

## Roadmap to Energy Transition for Pakistan's Businesses

*By Shanze Afzal*

### Abstract:

Energy scarcity and dependency on fossil fuels pose significant challenges to Pakistan's businesses, exacerbating issues of exploitation and environmental degradation. With 51 million people lacking access to energy, the urgency to address this crisis is paramount. This report advocates for the adoption of renewable energy not only as an alternative to fossil fuels but as a means to challenge exploitative business practices. By indigenizing renewable energy solutions, tailored to Pakistan's landscape, it seeks to analyze feasibility based on geographical, sectoral, economic, and environmental factors. Furthermore, it emphasizes the role of businesses within neoliberal capitalism and climate change, proposing solutions that challenge dominant narratives while addressing energy poverty and mitigating climate catastrophe.

Keywords: Energy transition, businesses, roadmap document, climate change

### Glossary:

**Carbon Border Adjustment Mechanism (CBAM):** Tariffs and trade barriers on carbon-operated industry exports implemented by the European Union (EU)

**Corporate Social Responsibility (CSR):** Corporate Social Responsibility is a management concept whereby companies integrate social and environmental concerns in their business operations and interactions with their stakeholders.

**Emission factors (EF):** An emissions factor is a specific value that aims to establish a connection between the amount of a pollutant discharged into the air and the action or process responsible for releasing that pollutant.

**Global Climate Risk Index (CRI):** The Global Climate Risk Index (CRI) analyzes the impact of weather-related events (floods, heat waves, storms, etc) on different countries and regions. The CRI examines the intensity of the change caused by natural disasters.

**Greenhouse gas (GHG):** GHGs are the gasses that are in the Earth's atmosphere that trap heat.

**Greenwashing:** When big companies and organizations pretend to be green-friendly but in reality engage in unethical practices that are harmful to the environment. It is also known as green sheen.

**Indigenization:** Indigenization is the act of making something more native; transforming some service, idea, etc. to suit a local culture, especially through the use of more indigenous people in public administration, employment, and other fields.

**Key Informant Interviews (KII):** In-depth qualitative interviews with individuals who are well-informed on the topic of discussion.

**Land Degradation and Neutrality Fund (LND):** The fund is designed to substantially scale upland restoration and sustainable business models implemented on restored land.

**National Council for Climate Change Pakistan (NCCP):** Legislation or laws employed in Pakistan working to implement and supervise projects that study the impact of climate change in Pakistan.

**National Electric Power Regulatory Authority (NEPRA):** Established in 1977 as part of the Regulation of Generation, Transmission and Distribution of Electric Power Act, NEPRA supervises the provision of electric power services in Pakistan.

**Sustainability development goals (SDGs):** SDGs are goals set by the United Nations (UN) that aim to end poverty and to protect the planet so that everyone enjoys prosperity, justice, and good health.

**Synergy:** The combined power when things are working together.

**The Intergovernmental Panel on Climate Change (IPCC):** Official members of the World Meteorological Organization (WMO) who study and prepare reports on climate change and its impacts, its causes, and try to give possible solutions.

**Synergy:** The combined power when things are working together.

Introduction:

Energy plays a vital role in the functioning of Pakistan's businesses. With rising technological advancement, most of any business' operations require energy in some form. Pakistan's energy generation is dependent on depleting reserves of fossil fuels, which have been heavily exploited and contributed to issues such as the exploitation of land, labor, and resources. Energy is a scarce resource, nearly 51 million people do not have access to it in Pakistan. This scarcity, operating alongside a rising population and rising demand for energy, is an urgent matter that needs to be addressed. Energy resources such as renewable energy are often considered as alternatives in the context of the repercussions of fossil fuel usage on the climate, within the larger reality of climate change. This report looks upon the implementation of renewable energy for businesses not simply as an alternative to conventional forms of energy generation, but as a method to subvert businesses' common practices of exploitation. Hence it looks to indigenize renewable energy, which means to alter ideas of renewable energy so that they suit the landscape of Pakistan. It recognizes potential renewable energy alternatives and analyzes the feasibility for businesses to implement such systems with regard to geographical location, business sector, economic resources, and environmental impact.

This report highlights the importance of businesses as institutions within the context of neo-liberal capitalism and climate change and aims to provide solutions within this framework while subverting dominant ideas of the causes and consequences of climate change. These ideas are part of larger capitalist structures and must be complicated in order to create effective alternate energy solutions that will simultaneously aid climate catastrophe mitigation and alleviate energy poverty.

Research Objectives:

The primary objective of this report is to develop an action plan that will allow Pakistan to achieve a 30% energy transition to renewable energy sources by 2030. This goal is part of the Alternative Renewable Energy Policy 2019, set to meet the goals of the Paris Agreement. The reason why this goal is being highlighted in particular is with regard to the ongoing climate threat that Pakistan is experiencing, and the necessity for the country to have access to various climate funds such as the Land Degradation and Neutrality Fund (LND) which will only be available after projects of energy transition are already in effect. There is also growing pressure on the export market in the country, considering new tariffs and trade barriers such as the Carbon Border Adjustment Mechanism (CBAM) upon countries that have not significantly reduced their carbon footprint. This will significantly affect all industries, especially the textile industry, and cause even more economic instability in the country. Pakistan has been identified by the Global Climate Risk Index (CRI) as one of the most vulnerable countries to climate change, hence this report will aim to look at energy transition in the wider context of Pakistan's climate risk.

Methodology:

This report is primarily based on qualitative data collection through Key Informant Interviews (KIIs) with professionals working on sustainability and energy transition in Pakistan. These interviews were valuable in gauging the importance of energy transition and the main challenges that arise when suggesting the implementation of systems of alternate energy. This, coupled with interviews with professionals working in businesses of various sectors allows me to present this research with extensive depth on business practices. These business sectors include the energy, textile, agriculture, and service sectors which allowed me to understand each sector's energy transition potential and challenges. KIIs were a useful method in this regard to get a clear picture of the roadblocks of energy transition and how they can be tackled. These interviews were conducted both online and in-person and were recorded after obtaining the consent of the participant. This report also utilizes official documents of government laws and policies, and sustainability reports of businesses which were publicly available on their websites.

The aim of this project is to develop a roadmap towards energy transition for Pakistan's businesses. A roadmap, being a strategic plan that defines a desired outcome, requires the articulation of a concrete goal, so that major steps can be taken to reach it. I am utilizing the methodology of the roadmap for this report because there is value in the urgency of creating a strategy that defines the steps that need to be taken in order to meet a goal with regard to the urgency of the climate crisis.

Limitations:

The key limitation of this research is the fact that it operates within a neo-liberal framework in order for Pakistan to gain access to climate finance that would significantly aid vulnerable populations in Pakistan who are suffering from the worst effects of climate change. Operating within this framework does not account for the reductionist nature of statistical data as a means to depict goals relating to climate change. Yet, within Pakistan's uncertain economic climate, access to climate finance is the need of the hour.

The attribution of numerical values to climate disasters is a common practice within Western conceptualizations of environmentalism. It is not simply a reductionist approach to climate change, but a violent one. It does not account for the role of Western powers and ideologies in creating this oppressive capitalist culture that heavily exploits natural resources and how these powers continue to function in post-colonial countries like Pakistan. Highlighting the fact that Pakistan's Greenhouse Gas (GHG) emissions comprise only 1% of the global GHG emissions, even if Pakistan completely altered its business practices to be zero carbon, the effects of Climate Change would still be heavily experienced. Placing this into the wider context, large industrial

countries such as China and the United States of America have actually increased their coal usage.

These larger structural and cultural issues must be acknowledged and subverted within any extensive research on energy transition and climate change.

### What is the need for an energy transition for businesses?

Globally, the necessity of energy transition has been recognized, and many large corporations have transitioned to renewable energy to uphold their goals of sustainability. Pakistan, operating within a vicious cycle of economic instability, has been unable to achieve energy transition goals that are suggested by the United Nations (UN) sustainability development goals (SDGs), as well as other global entities. This report, rather than considering international markers of sustainability as benchmarks to Pakistan's transition, aims to indigenize Pakistan's sustainability practices to create a mechanism that will reduce risk and will allow the country to reap long-term benefits. Indigenization refers to altering a certain practice to suit a local culture.

There is a positive correlation between economic growth and energy, hence increasing energy resources is not only morally and ethically required, but also economically beneficial. However, this importance is not recognized in the business sector. This report recognizes that businesses contribute the most to climate change and suggests a roadmap for them to alter their energy practices by transitioning to clean energy. Fossil fuel use for industrial and business purposes generated 200 million metric tons of carbon dioxide emissions in 2022<sup>1</sup>, and the industrial sector is accountable for above 49% of Pakistan's carbon emissions<sup>2</sup>. According to National Electric Power Regulatory Authority (NEPRA) Pakistan's total installed power generation capacity is 39772 MW, of which 63% of energy comes from thermal (fossil fuels), 25% from hydro, and 5.4% from renewable (wind, solar and biomass) and 6.5% from nuclear energy<sup>3</sup>.

Coal releases the most carbon dioxide emissions of the three fossil fuels. This is problematic because in the light of Pakistan's energy crisis, with depleting supply of oil and gas, coal has been identified as a savior because of the Thar Coal project. This project has been heavily subsidized by international and local organizations and hailed as the solution to Pakistan's energy crisis on a macro level. However, on a micro level, this project has led to large-scale humanitarian issues such as mass displacement of indigenous populations and environmental degradation. These issues are sidestepped and undermined by Engro, through a narrative of

---

<sup>1</sup><https://www.statista.com/statistics/486054/co2-emissions-pakistan-fossil-fuel-and-industrial-purposes/#:~:text=Fossil%20fuel%20use%20and%20industrial,the%20highest%20figure%20since%201970.>

<sup>2</sup><https://www.sciencedirect.com/science/article/pii/S2211467X22000396#:~:text=The%20industrial%20sector%20is%20accountable,plentiful%20than%20coal%20%5B8%5D.>

<sup>3</sup> <https://www.trade.gov/country-commercial-guides/pakistan-renewable-energy>

environmental protection which does not only not account for the damage done to this land, but also violently *greenwashes* over the damage done to its people.

This acknowledges the huge and drastic failure of Corporate Social Responsibility (CSR), which does not only consult local populations about the overarching risks of such large-scale projects, but also does not hold organizations accountable for these risks. The causes of this failure of businesses to account for the larger structural impact of their practices are twofold. Firstly, businesses are powerful entities in Pakistan, and so foregoing social responsibility can be a small price to pay to achieve their goals of profit maximization. Secondly, and most often the case for small and medium enterprises, this kind of information about climate risk and energy transition potential and feasibility is not readily available for such a change to be enacted.

The first step in building climate resilience in the country is holding large businesses accountable for their violent practices and in educating the business sector on alternative energy generation capacities. Synergy between the government, academia and the business sector is imperative in this regard.

#### Unethical Business Practices:

It is important to subvert the idea that the responsibility of climate change is on individuals. Although eliminating individual carbon footprint is necessary, it has minimal actual impact because the energy-powered industries that produce such commodities are still intact. This is why citizens, who are facing the brunt of the climate crisis are swayed by the moral argument of reducing their individual carbon footprint by measures such as not using plastic bags and straws, driving energy-powered cars and recycling. However, the rapid action that is needed in order to prevent climate risk can only occur if large businesses change their practices since they contribute the most to climate change.

Here, a radical understanding of what effective climate action entails will be used. I use the term radical here in contrast to many business' sustainability goals with the recognition that many large corporations make claims of climate commitment without changing their business models, and instead employ the use of external "initiatives" such as tree plantations or beach cleanings to showcase their climate consciousness.

Radical climate action entails a transformation of business models that are detrimental to the environment. This false climate consciousness is often referred to as "greenwashing," which is a form of advertising or marketing spin in which green marketing is deceptively used to persuade the public that an organization's products, aims, and policies are environmentally friendly when they are not.

Hence, climate change mitigation projects such as tree plantations, which may be useful in their own regard, are not sufficient in significantly reducing the impact of climate change. Rather, they are knee-jerk reactions to increasing public pressure of climate action. The reason that I am drawing attention to this business practice is to highlight the causes for such practices, and identify them as one of the key challenges in a smooth energy transition to clean energy in Pakistan. Thus, I identify unethical business practices, lack of sufficient research and available information on effective climate mitigation strategies, and expensive initial renewable energy technology costs as the main challenges to an energy transition in Pakistan.

#### Roadmap:

The following section of this report presents how a partially renewable energy system of 30% for Pakistan could look like by 2030, and how to achieve this transition keeping in mind its effects on the micro and macro. This report recognizes that some forms of renewable energy are more suited to certain businesses within the context of their geographic location, type of business, and available financial and energy resources. Hence, in this report, I will analyze the various renewable energy alternatives in Pakistan with regards to the most viable ones, and talk about what kind of businesses these alternatives would be most effective for. This section will cover the potential for solar, biomass, and hydroelectric potential in Pakistan. The reason why I am choosing solar, biomass, and hydroelectric energy potential is because there is significant and most potential for these three sources, and they also present case studies for the complicated issues that could arise with the implementation of renewable energy technology in Pakistan.

I will reiterate at this point in this report that renewable energy sources have significant potential of addressing Pakistan's energy crisis, however, they must be implemented in the context of wider structural issues of capitalist exploitation of resources. This will be elaborated upon more in at the end of this section.

#### Renewable energy potential in Pakistan

##### Solar Energy

Pakistan has significant potential to use solar energy because the sun warms the surface throughout the year and therefore has a strong potential for solar power generation. The geographic location of Pakistan is ideal for solar energy usage because it receives around 1KW of solar energy per square meter of its landmass for 67 hours on average per day. The number of sunshine hours amount to almost 3000-3300 per year. Solar energy through solar PV is one of the cheapest (albeit, still costly) energy types that are currently used, and is the most widely used kind of renewable energy after hydroelectricity in Pakistan because it is easy to install.

There is potential for Pakistan's businesses to transition to solar energy for many reasons. Firstly, it will allow for a transformation for Pakistan's current energy grid, which is primarily powered by fossil fuel energy sources, to clean energy. In order to integrate solar energy into Pakistan's

energy grid, infrastructure must be developed gradually, from building new energy lines and substations to transforming the grid entirely to transition more heavily to solar energy. This will increase the share of renewable energy in Pakistan and aid the energy shortage that the country is facing. Secondly, there is incentive for businesses to transition to this kind of energy because once solar energy is installed, any excess energy can be sold to the energy grid, making it profitable for businesses in the long run. NEPRA also declared a net metering policy and tariff regulations in 2015 to benefit those consumers who use solar energy. A special meter has been provided to consumers who have the capacity to record both in and outflow of electricity, and they are to be charged for their net consumption. With rising electricity prices in Pakistan, businesses should be educated and incentivized on the benefits of solar energy usage.<sup>4</sup>

This kind of renewable energy transition would be most feasible for businesses that operate in urban areas of Pakistan, such as the commerce, retail, finance, and textile sectors.

### Biomass Energy

Being an agriculture-based country, Pakistan's agriculture sector has available supply of biomass which can be used for energy generation. Businesses in the agriculture sector would benefit the most from transitioning to biomass energy because it would be the most economically feasible and they would be able to reap long-term benefits of access to energy.

Biomass energy utilizes agricultural residues such as wheat straw, rice husk and straw, cane trash and cotton residue, all of which are readily available for agriculture businesses. Hence, biomass energy is promising in rural areas where biomass resources are readily available. It will allow affordable power supply to the businesses without long power outages.

The technology and equipment that is required to set up biomass power are steam boilers. This produces steam by burning biomass as fuel, and the steam is fed into a condensing steam turbine which is used as a power generator.<sup>5</sup> Biomass hence, is a promising alternative to fossil fuel-based energy, especially for businesses in the agricultural sector. Although biomass can be used in other sectors as well because it is derived from organic matter, it is most effective in the agricultural sector.<sup>6</sup> Using biomass can help increase the segment of renewables in total energy production from 1% to 5% by the year 2030. This would significantly aid Pakistan's target to transition to a 30% renewable energy transition by 2030.

The main drawback of using biomass for energy generation is that it is not completely GHG-free and could cause issues such as air pollution and diseases.

---

<sup>4</sup> <https://www.mdpi.com/2071-1050/11/4/1206>

<sup>5</sup> <https://www.researchgate.net/publication/236268398> BIOMASS POTENTIAL IN PAKISTAN

<sup>6</sup> <https://www.mdpi.com/2071-1050/12/1/249>



### Hydro-electric Energy

The installation of hydroelectric power plants is a promising way to partially overcome the energy shortage in Pakistan. There are currently 60,000 MW of hydroelectric resources in Pakistan, of which only 11% are being utilized to produce 7228 MV of electric power. Installing more hydro power plants and allocating resources for existing power plants to be optimized can help transition to renewable energy and mitigate the energy crisis in Pakistan. The use of hydroelectricity has been estimated to save 120 million tons of coal or 83.3 billion liters of oil in one year. This kind of energy can be used especially for businesses located in the northern areas of Pakistan. There are abundant water resources in Khyber Pakhtunkhwa (KPK), Azad Jammu & Kashmir (AJ&K), Gilgit, and Balochistan areas.

### Analysis

Each of these renewable energy projects require land on a large scale, which is why it is important to consider issues that may arise with the development of this infrastructure. Important considerations for this are what land is being used, and how installing renewable infrastructure upon this land will impact it. Within Pakistan's context, land is categorized into two aspects. The first is land that belongs to the state, often called common land, and the second is privately owned land. Common land in Pakistan that is inhabited by indigenous populations do not have legal rights over the land, which means that it can be seized at any moment and these people are displaced. So when considering a certain public land for such projects, it is important to take into account the people who are living there, how, and whether they are even being adequately compensated. There must be policies in play that not only protect the lives of people who live on this land, but protect their livelihoods. Since this project emphasizes on indigenizing energy, the social costs and benefits of a certain energy project are central to the argument, in order to alter the local climate of Pakistan but also bring into effect the structural change that will benefit the country.

The decision making process for the implementation of such projects operate in a highly bureaucratic top-down approach. Moving forward, the local populations must be considered as they are the primary stakeholders. Hence, renewable energy needs to be enacted responsibly otherwise it will pose risks to indigenous people's health, especially if they are implemented in ways that can degrade the environment. Hence, it is important for advocates of renewable energy to also take responsibility for the safety and well-being of communities, countries, and people who may be affected negatively.<sup>7</sup> An example of such irresponsible practice of implementing renewable energy technology are the Mega dam projects that were funded and facilitated by the World Bank. They have led to large-scale degradation of land and the mass displacement of

---

<sup>7</sup> Kyle white

indigenous populations. Other important considerations is how will this renewable energy technology be manufactured, what kind of labor practices will be used and what kind of funding is required. There are also more practical issues that arise with energy transition, such as that of backup energy generation. The energy generated by renewable energy cannot be sustained at a macro level. Hence, even within industries that have transitioned to renewable energy sources, backup energy exists which is based on thermal energy.

This drawback of transitioning to renewable energy provides an accurate picture of why it is important to consider and subvert the capitalist ideas of ‘development.’ Hence, simply replacing one large scale resource of energy production with another is not a viable solution. Rather, the exploitation of resources needs to be considered, halted and altered in order to solve Pakistan’s energy issues within the context of the larger structural problem of climate change. Often the language used around thermal energy consumption frames the resource as the energy, rather than the exploitative practice of which it is being made a cog in the machine.

#### Policy Reforms for Climate Change

There is increasing importance for the development of strong institutions to address climate change related issues in Pakistan. In fact, one of the key goals of the National Climate Change Policy (NCCP) is to mainstream the issue of climate change into development programs and policies. This will help promote adaptation to these concerns and transforming the system by building resilience. However, Pakistan, being a developing country with an uncertain political climate has weak and inefficient institutional structures. Thus, building strong governance is imperative for implementing a transition to clean energy. Progress has been made in setting up institutional structures and devising action plans and policies such as the Ministry of Climate Change Pakistan to help guide and accomplish the climate change related goals in the country. However, because of the ineffective institutional structures, these efforts remain fragmented with insufficient coordination and political support.<sup>8</sup>

There are a number of existing policies in place for the industrial decarbonization of Pakistan’s businesses. However, these policies have not been adequately implemented because Pakistan lacks the institutional support for such implementation. Before making policy suggestions for smooth transitioning of Pakistan’s business, it is important that current policies are also analyzed. For instance, in 2019 the Alternative Renewable Energy Policy<sup>9</sup> was issued which envisioned a mechanism for the solar and wind developers to develop technology for energy transition through auctioning of this technology. It has been four years since this policy was issued, yet the first round of auctions have not taken place as of yet. One of the most critical issue is implementation of existing policies.

---

<sup>8</sup> <https://www.adb.org/sites/default/files/publication/357876/climate-change-profile-pakistan.pdf>

<sup>9</sup> [https://climate-laws.org/document/alternative-and-renewable-energy-policy-2019\\_991c](https://climate-laws.org/document/alternative-and-renewable-energy-policy-2019_991c)

The National Electric Power Regulatory Authority (NEPRA) of Pakistan stated that the focus for all policy measures relating to climate change must surround reduction in imports of fossil fuels, increase in renewable energy based power generation, diversification of fuel sources and improvements in fuel supply. These goals have translated to Pakistan's National Climate Change Policy, which provides an overarching framework for addressing the challenges that Pakistan faces or will face in the future due to climate change.<sup>10</sup> The main issue that the NCCP faces is its implementation and lack of government support.

Pakistan's existing policies for climate change need to be reformed for two main reasons. The first, as I mentioned earlier, is that they do not suggest viable action plans for implementation considering lack of synergy within the country's various institutions. Hence, policies must also include an action plan to increase synergy between these institutions in order to implement renewable energy mechanisms. Secondly, they lack a human-centric approach. A human-centric approach would account for humanitarian issues on the micro level such as health risk, displacement and poverty. Poverty and climate change go hand in hand. Hence, policies for protection of human rights must also be in play when considering climate risk in reforms.

#### Policy recommendations

The following policy recommendations are advised for Pakistani government to overcome energy transition barriers.

- (a) Incentivize energy transition - Businesses are run on economics and in order for them to alter their business practices it is important to make it economically feasible and financially viable for them to transition to cleaner technologies. This can be through the use of Feed-in tariffs (FIT)
- (b) Education about green energy - It is instrumental to educate businesses about the disadvantages of using thermal energy and raise awareness of the long term economic and societal benefits of using renewable energy sources.
- (c) Government subsidies - The cost of energy transition is rather high, which is why it is important for the government to subsidize or make loans available so local businesses have access to clean technology and can transition.
- (d) International investment for green energy - Policies for international support to meet Pakistan's energy needs must be restructured from fossil fuel based energy development to renewable energy development.

---

<sup>10</sup> <https://mocc.gov.pk/SiteImage/Policy/NCCP%20Report.pdf>

- (e) Banning unethical business practices - Unethical business practices such as greenwashing, which are common in large corporations as a means to divert social responsibility for climate change by branding their products as environmentally friendly without changing harmful business practices.
- (f) Protection of rights - there must be legal frameworks in place to protect the human rights of people who are impacted by fossil fuel energy production. Sufficient reparations must be given to those who are displaced or harmfully impacted by fossil fuel energy.
- (g) Right to land - Indigenous populations must be given right to life and livelihood by ensuring humanitarian issues like forced displacement do not occur within frameworks of transitioning to clean energy

### Government role

The government must play a pivotal role in business' transition to renewable energy in Pakistan. There is insufficient communication within the federal, provincial and local government, which is a major setback because the National Council for Climate Change Pakistan's (NCCP) devised action plans demonstrate little understanding of the administrative and legal powers of the regulations, policies and programs. This is the main reason why implementation of such policies is such a big challenge in Pakistan. Coupled with Pakistan's political uncertainty, the government's priority has been to tackle immediate and urgent challenges as they come, and often climate change's threat does not make the cut.

However, Pakistan's reactive approach to climate change comes from the idea that climate change is an apocalyptic event. This perception of climate change as simply events or actions that are immediate, explosive and undeniable, leading to sensational visibility is quite prevalent. Rather, climate change needs to be viewed as what can be referred to as "slow violence"<sup>11</sup>, which is the kind of violence that is incremental and accretive, borne by the most vulnerable populations. It is the long term conflict in situations where sustaining life is becoming increasingly but gradually degraded. Such is the case for many areas of Pakistan, especially North Pakistan, where casualties are postponed and people are suffering<sup>12</sup>.

Furthermore, operating within this neo-liberal framework coupled with indigenization, the government needs to take steps to set up its own data collection methodologies and Emission Factors (EF). Emission factors (EF) are representative values that quantify the environmental impact of products and processes, forming part of the calculation to estimate the greenhouse gas (GHG) emissions of a particular activity or process<sup>13</sup> International figures are wildly inaccurate

---

<sup>11</sup>

<sup>12</sup> Slow violence

<sup>13</sup> <https://www.climatepartner.com/en/climate-action-insights/all-you-need-to-know-about-emission-factors>

and do not account for the large scale environmental degradation that Pakistan is experiencing, so this kind of data will allow a more accurate picture of Pakistan's climate risk. Secondly, this will assist businesses to undertake a transition accordingly. The government should set up benchmarks for EF based on current environmental impact. Pakistan greatly lacks data collection strategies on perceived and actual environmental impact. Mechanisms should be set up in order to have an accurate picture of the social and environmental impact of fossil fuel emissions.

However, it must be noted here that majority of climate change data consists of quantifiable variables that do not show the full picture of disastrous impacts of climate change. Measuring economic loss should not be the only way to talk about climate risk, rather a marginal analysis of climate change is necessary to depict the ways that climate change is experienced. Hence, the language in which climate change is talked about must shift. And impacts of it on the micro level must be qualitatively recorded and analyzed.

### Conclusion

This report looks upon Pakistan's energy sector to analyze wider integrated crises that Pakistan is engulfed in. It utilizes the potential for Pakistan's businesses to transition to renewable energy sources to meet international goals of sustainability while simultaneously emphasizing the importance of indigenizing this transition to suit Pakistan's local climate. By climate, I refer to not only the land, but also the people that are affected by large-scale decisions taken. Therefore, significant synergy is required between the various stakeholders of Pakistan's business sector's energy transition such as the businesses, government and indigenous people. A decentralized decision making process instead needs to be implemented to consider the social cost of energy transition projects so that solutions can be found that subvert dominant ideas of "development" that inadvertently harm land, resources and people.