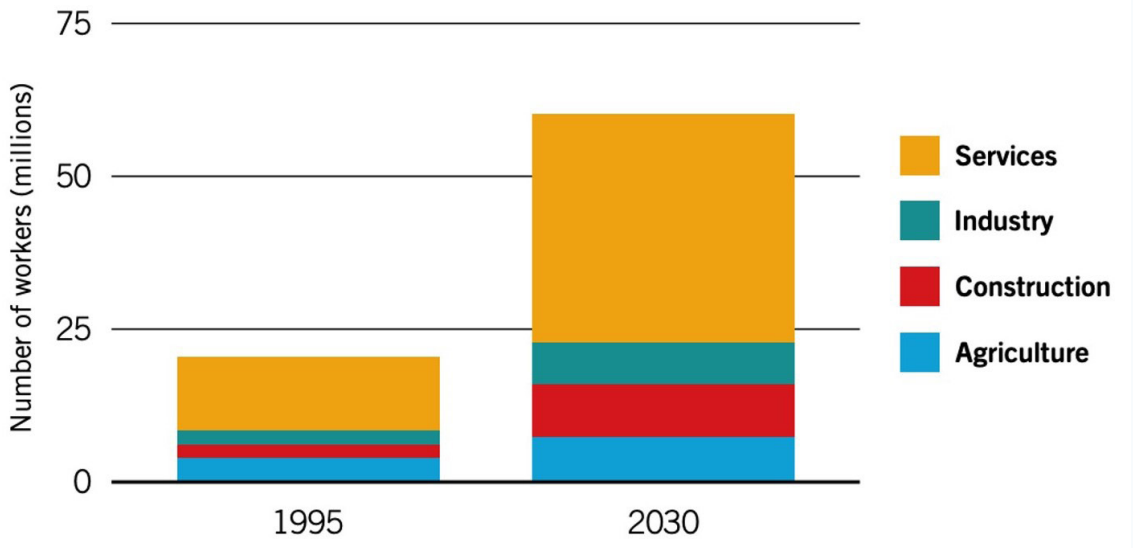
United Nations Human Settlements Programme. (2019). Local Climate Action in the Arab Region: Lessons Learned and Way Forward. P.7

United Nations Economic and Social Commission for Western Asia (ESCWA) et al. 2017. Arab Climate Change Assessment Report – Main Report. Beirut, E/ESCWA/SDPD/2017/RICCAR/Report. P.87

Ibid. P.87

Ibid. P.87

Figure 2: Breakdown of Total Employment by Sector in the Arab States, 1995 and 2030 (projections)



Source: ILO. (2019). P. 51

The majority of Arab workers are employed in the service sector. In 1995, the industry employed around 12 million people, accounting for %58 of all jobs. Except in Yemen, where agriculture accounts for %54 of occupations, services predominate across the region, especially in Oman (%84), Kuwait (%74), and Saudi Arabia (%74). Construction workers accounted for %11 of overall employment in 1995. The service sector is projected to grow further, reaching 62 per cent of total employment in 2030 (about 37.4 million workers). While jobs in Yemen are anticipated to shift towards services, the construction sector in neighbouring countries, namely Qatar and the United Arab Emirates, could become one of the most dynamic sectors in the economy. The construction sector is estimated to employ more than 8.6 million people by 2030, accounting for %14 of overall employment in the region, while the agricultural sector is expected to continue its declining trend, employing approximately 7.4 million people by 2030, or nearly %12 of the region›s total workforce.

When examining extreme working poverty in the Arab region, the conditions are highly diverse. For instance, extreme working poverty is non-existent in the Gulf Cooperation Council (GCC) countries, and vulnerable employment rates are relatively low, estimated at around %3 in 2017. However, migrant workers account for more than %50 of the overall population in four of the six GCC nations. The key labour market issue is primarily concerned

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Ibid. P.87
Ibid. P.99
United Nations Development Programme. (July 2018). Climate Change Adaptation in the Arab States: Best Practices and Lessons Learned. P.19-18
Ibid. P.19
Ibid. P.19
ILO. (2019). Working on a warmer planet: The impact of heat stress on labour productivity and decent work. P.50
Ibid. P.50
Ibid. P.51

with proper migration governance. Furthermore, most of these individual workers are employed in low-skilled industries, including construction and domestic services.

On the other hand, the proportion of workers in vulnerable employment has continued to rise, reaching %34.4 of the total employment in 2017. As a result, working poverty in non-GCC countries remains a significant concern. Around %18 of employees were estimated to be living in extreme poverty, with another %24.7 living in moderate poverty.

Finally, when examining the global share of jobs that rely on ecosystem services, the Arab region (see table 3) only accounts for %17 (the lowest percentage among all regions).

Table 3: Jobs Relying on Ecosystem Services, 2014 (in thousands)

Sectors	Examples of ecosystem services	Africa	Americas	Asia and the Pacific	Europe	Middle East	World
Most activity in the sector is related to biodiversity and ecosystem services							
Agriculture	Genetic resources and stock availability, freshwater, pollination, seed dispersal	217263	42600	670476	42108	4248	976694
Forestry		1634	1103	11866	2061	36	16700
Fishing		5118	2264	36491	603	252	44728
Food, drink and tobacco	Food, fibre and freshwater	3267	10470	46141	11083	510	71471
Wood and paper	Fibre, water purification and waste control	487	3605	7789	3694	126	15701
Renewable energy	Fibre for biofuels	123	292	1842	737	107	3101
Water	Freshwater supply, recycling, regulation, purification and natural hazard regulation	23	136	414	320	57	950
Most activity in the sector relies on biodiversity and ecosystem services, but they do not determine the nature of the sector							
Textile	Fibre, water purification and waste control	595	5409	39423	4263	165	49855
Chemicals	Genetic resources, biochemical diversity, freshwater	247	2254	10938	1388	<0.5	14827
Environment-related tourism	Food, freshwater, air quality, education, aesthetic and cultural value	2 282	7110	23081	4828	357	37657
Total by region		231039	75244	848461	71084	5856	1231684
Share of total regional employment		59%	17%	47%	16%	15%	40%

Source: ILO. (2018). P.21

ILO. (2019). Working on a warmer planet: The impact of heat stress on labour productivity and decent work. P.50
Ibid. P.50
Ibid. P.50
Ibid. P.50
According to ILO, "Extreme" working poverty is defined as those earning US1.25$ or less in purchasing-power-parity terms for themselves and their families
Ibid. P.50

5.4.2 Impact of Climate Change on Labour

5.4.2.1 Labour Activity

A critical feature of greenhouse-gas-induced warming is an increase in global-scale absolute humidity. Under such continued warming temperatures, the heat extremes impact incomes and food access in the Middle East North Africa (MENA) region has the potential to reduce labour activity and affect critical economic sectors. In most countries in the MENA region, the percentage of the workforce predicted to be particularly affected by decreasing productivity between 2010 and 2030 estimated between %20-10. The situation in the Arabian Peninsula is even more problematic as the percentage is expected to reach %40-15.

Manual workers will be most affected by temperature extremes. A study by United Nations Economic and Social Commission for Western Asia (UN- ESCWA) suggests that outdoor manual are the most vulnerable to consequences, resulting in reduced productivity (approximately 60 per cent decline), particularly in coastal regions where the heat stress is projected to rise across the Arab region. In this context, the Arabian Peninsula, for example, could experience a rise in temperatures, in some of its parts, beyond human endurance as a direct result of climate change.

5.4.2.2 Working-Hour Losses

Another feature related to heat stress and its impact on labour productivity is measured by working-hour losses. According to a study by the International Labour Organization (ILO), heat stress claimed over 0.4 per cent of total working hours in the Arab States in 1995, or to almost 90,000 full-time employment jobs (see table 1) . The study also suggests that heat stress is predicted to have a more significant impact in the future, with forecasts indicating that %1 of total working hours will be lost due to heat stress in 2030, equating to over 618,000 full-time employment jobs. Globally, even if effective climate change mitigation actions are implemented, it is estimated that an increase in temperatures caused by climate change would result in the loss of 72 million full-time employment by 2030 owing to heat stress.

Workers in vulnerable employment conditions are at higher risks to suffer from the effects of lost work time. This is due to the fact that such workers are less likely to be employed in the formal sector, and hence, lack the benefits that come along decent work such as social protection. Consequently, not only missed output may lead to lower salaries and incomes, but these workers are also less likely to have healthcare coverage which could help them cope with the health repercussions of working in hot weather conditions. In this regard, heat stress has a higher economic impact on non-GCC workers than on the GCC labour force.

International Labour Organization. (2019). Working on a warmer planet: The impact of heat stress on labour productivity and decent work. P.50

Ibid. P.50

Ibid. P.50

International Labour Organization. (2018). World Employment and Social Outlook – Trends 2018. P.21

Table 4: Working hours lost to heat stress, by sector, country/territory, Arab States, 1995 and 2030 (projections)

Country	1995						2030					
	Agriculture (in shade) (%)	Industry (%)	Construction (in shade) (%)	Services (%)	Total (%)	Total (thousand full-time jobs)	Agriculture (in shade) (%)	Industry (%)	Construction (in shade) (%)	Services (%)	Total (%)	Total (thousand full-time jobs)
Bahrain	5.8	3.2	5.8	0.9	**1.9**	**4.4**	9.5	6.2	9.5	2.2	**4.1**	**32.1**
Iraq	0.9	0.3	0.9	0	**0.3**	**11.3**	1.8	0.8	1.8	0.1	**0.7**	**87.9**
Jordan	0.3	0.1	0.3	0	**0**	**0.4**	0.8	0.3	0.8	0	**0.1**	**2.3**
Kuwait	1.6	0.6	1.6	0	**0.4**	**3.0**	3.3	1.6	3.3	0.3	**1.0**	**20.9**
Lebanon	0.1	0	0.1	0	**0**	**0.3**	0.5	0.2	0.5	0	**0.1**	**2.3**
Occupied Palestinian Territory	0.6	0.2	0.6	0	**0.2**	**0.9**	1.5	0.6	1.5	0.1	**0.5**	**7.4**
Oman	0.4	0.1	0.4	0	**0.1**	**0.4**	1.2	0.4	1.2	0.1	**0.5**	**6.2**
Qatar	5.4	2.9	5.4	0.7	**2.3**	**6.6**	8.9	5.6	8.9	1.9	**5.3**	**76.6**
Saudi Arabia	0.7	0.3	0.7	0.1	**0.2**	**8.8**	1.6	0.8	1.6	0.2	**0.5**	**69.3**
Syrian Arab Republic	0.6	0.2	0.6	0	**0.3**	**12.0**	1.4	0.6	1.4	0.1	**0.7**	**53.3**
United Arab Emirates	4.3	2.2	4.3	0.5	**1.8**	**21.1**	7.6	4.6	7.6	1.4	**2.6**	**164.1**
Yemen	1.1	0.5	1.1	0.1	**0.7**	**20.4**	2.0	1.1	2.0	0.3	**1.0**	**95.7**
Arab States	**1.0**	**0.6**	**1.0**	**0.1**	**0.4**	**89.5**	**2.0**	**1.4**	**2.0**	**0.4**	**1.0**	**618.0**

Dunne, J.P., Stouffer, R.J. and John, J.G. (2013). Reductions in labour capacity from heat stress under climate warming. Nature Climate Change, 6)3), pp.566–563.

Job bins, G., & Henley, G. (2015). Food in an uncertain future: the impacts of climate change on food security and nutrition in the Middle East and North Africa. Overseas Development Institute, London / World Food Programme, Rome.

Ibid. P.36

United Nations Economic and Social Commission for Western Asia (ESCWA) et al. (2017). Arab Climate Change Assessment Report – Main Report. Beirut, E/ESCWA/SDPD/2017/RICCAR/Report. P.182

Ibid. P.182

United Nations Development Programme. (2019). Climate Change Adaptation in the Arab States: Best Practices and Lessons Learned. P.27

ILO. (2019). Working on a warmer planet: The impact of heat stress on labour productivity and decent work. P.51

IILO. (2018). World Employment and Social Outlook – Trends 2018. P.7

5.4.2.3 Impact on Gender

The negative impacts of climate change are far from gender-neutral and more likely to affect women. In fact, women are more vulnerable to climate change effects, which, as a result, can limit their ability to adapt, resulting in more significant gender disparities. This impact, for instance, has the potential to increase maternal mortality linked to heat-stress, and gender-based violence, as an outcome of natural disasters or conflicts. As commonly known today, rural women face pressure to shoulder their husbands› activities on top of their daily responsibilities in cases where rural men move to cities in search of paid employment due to losing their traditional jobs. For example, in Yemen and Sudan, women and children's everyday activities involve fetching water from far-off areas, a burden that leads to health risks and dropouts of schools for young girls. Overall, three aspects contribute to Women's rising vulnerability to climate change risks. These include unequal access to resources, limited opportunities for enhancing current livelihoods or creating alternatives, and lack of involvement in the decision-making process.

5.4.2.4 Impact on Migration

Environmentally driven migration primarily occurs inside countries, with rural to urban movement being the most common. Mobility has long been viewed as a risk-avoidance and income-diversification strategy, yet the poorest and most vulnerable people are frequently unable to migrate. Cities, on the other hand, are increasingly becoming locations of environmental risks and hazards, especially those associated to climate change. In Iraq, for example, around 60,000 disadvantaged farmers, whose livelihood was harmed by drought in 2006 and 2008, migrated to urban areas, with Jordan experiencing similar migratory movements. Another example is Yemen, where water scarcity has had a significant impact on agriculture, putting people's livelihoods in jeopardy and making Yemen one of the most food-insecure countries.

5.5 Climate Change Impact on Economy and Economic Sectors

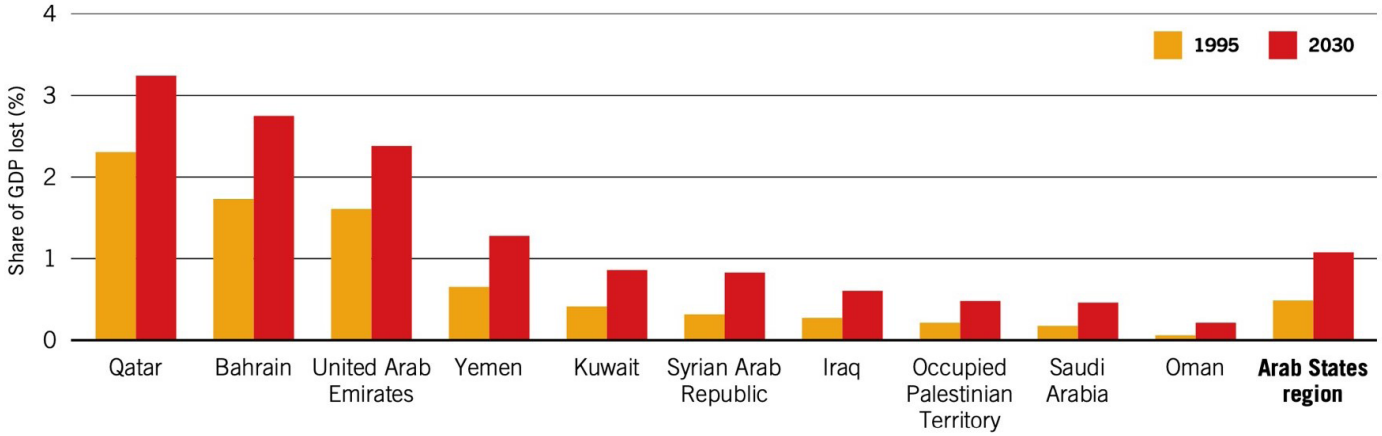
The economic implications of climate change are manifold. From an industrial standpoint, the economic impact is mainly concentrated in industries with large percentages of outdoor workers operating in moderate to heavy jobs or non-climate-controlled environments such as offices and factories. The economic consequences are most visible in primary sectors, predominantly, in agriculture, including other economic industries, such as construction and services, which are also vulnerable to heat risks. The impact is also measured from a macro-level perspective using gross domestic production (GDP) indicators.

5.5.1 Impact on GDP

Heat stress is projected to have cost the Arab region roughly %0.5 of its average GDP in 1995, and this loss is expected to rise to 1.1 per cent by 2030 (see figure 3). With the varying effects of heat stress on labour productivity in the region, the worst-affected country has been Qatar, losing 2.3 per cent of its GDP in 1995 and 3.2 per cent by 2030. Similarly, heat stress is estimated to cost Bahrain and the United Arab Emirates more than %2 of GDP by 2030. Heat stress has a lesser impact on other countries in the region. Thus, heat stress has a modest effect on Oman›s labour productivity: the country›s GDP loss was nearly zero in 1995 and is anticipated to reach only 0.2 per cent by 2030.

United Nations Development Programme. (2019). Climate Change Adaptation in the Arab States: Best Practices and Lessons Learned. P.27
Ibid. P.27
United Nations Human Settlements Programme. (2019). Local Climate Action in the Arab Region: Lessons Learned and Way Forward. P.10
UN Habitat. (2017). Habitat III Regional Report Arab Region: Towards Inclusive, Safe, Resilient and Sustainable Arab Cities. P. 47
Ibid. P.47
Ibid. P. 48

Figure 3: Percentage of GDP lost to heat stress under a °1.5C global warming scenario, ten most affected countries/territories, Arab States, 1995 and 2030 (projections)



From a global outlook, the following table shows various scenarios of estimates related to economic losses from climate change and its impact on world GDP.

Table 5: Estimates of Economic Losses from Climate Change

Study	Warming	Impact (% on GDP)	Comment
Mendelsohn, Schlesinger, Morrison and Andronova (2000)	2.0° by 2060	A cumulative effect of a loss of 0.3% of GDP in 2060	Assuming 2°two of warming is reached by 2060, most damages will come from agriculture. OECD economies will gain from warming while the rest of the world will lose. Damages to individual countries do not always follow continental averages. The Ricardian model predicts much smaller losses and gains than the reduced-form model, predicting a 0.04% net gain to 2060 GDP levels from 2.0°C warming.
Mendelsohn, Schlesinger and Williams (2000)	2.5°C by 2100	Cumulative market impact costs do not exceed 0.1% of GDP in 2100	The market impact costs will vary from country to country across the globe. High-latitude countries are expected to gain, and low latitude countries are forecast to be harmed by warming. However, temperature effects beyond 2.0°C are expected to reduce benefits and increase damages.
Stern (2005)	Baseline scenario of between 2.4°C and 5.8° by 2100	An average loss of 5% of global GDP per annum over the next two centuries	Estimates are based on no action. Costs increase to 20% of GDP or more if a broader range of risks and impacts are considered. Based on simple extrapolations, costs of extreme weather alone could reach 0.5-1% of world GDP per annum by the middle of the century.
Intergovernmental Panel on Climate Change, Fifth Assessment (2014)	Approximately 2.0°C	A loss of 0.2%-2.0% of GDP per annum	There are considerable differences between countries when damage estimates accelerate beyond 3.0°C of warming. Delaying mitigation efforts beyond those currently in place to 2030 is estimates to substantially increase the difficulty of transitioning to low long-term emission levels.

Source: Adapted from Wade, K., & Jennings, M. (2016).

ILO. (2016). Climate Change and Labour: Impact of heat in the workplace. P. 21 United Nations Human Settlements Programme. (2019). Local Climate Action in the Arab Region: Lessons Learned and Way Forward. P.5
Ibid. P.21
ILO. (2019). Working on a warmer planet: The impact of heat stress on labour productivity and decent work. P.52
Wade, K., & Jennings, M. (2016). The impact of climate change on the global economy. Schroders Talking Point.

5.5.2 Impact on Agriculture Sector

In rural areas, distributed across the MENA region, farming (including agriculture, livestock, and fisheries) is a significant source of income and a key contributor to food security. Farming makes up about %10 of GDP in developing nations and generates export gains for countries such as Morocco and Egypt. Additionally, farming constitutes a significant source of jobs and income. For example, in Morocco, agriculture employs about %40 of the workforce, while in Yemen and Egypt, agriculture employees between %20 to %30 of the people.

Given its importance, agriculture is a crucial element in achieving the welfare and food security of farmers. In this context, rural farmers rely on growing and selling food and non-food products to create income. Hence, the impact of climate change will directly impact their stability in terms of capacity to get food and the reliability of their food supply. For example, drought will enormously affect small-scale pastoralists as they have limited adaptability to climate change risks. According to the World Food Programme (WFP), pastoralism (or animal husbandry) employs about %9 of the agricultural population in Morocco, Algeria, Libya, Egypt, and Syria's inland. The WFP also estimates that in North Africa, Jordan, Lebanon and Syria, another %14 practice mixed dryland farming, which combines livestock with barley, rainfed wheat, and fodder. As projected by the WFP, by 2030, these areas will be constrained by higher temperatures, and they will be subject to rising aridity and drought-relevant risks.

Similarly, farmers in far-off highland systems are especially vulnerable to climate change due to widespread poverty, isolation, and limited resources. Yemen, northern Iraq, Morocco, Algeria, and Iran constitute about %30 of MENA's agricultural population, comprised of rainfed farming of cereals, legumes, and trees on terraces, and sheep

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World Food Programme. (2015). Food in an Uncertain Future: The impacts of Climate Change on Food Security and Nutrition in the Middle East and North Africa. P. 20
Ibid. P.20
Ibid. P.20
Ibid. P.30
Ibid. P.30
Ibid. P.32
Ibid. P.32
Ibid. P.32
Ibid. P.32

herding on communally managed areas in the highlands. By 2030, Moroccan farmers will most likely face drought and severe temperatures spikes, while farmers in Morocco and Iraq will be affected by the reduced water supply caused by snowmelt. Similar to dryland farmers and pastoralists, highland farmers are particularly vulnerable to drought and long term constraints on natural resources, notably water in communities that rely on snowmelt.

The following table summarises the typical vulnerabilities of rural livelihood groups.

Table 6: Typical Climate Vulnerabilities of Rural Livelihood Groups

	Exposure	Sensitivity	Adaptive capacity
Pastoralists & Dryland farmers	• Heat extremes and temperature increases • Aridity and drought	• Highly sensitive to drought • Sensitive to land degradation • Livestock pests and disease	• Poverty extensive among small producers • Poor access to markets and services • Little off-farm income
Highland farmers	• Heat extremes and temperature increases • Aridity and drought • Changes in water availability due to snowmelt	• Highly sensitive to drought • Sensitive to degradation of natural resources • Changes in viable crops	• Poverty extensive • Poor access to infrastructure, markets and services • Little off-farm income
Semi-arid farmers	• Heat extremes and temperature increases	• Highly sensitive to drought and aridity	• Moderate poverty among small producers

Ibid. P.32
World Food Programme. (2015). Food in an Uncertain Future: The impacts of Climate Change on Food Security and Nutrition in the Middle East and North Africa. P.32
Ibid. P.32

	• Aridity and drought • Saltwater intrusion • Changes in patterns of precipitation and water availability	• Lower drought sensitivity amongst irrigation adopters, but increasing in future	• Better connections to markets and services • Off-farm income is more significant
Irrigated areas	• Heat extremes and temperature increases • Upstream hydrological changes • Changes in water availability	• Lower drought sensitivity, but may increase in future • Moderately sensitive to temperature increases • Reduced sensitivity is dependent on the maintenance of irrigation networks and water supplies	• Moderate poverty • Good access to markets and services • Off-farm income significant

Source: Adapted from WFP. (2015). P.34

In several MENA countries, fisheries play a vital role in the diets and income of the poorest segments of society. **Artisanal fishermen make up around %2 of the rural population in the MENA,** mainly along the coastal lines of Yemen, Syria, Lebanon, Sudan, Egypt, Algeria, Tunisia and Morocco. Members of these communities, on the whole, have little access to social services, live in poverty, and are relying heavily on fisheries for their livelihood and food security. Climate change implications, including temperature fluctuation and ocean acidification, are expected to diminish fisheries and impede aquaculture production growth. Despite rising commerce and aquaculture production, **marine capture fishery production in the MENA region is expected to shrink by %9 by 2030 and the total consumption of fish is anticipated to reduce by %2.** The cited data, in essence, suggests effects on rural artisanal fishers, as well as lower availability and increased pricing of fish protein for poor urban customers.

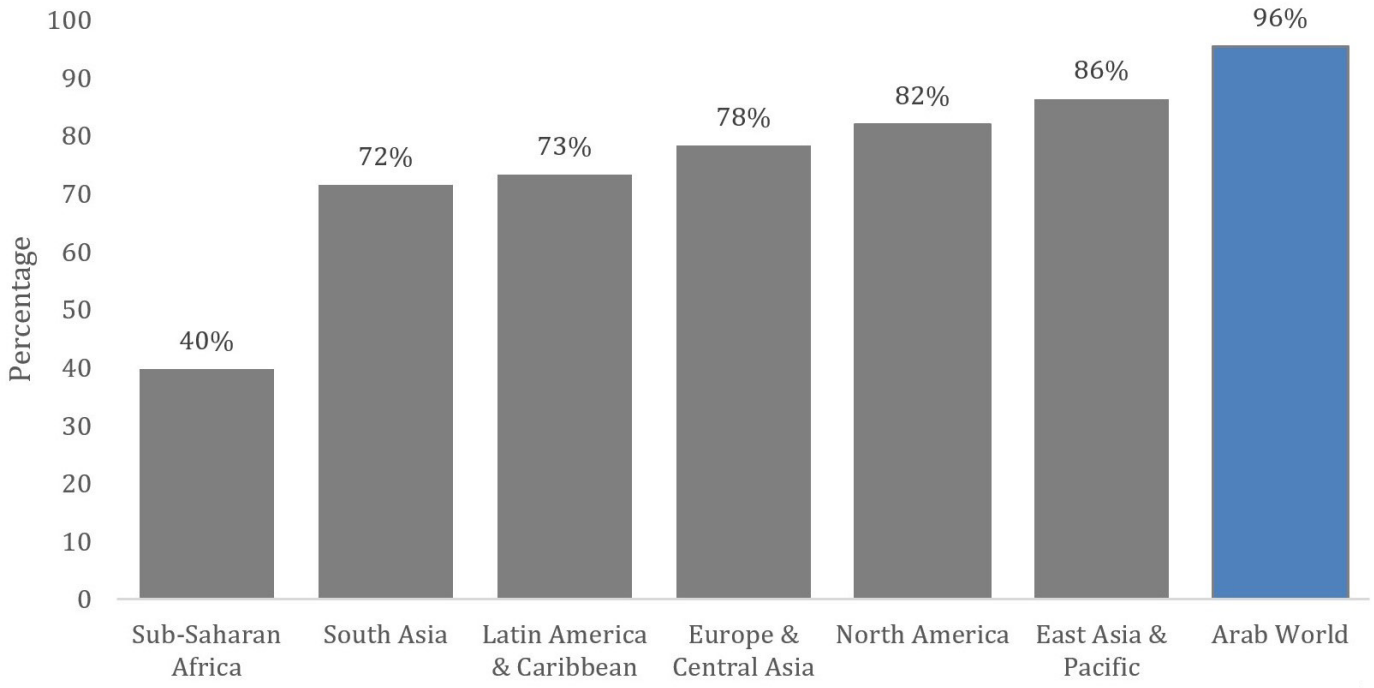
World Food Programme. (2015). Food in an Uncertain Future: The impacts of Climate Change on Food Security and Nutrition in the Middle East and North Africa. P.32
Ibid. P.32
Ibid. P.32

5.5.3 Impact on Energy Sector

Energy vulnerability is a critical issue and a concept that is particularly significant in the Arab region. Defined as "the absence of adequate safeguards to ensure a country s energy demand and supply patterns are sustainable to support socioeconomic growth and development in the long run," energy vulnerability stems from a variety of issues affecting present energy demand and supply trends. According to ESCWA, the reasons behind such vulnerability, "is not only due to the Arab region's high degree of intraregional heterogeneity in socioeconomic development and associated large differences in access to affordable, reliable, sustainable and modern energy, but also due to the region's rapid increase in energy demand over recent decades, in combination with institutional, regulatory, infrastructural and socio-political structures that lag behind the region's energy needs in many cases."

The Arab region›s economy is heavily reliant on fossil fuels, both for local energy consumption and export revenue. According to the World Bank 2014 figures (the latest statistics relevant to the Arab region), **oil and natural gas account for around 96 % of regional energy supply, making the Arab region the world's most fossil fuel-dependent region** (see figure 4). Additionally, Arab economies are characterised by a lack of alternate sources of energy, particularly renewable energy, with some notable exceptions, including Egypt, Iraq, Morocco, and Sudan, all of which have considerable hydropower energy resources (i.e., energy from moving water (e.g., dams) that produces power to create electricity in a variety of ways). Consequently, Arab countries are missing out on major technology advances and developments in the clean energy sector, despite the region›s huge potential, because the region›s undiversified energy mix contributes to its expanding carbon footprint.

Figure 4: Fossil Fuel Energy Consumption by World Regions, 2014 (%)



Source: Adapted from World Bank Data

ESCWA. (2019). Energy Vulnerability in the Arab Region. P.3
ESCWA. (2019). Energy Vulnerability in the Arab Region. P.3
Ibid. P. 26
Ibid. P. 26

When examining the impact of climate change on energy in the Arab region, changes in both energy demand and supply are anticipated. **In terms of the energy demand**, most countries in the region are already experiencing the effects of climate change on their energy consumption patterns. For example, temperature extremes have led to changes in peak hour patterns, air conditioning intensity, and the necessity for water desalination in daily life. Furthermore, as precipitation decreases and evaporation from waterways increases, countries will be compelled to rely more on energy-intensive water supply systems like desalination and underground water pumping. **As for the energy supply**, hydropower and other water-intensive generation systems› capability may deteriorate as water levels decrease owing to reduced precipitation and higher evaporation. Water scarcity may also affect cooling and cleaning systems for Concentrated Solar Power (CSP), nuclear power, and other thermal generation technologies.

5.5.4 Impact on Infrastructure Sector

Infrastructure is the backbone of economies which represent a supporting system that drives and sustains all types of human activities consisting of domestic, commercial, and industrial, whether in urban or in rural contexts. The vast share of infrastructure projects, including transportation systems, coastal defence works, water supply and wastewater systems, electric production facilities and oil and gas pipelines, are anticipated to be affected by climatic changes. **Despite the importance of infrastructure, the Arab region lacks systematic studies that measure the impact of climate change and examine adaptation solutions.**

A study conducted by the Arab Forum for Environment and Development in 2009 examined four types of infrastructure: transportation, coastal protection works, water supply and wastewater systems, and energy generation and supply systems. For example, in the Arab region, transportation infrastructure is frequently subjected to extended and extremely hot days, sandstorms, thunderstorms, dusty and windy weather, and sea surges in coastal areas. Under forecasted climate change scenarios, all of these climatic situations are expected to worsen, becoming more frequent and widespread. The implications of climate change on the transportation industry can be divided into two categories: those that influence infrastructure›s structural integrity and those that affect how it operates:

Middle East Institute. (February 2012 ,22). Implications of Climate Change on Energy and Security in the MENA Region.https://www.mei.edu/publications/implications-climate-change-energy-and-security-mena-region
Ibid.
Ibid.
Arab Forum for Environment and Development. (2009). Arab Environment Climate Change: Impacts of Climate Change on Arab Countries. P. 114
Ibid. P. 114

Table 7: Impact of Projected Climate Change on Transportation

Climatic changes	Impact on structural elements of infrastructure	Impact on operation of the infrastructure
Increases in frequency and intensity of very hot days and heat waves.	• Excessive expansion in bridge joints and pavement surfaces • Decreased viscosity of asphalt which may lead to traffic-related rutting and displacement of pavement. • Deformities in metal components including rail-tracks, bridge steel elements, etc	• Limitation on the maximum load capacity of trucks and airplanes due to weakening of pavement. • Harsh climatic conditions will reduce the effectiveness and increase the cost of construction and maintenance.
Increase in sea water level / sea surges.	• Inundation of coastal transportation elements including roads, bridges, airports, etc. • Erosion and deterioration of pavement, bridge support and its base. • Costly adjustment in harbour and port facilities to accommodate tidal increases and more intense sea surges.	• Frequent closure of coastal roads due to sea surges. • Storm surges may disrupt operations and pose hazards to passengers of coastal airports (e.g., Beirut and Manama Airports).
Increase in the frequency and intensity of sandstorms, thunderstorms, and windy conditions.	• Increased damages to road, rails and bridges. • Increased risk of mudslide and rockslide in mountainous regions, such as in Lebanon.	• Intense sandstorms in desert areas across the Arab world would cause disruption of road traffic and increase frequency of closures and accidents. • Disruption of the operation of airports.

Source: Adapted from AFED. (2009). P. 115

5.5.5 Impact on Tourism Sector

With the potential impact of climate on the Arab region, it is anticipated that many Arab countries may experience a decreasing number of tourists, including tourism receipts, with Saudi Arabia being an exception, as the majority of tourists are pilgrims who are driven by religious obligations rather than tourism attractions. The Mediterranean region, a host of several Arab countries is a case in point. On average, travel and tourism contribute %15 of GDP to Mediterranean countries, including indirect and induced effects. The following table shows potential effects of climate change on Mediterranean destinations and how the market is anticipated to react:

Arab Forum for Environment and Development. (2009). Arab Environment Climate Change: Impacts of Climate Change on Arab Countries. P. 123

McKinsey Global Institute. (May 2020). A Mediterranean basin without a Mediterranean climate?. P.21

Table 8: Potential effects of climate change on Mediterranean destinations

Climate change effects at the place of destination	Implications for the destination	Possible reactions of the market
- **Winters milder and wetter** - **Summers warmer and drier** - **Changes more pronounced in the Eastern Mediterranean** - **Increase of heat index** - **More days above 40°C** - **More arid landscapes** - **Impacts of sea level rise exacerbated by the low tides**	- More severe risks of droughts and fires - Increasing water shortages - Increased personal exposure to heat - Beach degradation and loss of habitats due to sea level rise - More vulnerability to tropical diseases (e.g., malaria) - More flash flooding - Poor air quality in cities	- Improvement of summers in Northern Europe generates more domestic holidays - Less incentive to spend summer holidays in the Mediterranean - Increased incentive for spending holidays in the Mediterranean during the inter-mediate seasons - Increased incentive for southerners to travel to the North

Source: Adapted from AFED. (2009). P. 124

The vulnerability of the tourism sector to climate change effect both direct (e.g., increase in the average temperatures of the sea and air) and indirect (e.g., droughts) will vary by region tourism activities, choice of destination and tourist expenditure. The direct effects of climate change on the tourism sector will be significant in the Arab region, primarily because this region will experience an increase in the frequency of extreme weather events (e.g., droughts, heat waves), and the tourism industry is highly sensitive to climate variability and change. Land and sea interactions, for example, amplify severe heat conditions in coastal areas of northern Africa and the Middle East. Summertime sea surface temperatures in the Mediterranean are projected to rise, making the region more conducive to the development of tropical cyclones. **In short, the tourism sector›s vulnerability in the Arab region is strongly intertwined to the beaches and infrastructure that form the foundation of much currently marketed tourism in the region, particularly in North Africa (e.g., Egypt and Tunisia).**

Arab Forum for Environment and Development. (2009). Arab Environment Climate Change: Impacts of Climate Change on Arab Countries. P. 124
Ibid. P. 124

5.6 Barriers to the Region

Among the challenges that Arab countries face in mitigating climate change is the lack of or limited nature of systematic observation of climate-related variables. For example, inadequate monitoring of climate and weather variables is currently limiting weather forecasts and climate projections, making regional climate predictions the worst in the world. This has resulted in ineffective and uninformed decision-making when employing relevant adaptation measures and interventions to improve resilience.

Another challenge is the lack of awareness or understanding among national leaders and the general public about effective actions and climate change resilience-building measures. For instance, although %84 of Arabs feel that climate change is a severe threat to their countries, according to a recent poll by the Arab Forum for Environment and Development (AFED), at the same time, the poll indicated that education and awareness are insufficient. In this context, the scant data and research that is now accessible in the region have not been broadly disseminated, nor has it been promoted and customised to the different segments of the Arab societies, let alone the fact that adaptation opportunities and effective strategies applied elsewhere in other regions are not being sufficiently exploited.

Ibid. P. 124
Ibid. P. 125
United Nations Development Programme. (2019). Climate Change Adaptation in the Arab States: Best Practices and Lessons Learned. PP. 39-38
Ibid. P. 39
Ibid. P. 39
Ibid. P.39
Ibid. P.39
Ibid. P. 39

TRADE UNIONS AND CLIMATE CHANGE

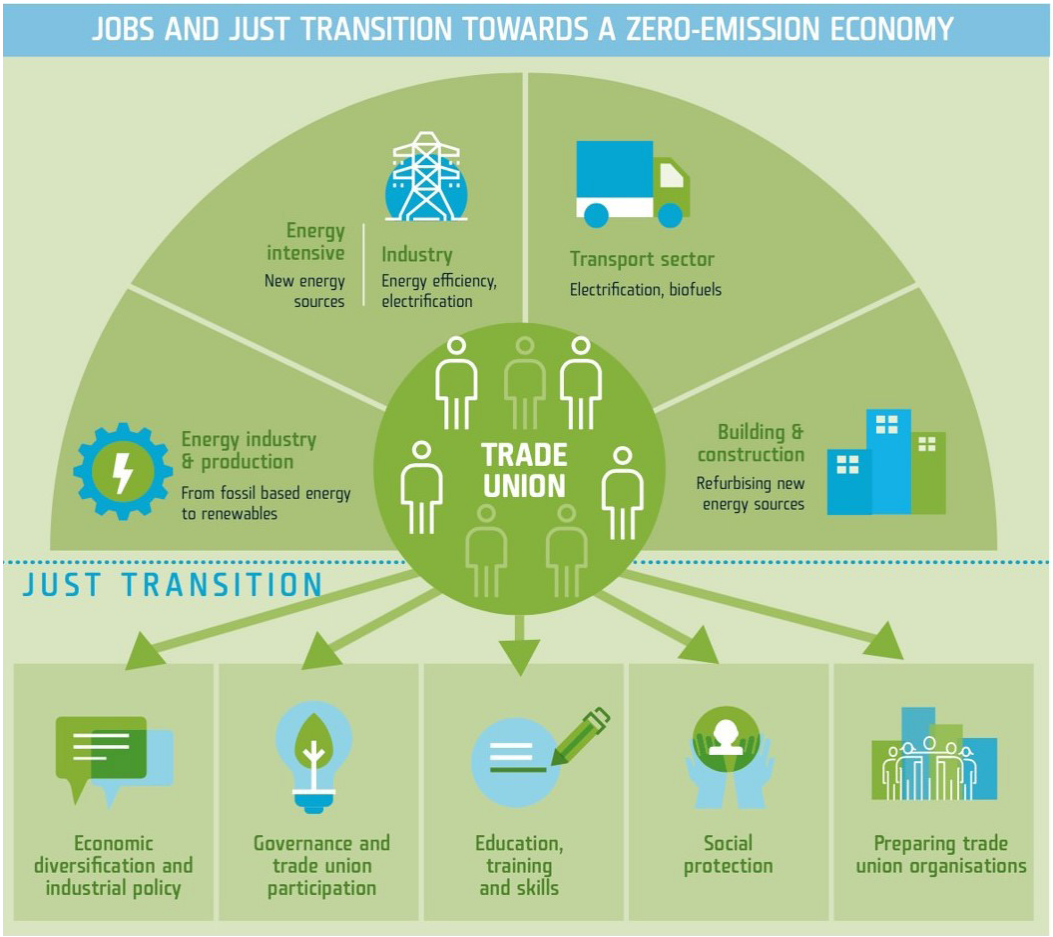
Credit: Pexels

6 Trade Unions and Climate Change

6.1 Background

From the perspective of labours, the transition towards a low carbon economy will fundamentally reshape the labour market in different ways generating both new risks and new opportunities for workers. This involves new employment opportunities and, in certain circumstances, job losses, the replacement of some current occupations with new ones, necessitating the acquisition of new competencies and skills required by the labour market. Specific industries and regions, particularly those reliant on carbon-intensive sectors, may be disproportionately harmed. **Anticipating and mitigating these changes and their impact on workers is central to trade unions scope of work. Together with related policy planning, climate governance provides a chance for trade unions to deepen their grasp of current trends and their role in influencing climate policy.**

Figure 5: JOBS AND JUST TRANSITION TOWARDS A ZERO-EMISSION ECONOMY



Source: European Trade Union Confederation. (2018). P. 7

Consequently, and in tandem with the United Nations 2030 Agenda for Sustainable Development, it is critical to ensure a "just transition" of the workforce while creating decent and high-quality employment opportunities. As such, the participation of trade unions in the governance of the policy-making process is extremely important, a recommendation that has been emphasised across the globe policy and research agenda. The preamble of the Paris agreement, for example, acknowledges "the imperatives of a just transition of the workforce and the creation of decent work and quality jobs," which underscores the importance of the workers' participation. Furthermore, **the ILO recommends the need for collaboration**

European Trade Union Confederation. (2018). Involving trade unions in climate action to build a just transition.P.7
United Nations. (2015). Paris Agreement. [online] United Nations. Available at: https://unfccc.int/sites/default/files/english_paris_agreement.pdf.P.2

among "social partners" that involve trade unions to "effectively integrate measures for a just transition into local, sustainable economic development," through consultations and dialogue with governments "all possible levels and stages of the policy process."

However, in reality, the role of trade unions is yet to gain traction and requires further improvement. For example, a recent publication by the European Trade Union Confederation (ETUC) indicates that not all member countries of the confederation are consulted on climate and energy policy-related issues. Additionally, in more than %50 of the surveyed cases, proposals submitted by trade unions were not considered. According to the report, such limitations can partly be explained by the extent of trade unions' participation, typically tied to the national culture of the social dialogue and might vary depending on the political environment and associated circumstances.

Similar limitations were also observed in the SDGs implementation process. A recent study by the ITUC, titled: **"A Trade Union Take on the SDGs"** examined if the states' official narratives in their Voluntary National Reviews (VNRs) to the United Nations contrast or complement how governments implement the SDGs. It also evaluated the different levels of **transparency**, consultation and social dialogue applied in relevant processes against the involvement of trade unions. When it comes to transparency, the study revealed clear limitations based on feedback from trade unions. Eleven trade unions out of the 13 countries reported some restrictions on access to information related to the SDGs' implementation process, with two countries (Thailand and Spain) having no access to any data. When examining **multi-stakeholder consultations**, a vital tool to ensure a genuinely participatory implementation process, as envisioned by Agenda 2030, the study reported different cases where consultations were either "adequate," "lack structure," "de facto one-way information sessions," or in some cases, countries "have either no consultation process in place or effectively exclude trade unions from participating in it" as in the cases of Colombia, Namibia, Thailand and Pakistan. Finally, regarding the social dialogue, the study highlights the insufficient integration of social dialogue into the planning and implementation process of the SDGs. For instance, trade unions reported that "discussions often tend to be fragmented, lack long-term planning and have a limited scope."

International Labour Organization. (2015). Guidelines for a just transition towards environmentally sustainable economies and societies for all. P.9

Ibid.8.

European Trade Union Confederation. (2018). Involving trade unions in climate action to build a just transition.P.14.

Ibid. P.14.

The study examined 13 countries: Argentina, Chad, Colombia, Germany, Indonesia, Mexico, Namibia, Pakistan, Norway, Spain, Sweden, Thailand and Zimbabwe.

ITUC. (2021). A Trade Union Take on the SDGs. P. 5

6.2 Trade Unions and Just Transition in the Global South

While climate change is well-known worldwide, the concept of a Just Transition is only now gaining traction. Within the Global South, despite the fact that South African unions were at the forefront of developing the concept of Just Transition, it is still a relatively new concept throughout the rest of the Global South. Consequently, **in many developing nations, one of the first difficulties for trade unions is to explain to workers what Just Transition is, how it can be achieved, and what benefits it brings, particularly when good, organised jobs are at stake.**

Some trade unions in the global south are devising strategies for Just Transition. Although prominent examples of just transition can be found in counties such as Spain, Canada, Germany and the Netherlands, some trade unions in low- and middle-income countries, with varying experiences, have also been working on just transition strategies, which they have adapted to match their national settings and development priorities. The Congress of South African Trade Unions, for instance, was an early proponent of just transition and climate jobs since 2009. Similarly, in 2012, The South African National Union of Metal Workers endorsed resolutions on climate change and just transition.

On the other hand, other unions, despite being aware of climate change, have yet to place it as a top priority concerning what are typically viewed as their core issues. Due to a lack of an enabling environment (e.g., set of policy, institutional, regulatory and cultural conditions) and some unions may not see opportunities to engage in just transition via social dialogue. As a result, they oppose just transition because they view it as an incremental strategy that will only result in insignificant improvements in working conditions. Instead, they urge for a change in the system.

6.3 Barriers to Just Transition

Building on the above considerations, the Union-to-Union organization, identified a number of issues that present barriers to just transition.

Ibid. P. 5

According to ILO, Social dialogue is defined as all forms of negotiations, consultatiosn and exchanges of information by and among representatives of governments, employers and workers on topics of common interest relating to economic or social policy. See ILO. (2017). Social dialogue as a driver and governance instrument for sustainable development.

ITUC. (2021). A Trade Union Take on the SDGs. P. 5

Ibid. P. 5

ITUC. (2019). Unions and Just Transition in the Global South. P.1.

Ibid. P.1

Union to Union. (2020). Just Transition In the International Development Cooperation Context. P.19.

Ibid. P. 19

Figure 6: Barriers to Just Transition

When it comes to the systematic violations of labour rights, **the Middle East and North Africa (MENA) remains the worst-affected region in the world for workers' rights** (see figure 7). According to the ITUC Global Right Index 2021, MENA countries have an average rating 4.50, up from 4.44 average in 2020.

Ibid. PP.20-19
Union to Union. (2020). Just Transition In the International Development Cooperation Context. P.20
ITUC. (2021 .(2021 ITUC Global Rights Index. P.

Figure 7: Ranking of World's Worst Regions in relation to Workers' rights

REGION		2021	SCALE
MENA	18 countries	**4.50**	(4) Systematic violations of rights to (5) No Guarantee of rights
Asia-Pacific	23 countries	**4.17**	(4) Systematic violations of rights to (5) No Guarantee of rights
Africa	42 countries	**3.71**	(3) Regular violations of rights to (4) Systematic violations
Americas	25 countries	**3.48**	(3) Regular violations of rights to (4) Systematic violations
Europe	41 countries	**2.51**	(2) Repeated violations of rights to (3) Regular violations

Source: ITUC (2021). Global Rights Index. P. 16

Additionally, fundamental labour rights relevant to trade unions such as establishing or joining trade unions face high restrictions in the region. The below figure demonstrates some of these challenges, which, in essence, add extreme burden on the path to just transition.

Figure 8: Violations of workers' rights in MENA

Source: ITUC (2021). Global Rights Index. P. 17

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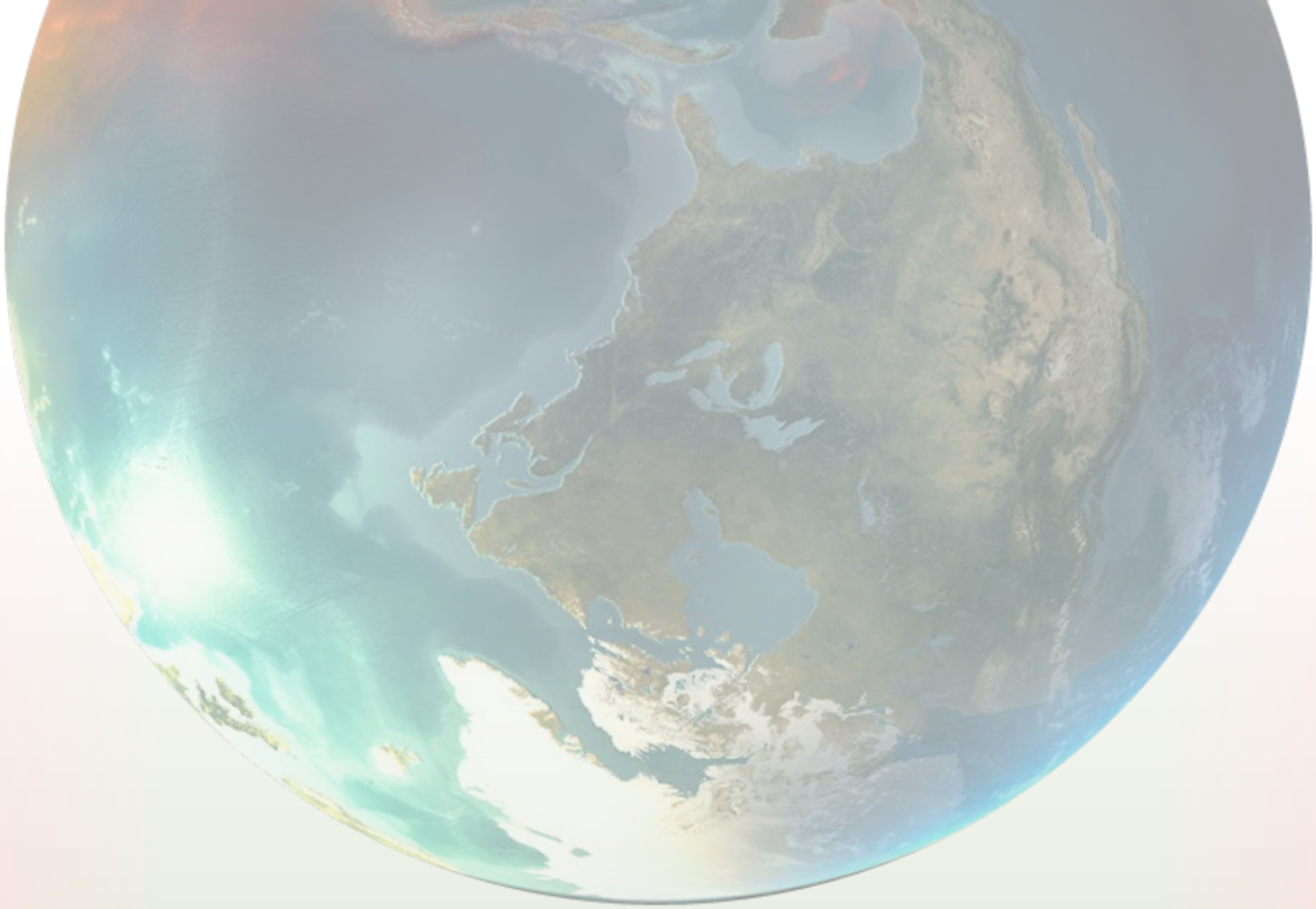

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ARAB TRADE UNION CONFEDERATION

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