THE PATH TO A SUCCESSFUL PAKISTAN

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About the project

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Impact

The Ministry of Finance is interested in learning how development initiatives that aim to improve livelihood opportunities for vulnerable households can be made more sustainable and resilient. We analyze the sources of vulnerability differently, focusing on environmental risk factors affecting health and women's contribution to household income. We propose a series of policy recommendations to: i) tackle air pollution, focusing on actions that could involve a broader effort to address climate change, to improve quality of life for all Pakistanis, and particularly vulnerable households; and ii) bring women into the labour force that could yield multiple benefits, including increasing resilience of vulnerable households, raising national productivity, and resulting in broader development and welfare gains.

This report was prepared by a team comprising Kulsum Ahmed (Director, Integrated Learning Means (ILM), Fellow Consortium for Development Policy Research (CDPR)), Ijaz Nabi (Chairman, CDPR and Country Director, IGC and former Sector Manager, World Bank), Sanval Nasim (Assistant Professor, Colby College), Amna Mahmood (Country Economist, IGC), and Farah Said (Assistant Professor, Lahore University of Management Sciences (LUMS)). Support was provided by Javeria Suhail (Research Assistant).

In brief

- Despite lackluster economic growth in recent years, Pakistan has succeeded in reducing endemic poverty. However, the poor remain vulnerable to economic shocks with an estimated 52% of the entire population vulnerable to falling back into poverty.

- This report focuses on how health shocks associated with environmental risk factors can be managed more cost-effectively, and on how increasing the number of incomes within a family, with a gender focus, can further spur development at the household level. In that regard, the report focuses on how the resilience of vulnerable households could be further magnified.

- This report shows that more vulnerable households are disproportionately affected by health impacts arising from environmental risk factors. These households are also often the ones that seek to augment income through female participation in the labor force, yet they do not fully benefit from this participation due to low skills, wages, and gender disparities. Addressing both environmental risk factors and gender disparities in the labor force will benefit vulnerable households disproportionately in Pakistan.

www.cdpr.org.pk. +924235778180 admin@cdpr.org.pk

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The Path to a Successful Pakistan[1]

1. Introduction

Despite lackluster economic growth, Pakistan has succeeded in sharply reducing endemic poverty. However, a large share of low income households, engaged in low productivity occupations, lies just above the poverty line. Such households are vulnerable to economic shocks (such as the one associated with COVID 19, sharp energy price increase, food price inflation, health emergencies) and can quickly slip back into poverty. In 2018-2019, it was estimated that 52% of the entire population was vulnerable to falling back into poverty (Jamal 2021).

Over the last three years, the Government of Pakistan (GoP) has taken a three-pronged approach to address low-income households' vulnerability to income shocks: (i) Ehsaas cash support (in response to the COVID-19 income shock); (ii) macro-economic stabilization, resumption of high sustained growth and creation of productive jobs; and (iii) the PKR 1.4 trillion Kamyab Pakistan Programme (KPP) launched on October 4, 2021, to support income growth of small firms and farms.

Under KPP, GoP intends to provide subsidized, interest free microloans to 3.7 million families over a period of five years. Initiating from the poorest districts across the country, KPP prioritizes the most vulnerable. It aims to reduce poverty and transition families towards sustainable livelihoods by providing subsidized loans, coupled with building skills, making health insurance mandatory for all borrowers, and providing the opportunity to avail low-cost housing.

The KPP is currently in a pilot phase, and is particularly focused on ensuring smooth flow of financing through the commercial banking system to microfinance institutions, so that they can on-lend funds to vulnerable households This financing scheme strives to address previous bottlenecks that include poor ability of commercial banks to efficiently handle microcredit loans, and simultaneously the lack of funds in the microfinance institutions that limit on-lending despite their high recovery rate.

Further, taking into account that health is a key determinant that affects this slide back into poverty, the GoP has also introduced a healthcare scheme, the Sehat card, for all eligible household members. Reduced incomes from either illness of the main wage earner or from taking time off work to care for other family members, and equally from spending disproportionate percentages of earnings on healthcare often propel families that have just risen above the poverty line, back into extreme poverty. The Pakistan Household Integrated Economic Survey (HIES) 2018-2019 notes that on average 3% of monthly consumption expenditures are used for health purposes. It is important to consider this information in the context that the same survey shows that monthly consumption expenditure exceeds household income for the first four quintiles. Further, anecdotal information suggests that the poor only seek medical help in cases of extreme illness.

This report tackles the sources of vulnerability differently. It does not tackle financial flows, but rather focuses on how health shocks associated with environmental risk factors could be managed even more cost-effectively, and on how increasing the number of incomes within a family, with a gender focus, further spurs development at the household level. In that regard, the report focuses on how the resilience of vulnerable households could be further magnified. In doing so, the report also comes out with conclusions that go beyond KPP, and appear to be foundational steps for any development program that strives to support Pakistan citizens to be healthier and more productive.

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[1] This report was prepared by a team comprising Kulsum Ahmed (Director ILM, Honorary Fellow CDPR and former Sector Manager, World Bank), Ijaz Nabi (Chairman, CDPR and Country Director, IGC and former Sector Manager, World Bank), Sanval Nasim (Assistant Professor, Colby College), Amna Mahmood (Country Economist, IGC), and Farah Said (Associate Director, MHRC, LUMS). Support was provided by Javeria Suhail (Research Assistant). We are grateful to the International Growth Center (IGC) for funding.

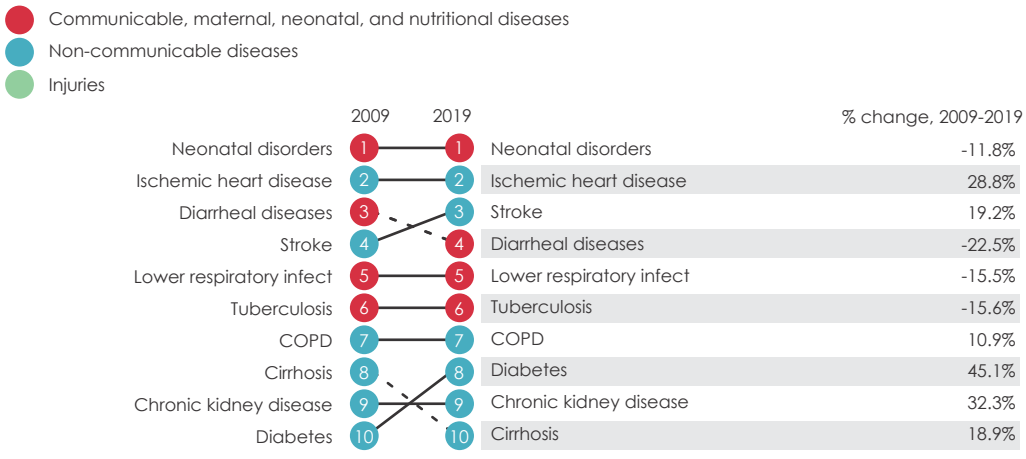
2. Pakistan's Health Paradigm

Pakistan's health burden today is a complex mixture of traditional hazards, such as lack of access to clean water, poor sanitation and hygiene coverage, as well as modern hazards, such as urban air pollution. The Global Burden of Disease (GBD) study, conducted every 10 years, aims to assess the major causes of disease that lead to early mortality and high morbidity, resulting in loss of productivity, both globally, and at a national level. Further, it attempts to evaluate the underlying top risk factors that raise the probability of adverse health outcomes in a country. The burden of disease attributable to risk factors is measured in terms of lost years of healthy life using the metric of the disability-adjusted life year (DALY). The DALY combines years of life lost due to premature death with years of healthy life lost due to illness and disability. A DALY is therefore directly associated with loss of productivity.

The GBD's approach is particularly instructive in terms of broader healthcare policy, as it moves away from single disease "silos" to an attempt to take a wider perspective on the disease burden. Figures 1 and 2 below show the top ten causes of death and of death and disability combined in Pakistan, including the relative increase in these diseases between 2009 and 2019, i.e., over a 10-year time period (GBD 2021). It is important to note the significant increase in ischemic heart disease and stroke, as well as diabetes and kidney diseases in Figure 2. This has resulted in shifting the health burden from mainly communicable diseases to a "double" health burden which is about 60% non-communicable disease (NCDs) versus 40% communicable diseases (CDs) in Pakistan. Unlike CDs, which can be cured, NCDs need to either be prevented or they need to be managed throughout a lifetime, resulting in increasing health costs, and a reduced life span.

Figure 3 below shows the major risk factors that drive the most deaths and disability combined for Pakistan in 2019, before the Covid-19 pandemic, compared with 2009. As can be seen, malnutrition occupies the top spot, with air pollution at number 2, consistently, during the 10-year period. Despite some reduction in water, sanitation, hygiene (WaSH) and tobacco related risk, both still appear in the top 10 risks.

Figure 1. What causes the most deaths in Pakistan?

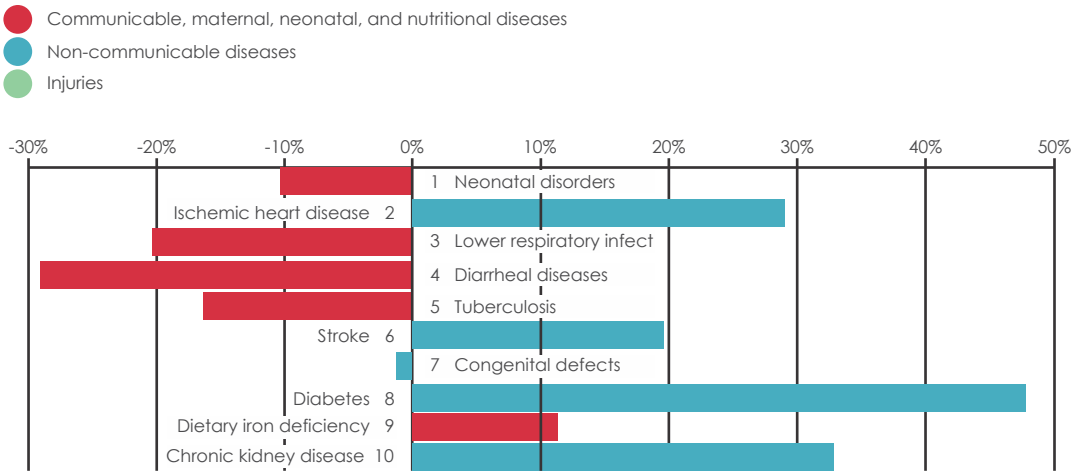


Top 10 causes of total number of deaths in 2019 and percent change 2009-2019, all ages combined

See related publication: https://doi.org/10.1016/S0140-6736(20)30925-9

Source: https://www.healthdata.org/pakistan

Figure 2. What causes the most death and disability combined in Pakistan?

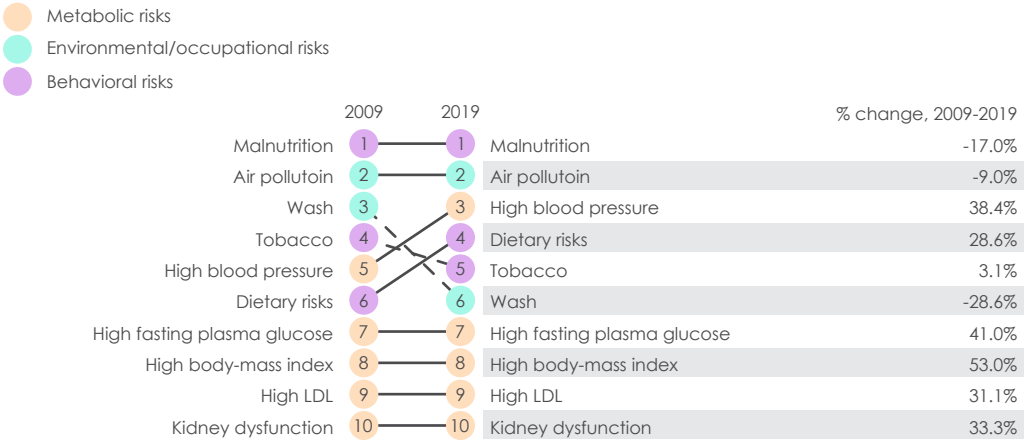


Top 10 causes of death and disability (DALYs) in 2019 and percent change 2009-2019, all ages combined

See related publication: https://doi.org/10.1016/S0140-6736(20)30925-9

Source: https://www.healthdata.org/pakistan

Figure 3. What risk factors drive the disease burden (death and disability combined) in Pakistan?



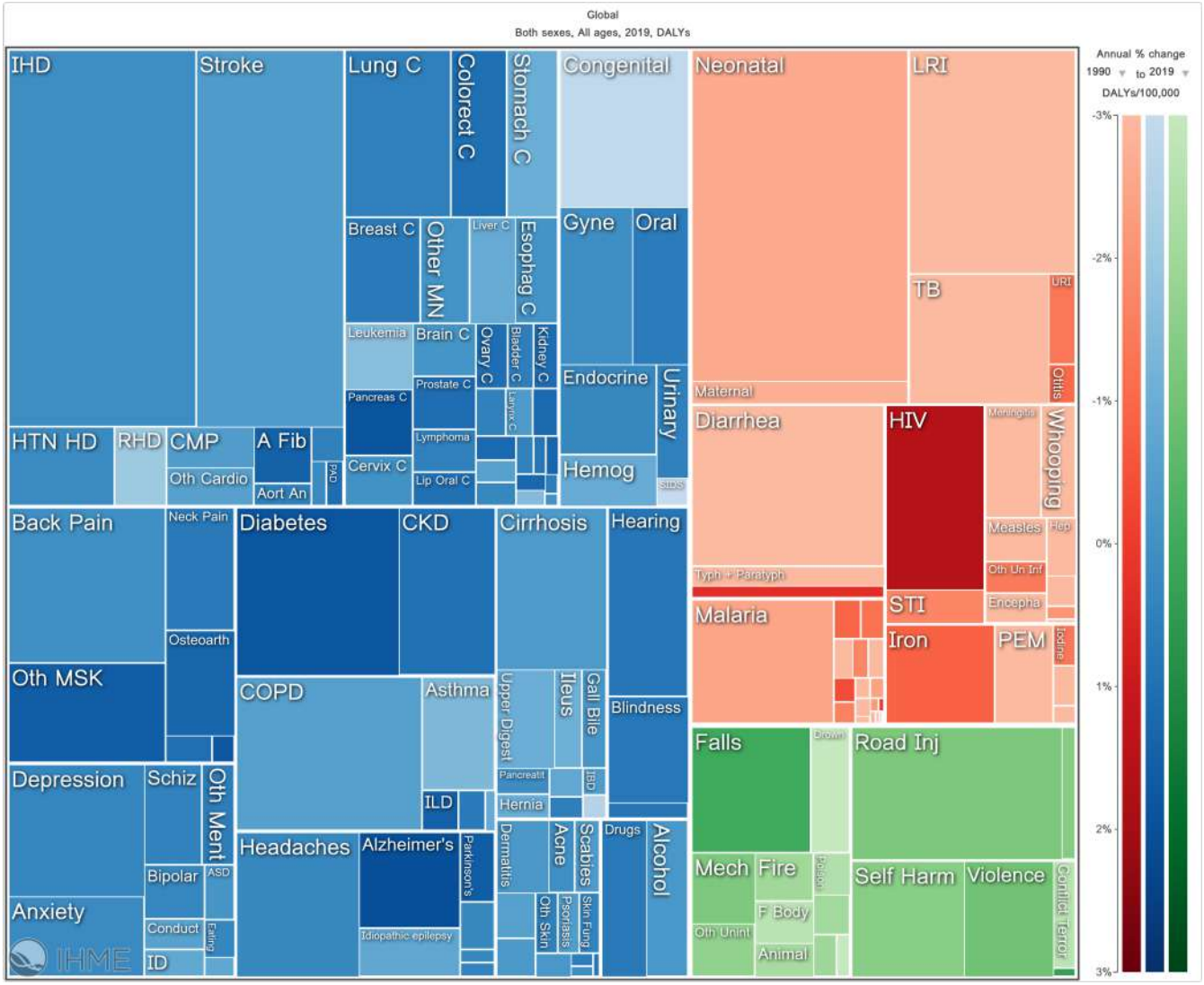
Top 10 risks contributing of total number of DALYs in 2019 and percent change 2009-2019, all ages combined

See related publication: https://doi.org/10.1016/S0140-6736(20)30752-2

Source: https://www.healthdata.org/pakistan

Breaking this down further, taking only the malnutrition link, it is instructive to understand how this risk factor relates to DALYs from specific illness, as shown in Figure 4.

Figure 4. DALYs attributable to child and maternal malnutrition



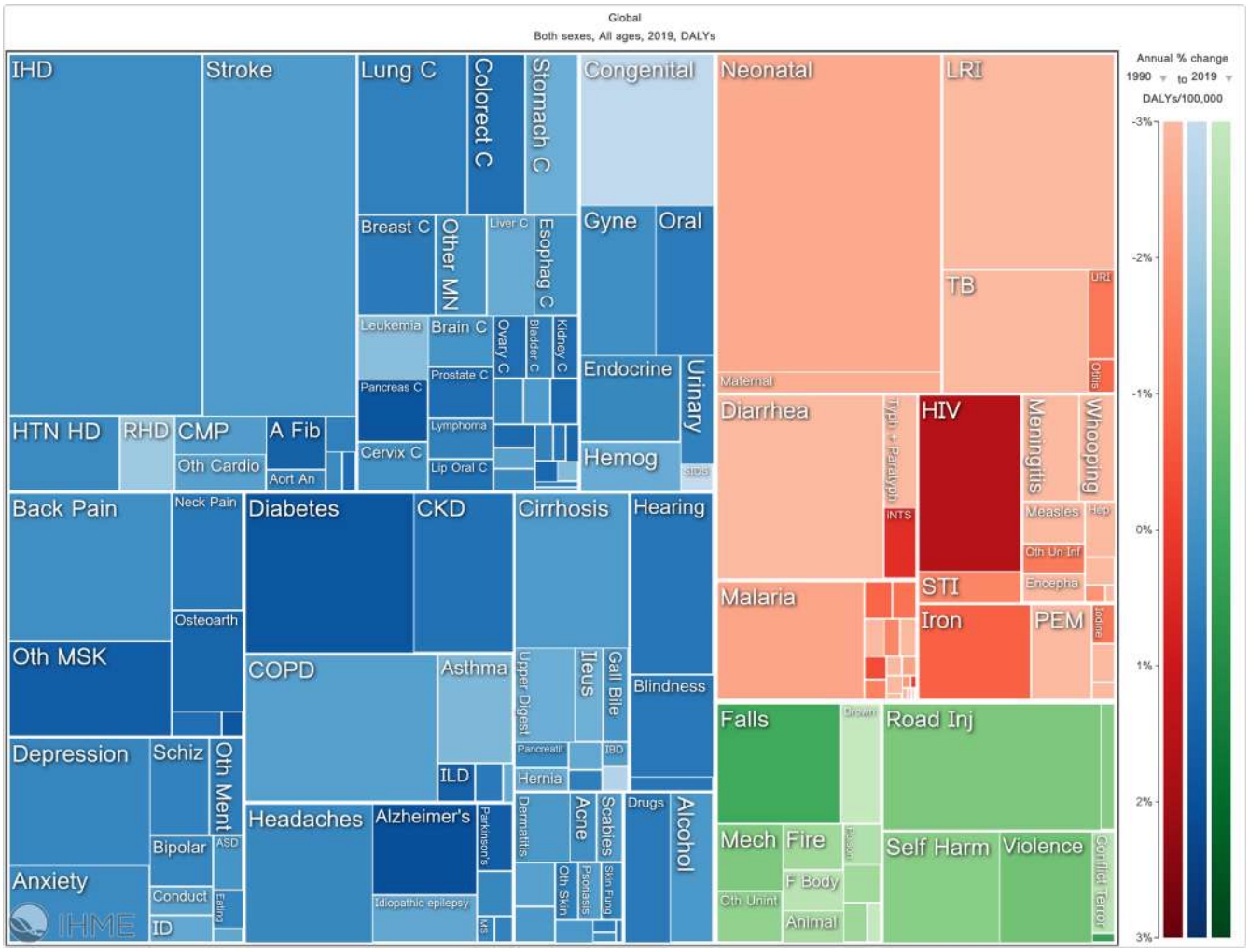
Source: https://vizhub.healthdata.org/gbd-compare/

These show a clear connection between the malnutrition risk factor, which increases the probability of deaths and years of healthy life lost from neonatal infections, lower respiratory illnesses and diarrhea. Indeed, repeated bouts of diarrhea and lower respiratory infection among children, particularly under the age of 2 years, due to unsafe drinking water and poor sanitation, and poor air quality, result in poor absorption of food leading to stunting and learning disabilities that affects future income (World Bank 2008).

Further breaking down the air pollution risk factor is also instructive. This risk factor captures both indoor air pollution and outdoor air pollution. It is associated with incidence of ischemic heart disease, stroke, lung cancer, neonatal morbidity, lower respiratory infections, diabetes and chronic obstructive pulmonary disease in Pakistan. Generally, though, there appears to be poor understanding amongst the public of the extent of health burden from air pollution in Pakistan.

Indeed, a recent paper from Aga Khan University Hospital notes that about 1000 people suffer a stroke every day in Pakistan, of which about 400 people die within 30 days. The authors suggest that by addressing air pollution exposure alone, 30% of strokes in Pakistan could be prevented (Fatmi, Mahmood, and Samad 2020).

Figure 5: DALYs attributable to air pollution



Source: https://vizhub.healthdata.org/gbd-compare/

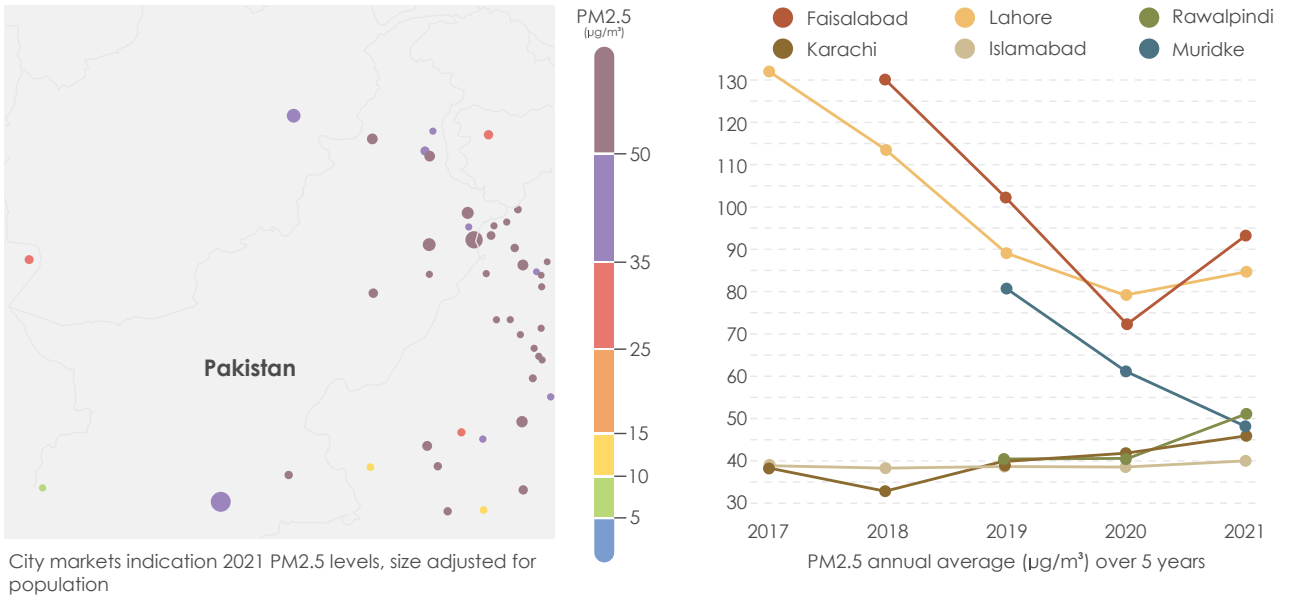
2.1 Air Pollution

Air quality in several Pakistani cities has deteriorated considerably over the years. Cities such as Lahore—Punjab's Capital and Pakistan's second largest city with over 10 million residents—ranks among some of the most polluted cities in the world while Pakistan came third in the list of the most polluted countries in 2021 (IQAir 2021).

PM2.5 constitutes the most egregious pollutant. These are tiny particles—smaller than tenth the diameter of a hair strand—which easily enter the bloodstream when inhaled. Looking at all the Pakistani cities where air quality is formally measured, the annual average PM2.5 levels in 2021 exceeded the WHO standard by a considerable margin (Figure 6). Lahore's daily PM2.5 levels went up to almost 13 times the local standard while its annual average levels stood at almost 10 times the WHO standard (Figure 7).

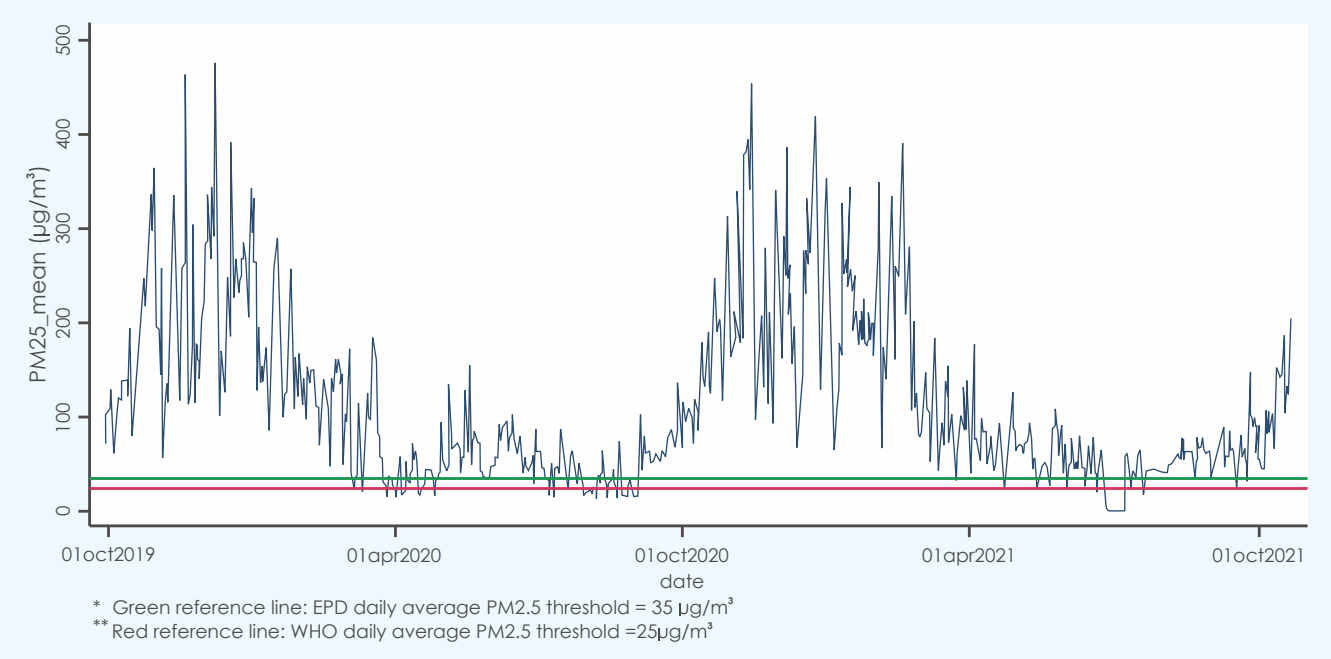
Exposure to such dangerously high levels of pollution carries significant health and non-health impacts. The evidence on the detrimental impact of poor air quality on health and other human capital outcomes in Pakistan is scarce. The Air Quality Life Index (AQLI) — developed by the Energy Policy Institute at the University of Chicago (EPIC) — shows that reducing the existing air quality down to the WHO standard can improve the average life expectancy of a Pakistani by 2.7 years and of a Lahori by 5.3 years (EPIC 2020).

Figure 6: Overview of Pakistan's PM2.5 levels.



Source: IQAir 2021 World Air Quality Report. https://www.iqair.com/us/world-air-quality-report

Figure 7: Lahore's daily PM2.5 levels.



Source: AirNow (courtesy Mahnoor Kashif).

Figure 8: Air Quality Life Index (Pakistan).

Province	District	Population (Millions)[1]	$PM_{2.5}$ Concentration (ug/m^3)		Life Expectancy Gain (Years) from Reducing $PM_{2.5}$ from 2016 Concentration		
			2016	After 32% Reducing	To WHO Guideline of $10ug/m^3$	To National Standard of $15ug/m^3$	By 32%[2]
All Pakistan		203.2	37	25	2.7	2.2	1.2
Sindh	Karachi City	22.4	16	11	0.5	0.1	0.5
Punjab	Lahore	9.4	64	43	5.3	4.8	2.0
Punjab	Faisalabad	8.1	59	40	4.8	4.3	1.8
Punjab	Gujranwala	5.1	58	40	4.7	4.3	1.8
Punjab	Rawalpindi	4.9	41	28	3.0	2.5	1.3

Source: EPIC. https://aqli.epic.uchicago.edu/country-spotlight/pakistan/.

Since the physiological effects of air pollution tend to be consistent across populations, we can rely on evidence from other contexts to gauge the harmful impact of poor air quality on health and human capital outcomes. The epidemiological literature has produced state-of-the art models that unequivocally demonstrate the deleterious impact of air pollution exposure on health (Dominici, Samet, and Zeger 2000). However, these models fail to account for behavioral changes—or adaptation—that could confound the health-pollution relationship, especially in empirical settings.

Economists have relied on quasi-experimental approaches to document several causal health and non-health effects of air pollution while addressing behavioral confounders. The broader questions that economists address include: How do the effects of air pollution on health and human capital vary across pollution levels and subpopulations? What sort of adaptive behavior do individuals engage in to mitigate these effects?

2.1.1 Health

One quasi-experimental way of examining the health-pollution relationship is looking at the effects of changes in pollution levels induced by factory closures. Temporary reduction in pollution owing to the closure of manufacturing units—due to events such as labor strikes or recessions—lead to lower respiratory-related hospitalizations, mortality, and other morbidities (Pope 1989; Ransom and 1992; 1995; Chay and Greenstone 2003).

Exploiting high frequency data on temporal variations in pollution levels shows that reduction in carbon monoxide improves both infant mortality and birth outcomes such as birth weight (Currie, Neidell, and Schmieder 2009; Currie and Niedell 2005). In the US, the 15-year decline in carbon monoxide from 1982 – 2003 led to $720 million in lifetime earnings owing to improvements in birth weight and $2.2 billion owing to reduced infant mortality for the 2003 birth cohort.

Similarly, reductions in pollution levels because of lower highway congestion due to the introduction of a new electronic toll collection system reduced the incidence of premature births and low birth weights by roughly 12 percent (Currie and Walker 2011). Further evidence shows that airborne smoke caused by Indonesian wildfires led to a 17 percent increase in infant mortality (Jayachandran 2009).

2.1.2 Economic and Productivity Consequences

Besides health, air pollution also directly and indirectly affects human capital, leading to economic and productivity losses. Pollution can directly affect the brain's neurological function, diminishing cognitive ability. On the other hand, severe morbidities—such as reduced lung function—could reduce one's focus and hence the ability to perform a range of physical and cognitive tasks. Pollution can therefore increase school and job absences and performance, inhibiting human capital growth and economic productivity.

Economists have found strong evidence which shows that an increase in carbon monoxide levels leads to higher school absences, even when levels lie well below mandated standards (Currie et al. 2009). Similarly, improvements in air quality owing to source closures improves school attendance (Pope 1989; Ransom and Pope 1992).

While air pollution can impair learning outcomes by increasing absenteeism, it also affects students present in schools. Pollution exposure reduces students' ability to concentrate and stems brain development (Block and Calderón-Garcidueñas 2009). A longitudinal study from California has shown that a 10 percent decrease in PM2.5 raises school children's math and reading test scores by 0.14 percent and 0.21 percent, respectively (Zweig, Ham, and Avol 2009). Research in Israel shows that a 10 unit increase in PM2.5 reduces high school students' test scores by 1.9 percent of a standard deviation while a 10 unit increase in carbon monoxide reduces test scores by 2.4 percent of a standard deviation (Lavy, Ebenstein, and Roth 2012).

Just as pollution raises school absences, it also increases worker absences. Evidence from Mexico City reveals that a 1 percent increase in sulfur dioxide levels reduces hours worked by 0.72 percent (Hanna and Oliva 2011).

While pollution impacts the labor market at the extensive margin by reducing labor supply, it also affects it on the intensive margin by lowering labor productivity. A study has shown that a ten parts per billion decrease in ozone concentrations increases productivity of agricultural workers by 5.5 percent (Graff Zivin and Neidell 2012). Another study demonstrates that cities that have exposed their citizens to high levels of lead have substantially lower wages, value added per worker, and capital value per worker (Clay, Troesken, and Haines 2010). Evidence from China reveals that a 10 microgram per cubic meter increase in PM2.5 causes output per worker to fall by 8.2 percent (Fu, Viard, and Zhang 2021). On a broader scale, results show that a 10 microgram per cubic meter increase in PM2.5 decreases output by 8 percent (Dechezleprêtre et al. 2019).

As stated earlier, pollution exposure inhibits cognitive ability and thus decision-making. Evidence from China shows that reduced performance caused by air pollution explains almost 7 percent of under-performance of investors (Huang, Xu, and Yu 2020). Similarly, we now know that a high air quality index leads to more pessimistic earnings forecasts (Dong et al. 2021). More morbid evidence from the UK suggests that a 1 microgram per cubic meter increase in PM2.5 leads to a 0.3 – 0.6 percent increase in traffic accidents per day.

Through neuro-inflammation and reduced serotonin production, pollution can foster aggressive behavior. A study from Chicago reveals that a 1 standard deviation increase in PM10 leads to a roughly 3 percent rise in violent crime (Herrnstadt et al. 2021). Further research in the US shows that an increase in violent crimes owing to pollution exposure costs the country $1.4 billion a year (Burkhardt et al. 2019). Shockingly, the rise in violent crime due to increases in pollution occurs at levels well below stipulated standards.

Exposure to air pollution during gestation can affect children's' human capital outcomes later in life. These include lower scores on language and math tests in school (Bharadwaj et al. 2017); depressed earnings later in life (Isen et al. 2017; Voorheis 2017); high unemployment (Isen et al. 2017); lower probability of college attendance (Colmer and Voorheis 2020); reduced high school completion (Voorheis 2017); and higher chances of incarceration (Voorheis 2017).

Another area of concern—which often goes neglected—in developing countries such as Pakistan is indoor air pollution (IAP), which results from cooking and heating with solid fuels on open fires and traditional cookstoves. Since women mostly carry the burden of cooking and their children often spend time with them, IAP disproportionately affects women and children.

Low-income households often lack access to clean energy sources and overwhelmingly rely on cheap fuel such as biomass and coal to meet their energy demands. Burning such fuels release toxic pollutants such as PM2.5 and carbon monoxide, leading to pollution concentrations well in excess of established standards. Indoor levels can be orders of magnitude higher than outdoor levels, thus considerably raising health and human capital risks. Strong evidence links IAP to acute lower respiratory infections, chronic obstructive pulmonary disease, lung cancer, and increased risk of other morbidities including low birth weight, asthma, tuberculosis, blindness, and cardiovascular diseases.

The WHO estimates that IAP causes DALYs losses of 3.7 percent in high-mortality developing countries. In most developed countries, a shift away from biomass fuel burning to natural gas and electric options has resulted in a reduction in this particular environmental risk factor. However, according to the Pakistan Social and Living Standards Measurement (PSLM) survey 2019-2020, only 37% of households have access to clean fuel technology for cooking and lighting. Hence, Pakistan's air pollution risk factor in the GBD report is a combination of both outdoor and indoor air pollution.

2.2 NCDs and the overall healthcare cost burden of a country

The health sector has just started to take on the NCD agenda, adjusting the national curriculum, initiating surveys to better understand the distribution of the disease burden, and preparing an action plan to tackle NCDs. Underlying risk factors for NCDs are both behavioural (e.g., food and beverage consumption and physical activity) as well as environmental (e.g. air quality, water quality, physical environment). Further it is best to prevent NCDs, since there is no treatment option, rather only a continuous management approach, thus putting a permanent cost burden on the healthcare system of a country.

In the case of behavioural risk factors, typically patients are advised on lifestyle changes by health professionals. These include advice on what one eats, drinks and the level of exercise. Even on these aspects, “nudges” towards good behaviour, such as a higher cost for sweet beverages that cause diabetes, or on tobacco products that give rise to lung cancer are useful to help to reduce the overall healthcare cost of a country. In the case of environmental risk factors, individual action is even more limited, since technological options (i.e., availability of natural gas for cooking or using air purifiers inside the home) are usually constrained by income. Further, to effect a change in the environment is outside an individual's ambit of action. Indeed, these factors are also outside the health sector's domain, and often require policy action across several sectors, as well as vertical levels of government. This raises important questions, such as how best should the health sector work with other sectors to ensure that sectoral policy and programs include public health goals, so that the overall cost for the country is reduced, rather than just shifted across sectors. A World Bank study (World Bank, 2008) estimated that the economic cost of environmental degradation in Pakistan was approximately 9% of GDP.

In Pakistan, the picture is further complicated by the lack of research that aims to better understand the healthcare burden created by environmental risk factors. It is interesting to note that Punjab's NCD Unit, despite highlighting incidence of strokes, heart disease and cancers as major NCDs in the province, does not even note that exposure to poor air quality increases the risk of these diseases on their website. There is also little research on IAP. A recent study in Mirpurkhas and Nawabshah found that women were 5 to 6 times more at risk of acute coronary syndromes as a result of cooking with solid fuel, compared with women cooking with natural gas (Fatmi et al. 2020). Yet household energy policy does not make any link with health costs.

The situation is better with water, sanitation and hygiene and the link with communicable diseases. However, there is even less data on the NCD burden resulting from contaminated water in Pakistan, even though this, too, is likely to be a cause of significant health impacts. Consumption of food irrigated in and fish that live in contaminated water is even more dangerous than directly consuming contaminated water as pollutants bioaccumulate, which can ultimately lead to NCDs, such as liver, kidney and reproductive damage, and neurological and hormonal problems. Further groundwater pollution with both naturally occurring pollutants, such as arsenic, but also pollutants from use of agricultural pesticides and fertilizers increases

risk for NCDs. Research on water contamination in Bangladesh shows that arsenic pollution reduces labor supply by 8 percent (Carson, Koundouri, and Nauges 2011).

3. The Health Burden of the Poor

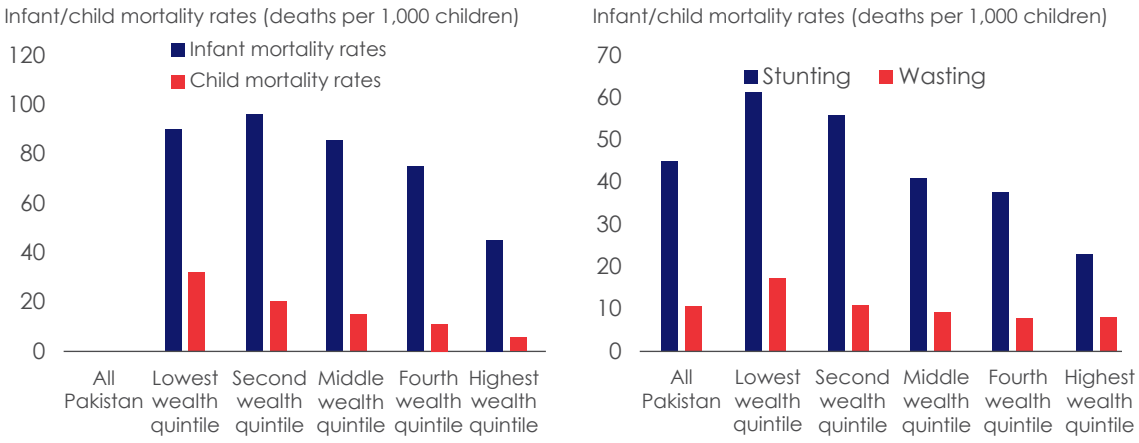
There is very poor data available on the burden of disease of the poor in Pakistan. Standard surveys (PSLM, HIES, DHS) do not make the link between income and health burden. In the case of environmental risk factors, the burden of disease is most likely skewed towards the poor (as it is in other countries) as they are more exposed to polluted air and water. Understanding the impact of environmental risk factors on health is important to draw an analysis on the productivity and income of poor and vulnerable families. The productivity of a person would reduce as a result of these ailments. Moreover, a large portion of these families' incomes can be taken up by treatments for these diseases, pushing them back into poverty. This traps these families in a vicious circle where low income and low productivity prevent them from gaining adequate educational and employment opportunities which in turn deters them to create sustainable livelihoods for themselves. A recent study from China analyzes these linkages between health, income and poverty, noting that illness is the main root of poverty in most low-income groups in rural China (Zhou et al. 2020). Indeed, during the launch of the KPP, the Prime Minister and Finance Minister both directly indicated that health impacts is a major drain on resources for poor and vulnerable households, hence putting in place a health insurance scheme, through the Sehat card, to help with management of health shocks in the short term.

Women are also rarely survey respondents, even though in rural settings they may be most exposed to indoor air pollution. Participants at a recent CDPR workshop on gender noted anecdotally that women borrowers were more likely to be vulnerable in terms of health, but rarely accessed healthcare, unless it was very serious. Interestingly, from primary data collected for a RCT (Afzal et al. 2022), 1800 women who were current or past microfinance borrowers were offered a small microfinance product. Those who took up the product used it for a wider variety of uses, mostly for purchasing household appliances (24%), food (20%), clothing (13%), wedding celebrations, religious festivals, or funerals (12%). Few for 'productive' uses such as investment in business (5%) or education (3%) and similarly few used it for medical expenses (5%).

However, the picture changes when the health of children under the age of 5 years is considered. Here the data is very clear in Pakistan. In terms of diseases, the number one killer of children in Pakistan today is pneumonia (as they breathe in polluted air from burning biomass fuel, together with women) and the number two killer is diarrhea. Environmental risk factors (namely, air and water pollution) play a major role in increasing susceptibility of children to these diseases. The risk of developing pneumonia in children is virtually doubled following exposure to air pollution, thereby accounting for approximately one million deaths globally (WHO 2021). Pakistan is one of only four countries in the world where most of these deaths occur.

Infant and child mortality is very different depending on the income quintile, as can be seen in the Figure 9 below. Deaths from pneumonia and diarrhea are also correlated with income quintile in Pakistan (Chang et al. 2018). Again, current research focuses on understanding how vaccines can be given in an equitable way, but the mere fact that the deaths from these diseases are higher for the lower income quintiles suggests that these income groups face greater exposure to environmental risk factors. A multidimensional approach to addressing these illnesses would also include tackling environmental risk factors.

Figure 9. Mortality and Stunting rates for Pakistani Children



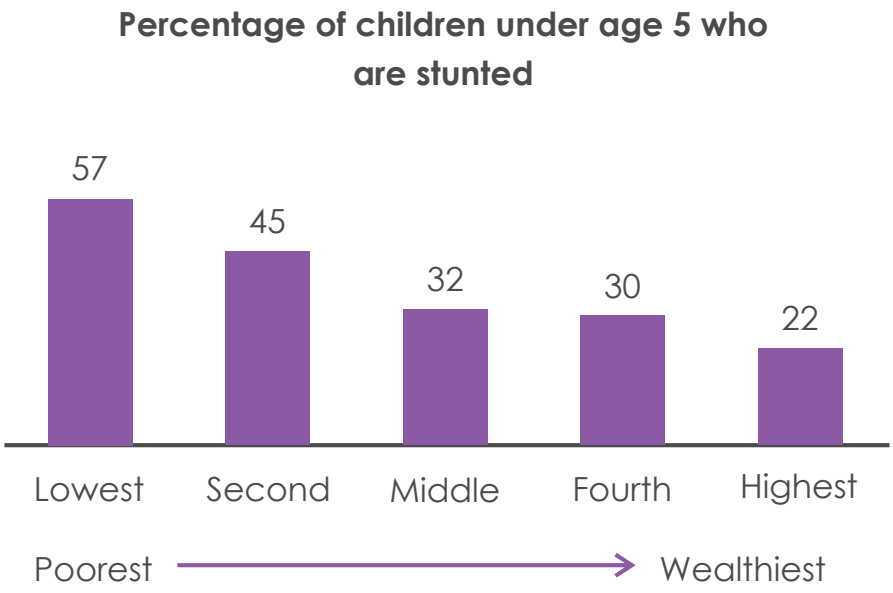
Source: Ahmed et al (2019)'s estimates, based on data from the Pakistan Demographic and Health Survey 2012-13.*Notes:* The infant mortality rate is the probability of children dying before their first birthday in the 10 years preceding the survey per 1,000 live births. The child mortality rate is the probability of dying between the first birthday and the fifth birthday in the 10 years preceding the survey per 1,000 children surviving to their first birthday. Stunting is defined as being two standard deviations below the WHO standard height for age. Wasted is defined as being two standard deviations below the WHO standard weight for age.

Source: Ahmed et al, 2019.

Air and water pollution are also responsible for creating long term impacts that can last across generations, for example through creating cognitive damage (i.e., reducing IQ) in children under the age of 2 years who have repeated bouts of disease and hence are malnourished, resulting in both physical and mental stunting, thus affecting educational attainment in later years (World Bank 2008, Alam et al. 2020). Further, improved nutrition in later years cannot change the cognitive damage, and these children continue to underperform in educational tests (Sokolovic et al. 2014). This clearly indicates that stunting cannot be cured, only prevented, and that the lower productivity consequences are lifelong.

Again, the data is clear. It is the children of the poor that suffer the most, though in the case of Pakistan stunting is found across all income quintiles, as illustrated in Figure 10. Pakistan's Demographic and Health Survey (DHS) 2017-2018 found that 57% of children under the age of 5 years are physically stunted in the lowest income quintile compared with 22% in the highest income quintile. This physical measure of stunting is taken as a measure of the malnutrition risk factor in the DHS. However, it is important to unpack how much of this malnutrition is a result of poor nutrition from lack of food versus poor nutrition from the inability to fully benefit from the nutrients in food due to lower respiratory infections or diarrhea (both often caused by exposure to polluted air and water) in children in the first two years of life. For the higher income quintiles, one does not expect stunting due to lack of food, and therefore much of this stunting is probably due solely to environmental risk factors. Since the poor are even more exposed to these same environmental risk factors, one would expect the contribution from environmental risk factors to be even higher.

Figure 10: Stunting in Pakistani Children by Household Wealth



Note: Excludes Azad Jammu and Kashmir Gilgit Baltistan

Source: Pakistan DHS 2017-18

4. Making Households More Resilient

The recent pandemic has emphasized the vulnerability of low-income households in the country - many of whom are bunched just above or at the poverty line - to economic shocks. With only half of the working age population at work, this nation of 200 million relies on the income of 46 million earners, with each earner supporting 4 dependents on average (Cho and Majoka, 2020). Diversifying household income via multiple earners has increasingly become the norm across many developing and developed countries. For instance, multiple earning members in the household potentially reduces vulnerability coming from precarious or temporary employment, and low pay. In Malaysia, female employment has consistently grown in the last five decades, following a concerted policy effort for the development of women in the 1990s. This has in turn led to an increase in dual-income families in the country (Zaimah et al. 2013).

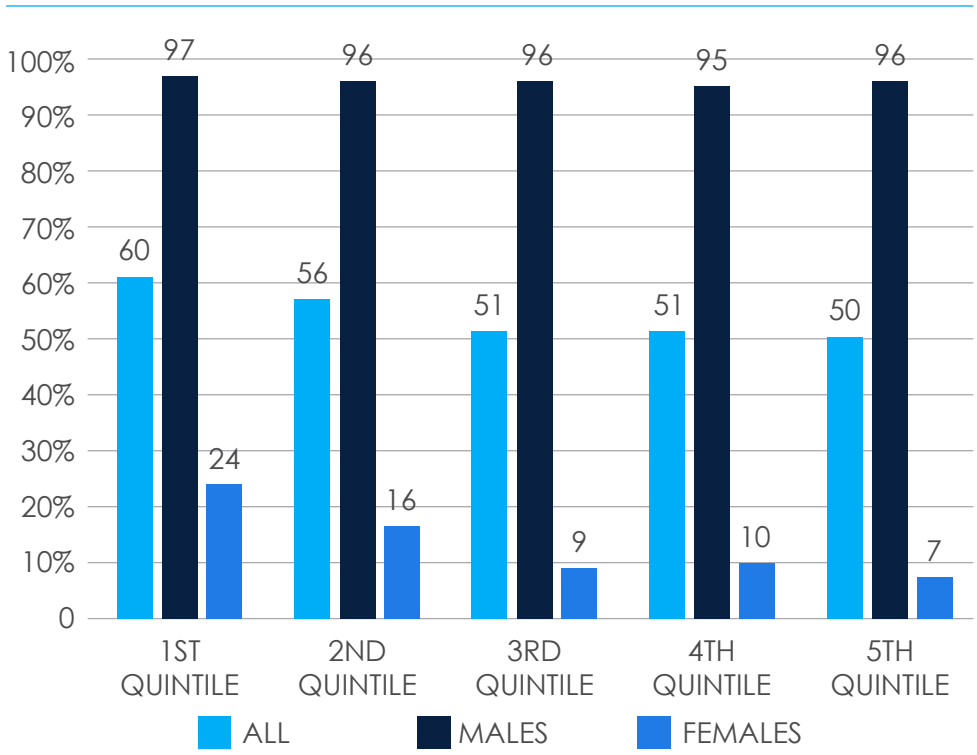
In Pakistan, nearly a third (33.75%) of the households have more than one income earner, of which nearly half (43%) have at least one earning woman in the family. Multiple-earner households report a significantly higher monthly income: an average of PKR 34,000 compared to PKR 14,000 earned by single earner families. Multiple-earner households where women also work earn PKR 5,000 more than single-earner families (PSLM 2019-2020, based on author's calculations). This may be because women tend to engage in informal, often low-pay, work, and may not be compensated at the same rate as men.

In Pakistan, it is also worth noting that many of the multiple-earning households, particularly those with female earners, seem to be vulnerable households that may have been driven into augmenting income. In general, while labor force participation for men is high, labor force participation by women is substantially lower. However, there is considerable variation in female participation across income quartiles, ranging from 24% for the lowest quartile to only 7% for women from the highest income quartile (see Figure 11 below).

Indeed, on average, multiple earner households where at least one of the earners is a female are 7 percentage points more likely to have worried about not having enough food to eat; 10 percentage points more likely to have experienced a time when they were unable to eat healthy and nutritious food; 10 percentage points more likely to have lacked food diversity because of lack of money/ resources in the last 12 months, than households with a single earner. They are also more likely to report being sick or injured in the

last two weeks than single earner households (PSLM 2019-2020, based on author's calculations). This suggests that women are working primarily to augment income in vulnerable households.

Figure 11. Female Participation by Income Quintile



Notes: The graph plots female labor force on the y-axis and income quintiles, disaggregated by gender, on the x-axis.

Source: Cho and Majoka (2020)

It is notable that trends among small business owners suggest households with multiple businesses in the household have larger businesses, household income and potential to grow. Evidence for this comes from primary data collected from a sample of 1400 married, female micro-business owners in Punjab (d'Adda 2019). A quarter of this sample are dual-business households, with both the husband and wife having a (separate) business, a little over a third are households where only the woman has a business, and the remaining are households where the husband and wife operate the same business together. Women from dual-business households are more likely to say they set up a business because they have no other options for employment and income generation (27% vs 18%). There is no difference in women's age, education or household assets between these two types of households, but women's business in dual-business households are larger, with assets and start-up costs worth PKR 70,000 and PKR 63,000, respectively, compared PKR 54,000 and PKR 47,000 for single business households, and hire one additional paid, full-time employee. Monthly sales from women's businesses in these households average PKR 20,000 and do not significantly differ by type of households, in dual-business households, the husband earns an additional PKR 23,000 per month from his business, which significantly increases the household income. Interestingly, businesswomen in dual business households also make riskier decisions with potentially higher returns: they are more likely to have introduced new products in the last 6 months (40 vs 26%) and are more likely to want the business to grow (83% vs 70%).

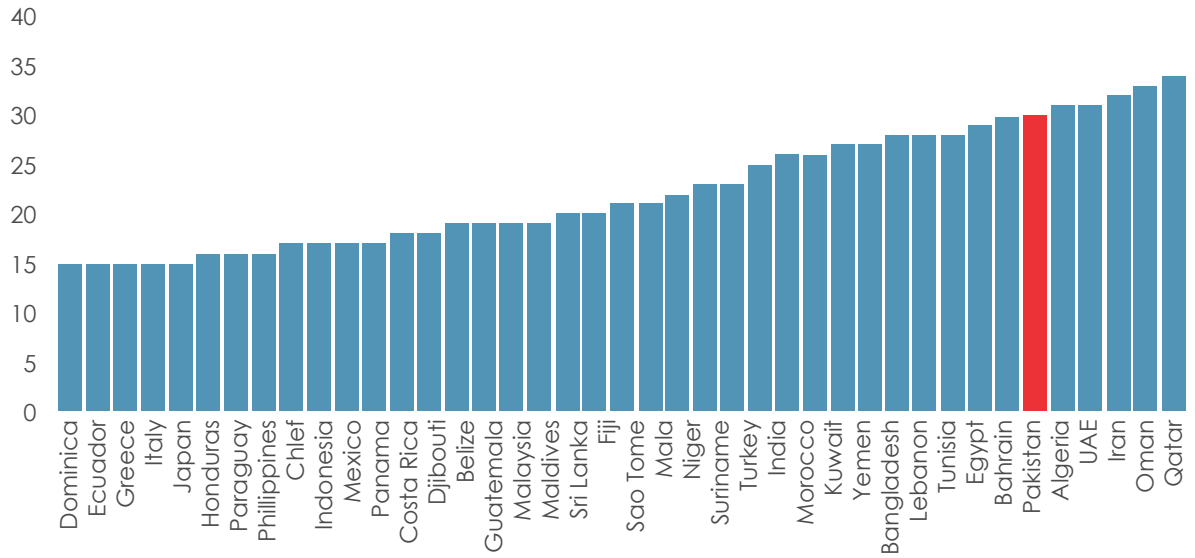
In summary, in vulnerable households, women work because they need to augment income. Yet they are not compensated at the same rate as men. On the other hand, societal norms may discourage women from working as household income rises, and the need to augment household income decreases. Yet, when women work, evidence from female microbusiness owners operating in households with multiple businesses in Punjab suggests that overall household income is greater, and businesses are larger with more potential to

grow.

4.1 Prioritizing female labor force participation to increase resilience among the vulnerable

Women represent a large, untapped productive resource of the country. Female labor force participation in Pakistan is among the lowest in South Asian countries and stagnant at under 30%. This is particularly true in urban areas, where female labor force participation has been hovering around 11% during 2001-2017 (Cho and Majoka 2020) and holds even among educated graduates, where female labor force participation, at 25.9%, is only a third that of the males (Labor force survey 2017-18). According to one estimate, closing the gender gap in labor force participation could lead to a (one-off) 30% boost in GDP (Cuberes and Teignier 2014).

Figure 12. GDP losses due to economic gender gaps in selected countries



Source: Cuberes and Teignier (2014). Losses are estimates for a particular year for each country and can be interpreted as a one-off increase in GDP (%) if gender gaps were to be removed.

In addition to the potentially significant impact on productive capacity, female employment has proven welfare impacts, both for the women themselves and for their dependents. For instance, women who work in Pakistan are more likely to have a say in household consumption decisions and their own health decisions, including the decision to use contraception (Fatima 2014). This has important implications for improving access to health care for a vulnerable segment of the population, and can be expected to augment the utility of new initiatives such as the Sehat card. Similarly, when women are part of household decision making, households tend to spend more on young girl's education than the average household, and as much as 13% more than the expenditure on boys (Saleemi and Kofol 2022; Data from Pakistan Rural Household Surveys 2014, 2016, 2017). A recent evaluation of Benazir Income Support Programme (BISP), the federal social safety net program, indicates that the periodic unconditional grants, given to women, led to substantial decrease in child labor in the household, with greater decrease in hours worked for girls than for boys (Churchill 2021). This and other international evidence[3] on the welfare impacts of female employment and decision-making power stresses the importance of including women for sustained growth and prosperity of vulnerable low-income households.

[3] See, for instance, evidence from pension programmes from South Africa (Duflo 2003), participation in local councils in India (Chattopadhyay and Duflo 2004), and agricultural production and income in Cote d'Ivoire (Duflo and Udry 2004).

4.2 What constrains economic participation by women?

Despite low economic participation by women, many women in Pakistan express a desire to work. In 2018, the Punjab Commission on Status of Women (PCSW) conducted a survey with approximately 30,000 women and their household members, in order to understand the barriers that women face in participating meaningfully in society and the economy. The data confirmed that the productive capacity of the female labor force is underutilized. Of the women interviewed, 11% were looking for work, and of those who were working, nearly two-thirds were working part-time. The desire to work is arguably higher among educated women - in interviews with 2500 women enrolled in undergraduate studies in public arts colleges of Lahore, more than four-fifths (84%) expressed a desire to work after graduation (Ahmed et al. 2020). However, as discussed earlier, even among this educated sub-sample, female labor force participation is low and only a fraction that of men.

Another often provided rationale is that women are the caretakers in the household given long-standing socio-cultural norms and household responsibilities do not allow women to work. Indeed, 42% of the women surveyed by PCSW cited domestic responsibilities as one of the reasons for not working. However, not all is explained by domestic work: as per the 2007 Pakistan Time Use Survey, two-fifths of the women who do not work, report not having enough to do the previous day. In fact, women who work do almost as much housework as women who do not work, while also being employed (Field and Vyborny 2016).

Financial exclusion and lack of access to finance are relevant challenges for female entrepreneurs. In the survey with 1400 businesswomen in Gujranwala (d'Adda et al. 2019), 22% reported lack of funds to be one of the main constraints faced by business women. In the PCSW sample, less than 5% reported having access to finance. However, evidence from around the world and from Pakistan has revealed that access to finance via microloans is insufficient to encourage growth on its own (Banerjee et al. 2015; Said et al. 2021).

While higher education, insufficient time free from domestic chores and access to finance do not seem to be significant levers for a big push in female labor force participation, other constraints such as lack of skills and knowledge - reported by 15% of the business sample in Gujranwala and by 50% of the sample of women interviewed by PCSW in Punjab - may be a binding constraint on economic participation by women as well. Evidence from Punjab indicates that when complimented with aid in establishing market linkages, skills training for women can be particularly beneficial, leading to potentially significant increase in the yearly income and empowerment of female entrepreneurs (Cheema et al. 2019).

Social norms, regarding acceptable occupations for women and of their mobility outside the household, as well as safe transport to and from places of work, are another binding constraint on women working. More than a third of the sample interviewed by PCSW reported not having access to transport or accommodation near places of work. Many women require permission from their household members to work - approximately 35% in Punjab (from PCSW survey 2018). Household members may not allow women to work if they deem it to be unsafe, or for work outside the home to be inappropriate for women. For instance, data from the Labor Force Survey (2000 - 2010) reveals that a third of the women who work, work from home. Two-fifths of those who do not work, say they do not have permission from their fathers or husbands to work outside the home, 15% report dislike having to work outside the home themselves (Field and Vyborny 2016). Finally, a small but significant proportion (15%) of businesswomen in Punjab also report health ailments as a reason for why they cannot dedicate their time and resources fully to their businesses.

5. Foundational Steps for a Successful Pakistan

The data discussed in this paper suggests that:
(i) Stunting is a serious issue in Pakistan, across all income groups, but particularly across lower income quintiles, resulting in permanent cognitive damage to children, lowering productivity and preventing the next generation from fully benefiting from opportunities. Shockingly, Pakistan's DHS (2017-2018) reports that 57% of children in the lowest income quintile and 22% of children in the highest income quintile are stunted. The source of this stunting is both lack of nutrition, but also environmental risk factors (poor air and water quality) resulting in repeated bouts of diarrhea and respiratory illnesses in children under the age of two, that prevents children from fully absorbing nutrients from their food.

(ii) Health costs are increasing and will continue to increase across the population, due to the increase in non-communicable diseases. Air pollution plays a role in at least a third of these diseases, yet is unrecognized as a major risk factor in Pakistan. Further, these diseases cannot be cured, only prevented. This means both an increasing economic burden associated with burgeoning health costs, but also lower productivity as people manage these diseases on a day-to-day basis. Again, all citizens are affected, and the poor are disproportionately affected as they do not have access to healthcare or insufficient income or savings to seek constant treatment.

(iii) Female labor force is among the lowest in South Asia, and so Pakistan loses out both in terms of untapped productive potential, but also the broader development gains and the resilience that comes with women wage-earners in the household. Social norms and financial exclusion both play major roles in preventing women from working.

These findings suggest that policy actions that address environmental risk factors and increasing women's participation in the workforce will reap development benefits beyond KPP. Indeed, broader action could lay the foundational steps for a more successful Pakistan.

5.1 Kamyab Pakistan – Broadening the goal posts to make it more kamyab

There is some lack of clarity as to the main objective of KPP. If KPP is solely a program to make access to finance easier for vulnerable households, then clearly the health and productivity implications are not center stage. Yet better health will lead to better outcomes for KPP borrowers, as is currently acknowledged by KPP through its Sehat card. Hence, this suggests that a key policy action would be to encourage better coordination across existing programs that strive to improve air and water quality, since at a geographical level, this could yield better outcomes on the ground. This could take the form of ensuring geographical overlap with existing WASH investment programs and any programs to improve household energy and outdoor air pollution, which by their very nature are provincial or city level interventions. In the case of the latter, there appears to be a vacuum, and such programs are sorely needed to help improve the conditions for successful outcomes from KPP. Such an effort will also clearly require agile coordination across different stakeholders and levels of government.

At the level of KPP specifically, the training program could include specific modules on personal action to reduce exposure to air and water pollution (e.g., through better ventilation, chimney, etc.) and reduce disease prevalence (e.g., through handwashing). This is a much less comprehensive approach, but at least attempts to support KPP users with relevant information to help achieve successful outcomes. We do not recommend any conditional actions as this would increase the cost of KPP administration as well as put an unfair onus on the poor to change their behaviour to access credit, without putting an equal measure on higher income groups.

In the case of female participation in the labor force, there is a clear vacuum in the KPP, as currently designed. No effort has been made to encourage greater female participation or even to monitor and report female participation. This could be because traditionally many microcredit programs already have high female participation. It is notable, however, that NRSP indicated in a CDPR workshop that traditionally they have over 50% women borrowers, but that in the case of the Kamyab Jawan program (another government initiative that provides loans for business), only 16% of the applicants, and 12% of the successful recipients were women, despite 25% of the funds being earmarked for women.

In addition, women are not well informed about these schemes. Women who are aware of such programs may face other obstacles - such as complex signing up processes and a reluctance to approach banks and other providers out of fear of exploitation. This suggests that significant effort does need to be made to better include female participation in KPP. Related to this is the need to collect gender-aggregated data to understand the constraints that women may face in participating in similar programs, and to dynamically refine the design to facilitate their participation. Specific suggestions on how this could be improved are described below.

Improved monitoring disaggregated by gender:

- Loan applied for, and approved
- Loan size and use
- Loan disbursed
- Loan refused
- Defaults and delayed payments

Set targets:

- Introduce a KPI for gender inclusiveness (or different KPIs for each province, considering varying societal constructs)

Improve chances of women borrowers utilizing KPP/loan programmes:

- Overlap with existing efforts to improve digital literacy for women
- Make application process friendly for women borrowers (who may not have a cell phone)
- Develop 'use cases' to illustrate access and encourage take-up

Oversight and Advisory mechanism:

- Include better gender representation in committees overseeing KPP/loan programme progress

However, while the recommendations above will help improve KPP's outcomes, broader actions related to improving environmental quality and promoting gender inclusiveness could be essential foundational steps that will benefit vulnerable households at a much broader level (beyond KPP borrowers) across the country. These are discussed in the sections below.

5.2 What could be done to encourage better air and water quality and related better health outcomes?

Air and water quality management are provincial responsibilities under the 18th Amendment. Given the lack of a mechanism for federal oversight in Pakistan, accountability only lies with citizens in a province putting pressure on their provincial governments. Yet, lack of understanding and awareness of the health effects of air and water quality on health in Pakistan means that the citizens cannot play this role effectively, even though the right to a clean and healthy environment is already a Constitutional right.
The lack of a public health approach in the health system also suggests that physicians have taken a clinical approach to treatment, rather than a preventative approach. With increasing NCDs in Pakistan, and improved awareness of the need to prevent such diseases, there is slowly a better understanding of new public health approaches. Lifestyle changes (increased exercise, better nutrition) can play a role in NCD prevention to some extent, and since these are under the control of an individual, physicians often exclusively highlight them. In the case of air and water quality, which are also risk factors for many NCDS, multiple sectors (outside health) and stakeholders (not just the individual) need to take concerted action. Hence, often these are ignored since neither physicians nor individuals can exert any control to change the situation with respect to these factors.

Before awareness improves, ultimately the pressure for change to improve environmental quality can only stem from a country's leaders, who are aware of the impact this can have on development, at a foundational level. However, currently lack of data collection and poorly designed national surveys on this specific issue prevents policymakers from being sufficiently informed to make good development decisions in the interest of the country.

The COVID-19 epidemic provides an interesting parallel, with useful lessons, for actions to address environmental quality. A coordination mechanism was established across different levels of government and different stakeholders, including a mechanism to collate data across jurisdictions. Select and smart approaches were applied to manage COVID-19 outbreaks, using data and lessons from other countries. Programs were put into place to support the most vulnerable (Ehsaas Emergency cash transfer). These programs also used data smartly, as well as relied on coordinated action across different levels of government. Vaccinations were both procured and received as donations and widely used across all provinces and income groups. Overall, these strategies paid off. Pakistan's COVID management approaches are being applauded worldwide.

In many countries, incentive systems to promote behaviour in the direction of

improving air and water quality include (i) linking good environmental outcomes with budget transfers across levels of government through score cards and conditional budgets transfers, (iii) creating fiscal incentives that are consistent with the goals set (e.g. taxing sugary beverages or tobacco, but equally tax exemption schemes for renewable energy), (iii) putting information in the public domain on air and water quality, as well as related health impacts, (iv) changing education syllabus to include information on air and water quality, related health effects, and personal action, and (v) encouraging citizen oversight e.g. through committee at the city level that monitor these indicators, and also through legal challenges.

Often interventions that improve air and water quality also help to reduce greenhouse gas (GHG) emissions, and therefore may also be eligible for climate finance (e.g., better handling of solid waste to reduce methane emissions into the atmosphere, or using cleaner fuels for household energy or reducing emissions from transport in cities).

Given that Pakistan is starting at a low base, the following areas could be prioritized:

(a) Put in place a centralized database that collects information across the provinces on key health related outcomes, derived from poor air and water quality, with income information. This could be through adjustment of existing national surveys, such as the PSLM and HIES. Making this database available to researchers will also encourage related public health and economic research.

(b) Work with the Ministry of Energy to develop and implement a household energy strategy. This is an immediate priority given the impact of use of solid fuels on infant and child mortality and stunting, particularly for low-income quintiles, and because this area has been completely ignored in the past. This area could also be partially financed through climate finance, given that reducing solid fuel emissions results in less GHG emissions.

(c) Work with the health sector to create constituencies to advocate for cleaner air and thus facilitate climate actions. Generally, there is poor understanding of the health impacts of air pollution in Pakistan. It is notable that Punjab's NCD Unit, despite highlighting incidence of strokes, heart disease and cancers as major NCDs in the province, does not link exposure to poor air quality with increased risk of these diseases on their website. Working with the health sector to ensure the new health curriculum on NCDs includes environmental risk factors will create a constituency for change in the health community.

(d) Work with the provinces to improve health outcomes by updating standards to health-based ones and using technology that provides real-time source-specific publicly available pollution data. Pakistan has strong pollution rules and regulations on paper but continues to experience hazardous air quality because of lack of health-based standards, weak monitoring and enforcement. Health outcomes could be improved significantly if provincial environment departments revised standards based on health needs in specific cities and across different provinces. In addition, compliance could be improved by using new monitoring technologies—such as the Continuous Emission Monitoring System (CEMS) adopted by pollution regulators in several Indian state governments—that transmit real-time pollution data from sources. Regulators can use this data to target non-compliant polluters or calculate pollution taxes for sources under a pollution tax regime. Access to source-specific pollution readings will also create public pressure on sources to improve compliance and incentivize researchers to help the regulator in designing better air quality measures and interventions.

(e) Focus on tackling urban air quality in 2-3 major urban areas e.g., Lahore, Peshawar and Karachi. This will yield important lessons that could be used by other cities at a later stage. It will also yield important local information on coordination across different stakeholders and sectors. This is of key importance as Pakistan already has several cities on the world's most polluted cities list. Further, infrastructure in cities is an investment that cannot easily be adjusted over time; planning information prior to infrastructure development that helps create cleaner cities is crucial. Again, climate finance can be tapped, as often co-benefits accrue, namely local (health) and global (reduced GHG emissions) benefits. An excellent summary of interventions and approaches that could be applied in Pakistan can be found in the CDPR's

"Workshop on Air Quality Key Takeaways" 2022.

(f) Address transport related air pollution where provinces can realize large gains in air quality. Existing studies—though imprecise—identify transport as the largest source of local pollutants. Though we do not have studies that apportion GHGs across sources in Pakistan, transport is an important source of GHG emissions in most countries. Therefore, tackling emissions in the transport sector can limit both local and global damages. Areas of intervention include: scaling-up existing public transportation projects such as the MetroBus and Orange Line; implementing the national Electric Vehicle (EV) policy with a particular focus on two-wheelers and commercial vehicles; setting stringent vehicular emission standards, at least in the short run until EV adoption picks up; and enforcing congestions taxes within cities.

(g) Set up a Unit in Ministry of Finance that focuses on the development of fiscal instruments for abating air pollution. These could incentivize better environmental quality with related health outcomes, through instruments such as carbon taxes, beneficial property taxes, tax credits for household renewables/ EVs, etc. This will help the shift in the right direction, but also yield revenues.

Such a unit could also help design and implement pollution taxes in the long run to achieve abatement at lower costs. Since regulators enforce uniform emission standards, marginal abatement costs can substantially differ across sources—especially across old and new plants. This leads to compliance at a considerably higher cost to society. Taxing source per unit of emission achieves several benefits: 1) it rests in the "polluter pays principle"—pollution causes damages to society hence you must pay for these damages—which appeals to citizens' sense of fairness; 2) it leads to cost-effective abatement since the tax equalizes marginal abatement costs across sources; 3) it yields a "double-dividend" -- pollution abatement as well as revenue for the government, which it can allocate to other public projects.

These policy actions, despite not being comprehensive, will begin to encourage a better understanding of environmental risk factors and their consequences, as well as help to generate preliminary interventions to tackle them[4].

5.3 What can be done to encourage more participation of women in the labor force?

As has been discussed above, women's participation could significantly boost GDP, yet there are significant socio-cultural, safety and access to finance barriers in Pakistan. Further, inadequate compensation and wage gaps put women at a further disadvantage, particularly those working to boost income in vulnerable households. This suggests that interventions that more broadly encourage more participation of women in the labor force, even beyond KPP, are essential to help change mindset and shift behaviour.

The constraints summarized in section 4.2 are instructive for designing products and policies that encourage economic participation by women. Access to finance may be necessary, but insufficient for ensuring labor force participation or growth of businesses owned by women (Said et al. 2021). Context specific interventions that target gender-specific binding constraints may be needed. For instance, evidence from developing countries suggests that economic participation by women can lead to welfare gains for the women and their household members, but more so if they have some degree of control and autonomy over their earnings[5]. Biometric verification for collecting the BISP transfers tripled the likelihood that women recipients come to collect cash directly; and women who were not collecting cash personally using debit cards under the old system were 9 percentage points more likely to have a say in how the cash would be used. Therefore, control over funds disbursed seems to be an essential condition for unlocking potential welfare gains discussed in section 4.1.

[4] Energy policy also plays an important role, but is consciously excluded from this list since there is already much research and action around it. However, the sectors and policy actions described here are less visible in the current public dialogue in Pakistan, despite their importance.

Much of the current thinking around encouraging women's economic participation centers around economic incentives. Yet one of the largest constraints, and indeed one reason why countries at the same level of development tend to have vastly different female labor force participation rates are the social norms that define what is considered appropriate and inappropriate behaviour (Jayachandran 2021). Social and cultural norms can dictate female mobility, their decision-making power in the household, and their engagement in the labor market. Women may be reluctant to step out of their homes because of lack of safe and affordable transport. Evidence on how much safety considerations can constrain female mobility comes from a recent study by Cheema et al. (2022), who evaluated a subsidized skills training program in Punjab. They found women were four times less likely to complete training if it required traveling outside the village boundary.

Some norms are deep-rooted and resistant to change. However, evidence suggests that overcoming these barriers is possible, whether by working around them or by alleviating them. For instance, women-only buses and easily accessible transport services are examples of policies working around a prevailing norm (Aguilar et al. 2021, Kondylis et al. 2020, Martinez et al. 2018; Seki and Yamada 2020). Using the same logic, peer support systems can, in addition to acting as an informal information and skill sharing platform, provide additional safety and security for female entrepreneurs to move about in the community with a peer or friend (Field et al. 2010, 2016).

Building on these insights, recent studies suggest that it may be possible to shift internalized norms by increasing exposure to 'successful role models' (Lafortune et al. 2018). There is suggestive evidence to support the value of role models in Pakistan. In a recent study, Ahmed et al. (2022) found that recent graduates from low-income households in Lahore who were exposed to successful alumni, were more likely to increase labor force participation to support household income during COVID induced lockdowns in 2020. In a more direct approach, Bursztyn et al. (2020) found that men in Saudi Arabia systematically overestimate social disapproval of women's work, and that simply providing credible information about views of their peers helps increase the labor force participation of their wives. In India, a school program that discussed gender roles and discrimination faced by women with adolescents led to persistent and equitable attitudes about gender, more so among boys than in girls (Dhar 2022). While similar attitude change interventions have been implemented in the NGO sector, local governments can make use of similar strategies to facilitate women's entry in the labor market (Jayachandran 2021).

The following areas can be prioritized:

(a) Ensure gender related KPIs are required for all financial institutions (from banks to microcredit) that provide loans. These KPIs need to be realistic and take into account different socio-cultural conditions across the provinces. Yet they need to be monitored and adjusted upwards over time. This may require the creation of a gender-related advisory committee within Planning Commission and Ministry of Finance to recommend appropriate KPIs, as well as to monitor progress over time.

Examples of such KPIs for loan programmes include the following:

(i) Improve monitoring with data disaggregated by gender:

- Loan applied for, and approved
- Loan size and use
- Loan disbursed
- Loan refused
- Defaults and delayed payments

(ii) Set targets:

- Introduce a KPI for gender inclusiveness (or different KPIs for each province, considering varying societal constructs)

(iii) Improve chances of women borrowers utilizing loan programmes:

- Overlap with existing efforts to improve digital literacy for women
- Make application process friendly for women borrowers (who may not have a cell phone)
- Develop 'use cases' to illustrate access and encourage take-up.

(iv) Oversight and Advisory mechanism

- Include better gender representation in committees overseeing loan programme progress

(a) With a focus on the most vulnerable households, encourage financial institutions to develop products to attract more female borrowers. Providing more flexible capital can facilitate entrepreneurial capacity of low-income female borrowers (Dimble and Mobarak 2019). Encouraging financial institutions to design disbursal methods that ensure that the recipient has some control over grants or loan funds can also reduce misappropriation of women's funds. As BISP biometric verification experience has shown, allowing women some control over funds withdrawn can be an important first step in giving women a say in household decision making.

(b) Reduce the stigma of a female breadwinner in target communities. This can be done through information interventions, exposure to role models, and promotion of discussions (via media campaigns and college-based programs) that discourage intolerance of gender discrimination.

(c) Take transport related initiatives that help to reduce both mobility and safety concerns for women, so they can participate more fully in training and/or in the labour force. This could be through encouraging the development and offer of new and improved transportation options for women, including group transportation from schools, offices, factories, etc.

(d) Encourage the development and implementation of skills training and mentoring programs specifically for women. Encourage educational and professional institutes to leverage interaction among working women for information and skill sharing, as well as a support system to overcome barriers to their mobility.

(e) Encourage large businesses to formulate and implement gender inclusiveness policies. This could include gender KPIs across corporations but also for senior level positions, provision of childcare services to retain women in the workforce, ensure equal wages for equal work, etc.

5.4 Conclusion

The findings of this paper suggest that more vulnerable households are disproportionately affected by health impacts arising from environmental risk factors. These households are also often the ones that seek to augment income through female participation in the labor force. Yet they do not fully benefit from this participation due to low skills, wages and gender disparities. Addressing both environmental risk factors and gender disparities in the labor force will benefit vulnerable households disproportionately in Pakistan. Further benefits will also accrue across all income quintiles, as these are nationwide challenges. This paper presents recommendations that will help to do that and hence move towards a more equitable, productive and prosperous Pakistan, indeed one that is truly kamyab.

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