

## Exploring Environmental Sustainability Practices in Pakistani SMEs

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### ABSTRACT

*In developed countries, most of the population recognizes that they are facing environmental and social threats which are mainly related to global warming. The problem associated with an ecological footprint, particularly water shortage, ecosystems, climate change, deforestation, and declining biodiversity, is considered a harmful threat to human life and environmental health around the world. The purpose of this study is to explore the environmental sustainability practices of Small and Medium-size Enterprises (SMEs) in Pakistan. Although there are three dimensions of sustainability, such as environmental, social, and economical. However, the focus of this study is on the environmental dimension of sustainability. Qualitative method was used to collect data. A sample of 30 manufacturing SMEs were chosen, and semi-structured interviews were conducted for a complete understanding of the research problem. The results revealed that most of the firms believed that they have measurable targets for reducing waste, energy, water, and carbon. As in Pakistan, there is an energy crisis, and most of the industries have shut down due to the energy crises. Another vital issue for the majority of industrial estates was the scarcity of water. To reduce air pollution, most of the medium firms were trying to protect the air from pollution, whereas small firms were less concerned about air pollution. Similarly, very few medium-size (Food, Steel, Pharmaceutical) firms recycle the wastewater and reuse it, While none of the small firms recycle the water. Most SMEs are utilizing power factor for energy saving due to severe energy shortage in the country. The study indicates a bleak outlook regarding the implementation of environmental sustainability practices in small firms*

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**Keywords:** Sustainability, Environmental Sustainability, SMEs.

### INTRODUCTION

In developed countries, most of the population recognized that they are, facing environmental and social threats all over the world, mainly related to global warming. World Wildlife Fund (2008) published a report named Living Planet Report, states that "the planet has limited capacity to support a thriving diversity of species humans included" (p.2). It also states that the problem associated with an ecological footprint, especially water shortage, ecosystems, climate change, deforestation, and declining biodiversity is considered the harmful threats to human life and environmental health around the world. Therefore, it is essential to adopt environmentally sustainable practices, so that we can safeguard the world for the wellbeing of the societies and the world in general where all the species live (World Wildlife Fund, 2008). The definition of sustainability is "adopting business strategies and activities that meet the

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needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future” (International Institute for Sustainable Development [IISD], 1992). In order to extend the concept of sustainability, the focus of the study is to explore the sustainability practices in the Small and Medium-size Enterprises (SMEs).

In the business world, SMEs have a long history of providing services to employment opportunities. SMEs are considered as the lifeblood for developed and developing countries because it plays a vital role in the development and growth of the economy. Pakistan comes under the umbrella of a developing country; it has potential and value for the growth (Marri, Gunasekaran & Sohag., 2007). The Pakistan economy is dependent on SMEs rather than large corporations, multinational companies, and government organizations. According to the demographic projection, the population of Pakistan will grow to 350 million by the year 2050. On the contrary, economic growth is prolonged as compared to the population. Due to slow economic growth, unemployment will also increase. Therefore, the failure to provide economic and social opportunities to the new generation will be resulting in a menacing threat to the economic and social success of the county. Therefore, to balance the economic growth and increased population demand, the SME can contribute much better than large firms (Khan, 2014).

Mainstream business practices in many sectors recognize the importance of environmental sustainability. Challenges relating to resource depletion and the production of greenhouse gases are attracting increasing attention owing not least to regulatory, supply chain, reputational, and consumer pressure. While there is evidence of some awareness and good environmental practice among SMEs, given that the vast majority of private enterprises are SMEs and that they are responsible for over half of employment and business turnover, we cannot afford to neglect their practices (Spence, Agyemang & Rinaldi., 2012). While a typical SME is likely to have a relatively small impact on the environment (compared to a large multi-national company, for example), the size of the sector suggests that their aggregate impact is significant (Seidel et al., 2009).

“Firms are focused on shareholder value, market share, and innovation. Hence, organizational goals are tied to economic performance, not environmental performance or social equity” (Bansal, 2002, p.124). Therefore, a firm focuses on financial sustainability at the stake of environmental and social sustainability. Goodland and Daly (1996) propose a distinction between social sustainability, economic sustainability, and environmental sustainability. While recognizing an overlap and linkages between the concepts, they maintain that the three concepts are best addressed separately. Therefore, the focus of the study is on environmental sustainability. The objective of the study is to explore the environmental sustainability practices in Pakistani SMEs. Although in Pakistan, Abbasi (2012) investigated the sustainable practices of manufacturing supply chain firms. He investigated the motivational factors for implementing sustainable practices, knowledge sharing, and the performance of those firms who are practicing sustainable practices. However, Abbasi (2012) has collected data from large organizations. Thus, there is no single study on the environmental sustainability of SMEs in Pakistan. Therefore, our study explores environmental sustainability practices in Pakistani SMEs.

## **LITERATURE REVIEW**

### **Sustainability**

According to the Environmental Protection Agency (2014), “Sustainability maintains the conditions between humans and nature that fulfill the social, environmental and economic conditions of the present and future generations. Yuan (2013) defined sustainability as, “Sustainability is about making decision and choice to mitigate the negative consequences and impacts of human actions, and then taking actions toward using limited resources wisely in a just and equitable manner for both present and future generation” (p.177). Gladwin, Kennely and Krause (1995) define sustainability as “Sustainability is a relationship between dynamic human econodonaldsmic systems and larger dynamic, but normally slower-changing ecological systems, in which (a) human life can continue indefinitely, (b) human individuals can flourish, and (c) human cultures can develop; but in which effects of human activities remain within bounds, so as not to destroy the diversity, complexity, and function of the ecological life support system” (p. 877).

SMEs are more advantageous than large organizations in terms of implementing sustainability practices. SMEs can react quickly to bring changes in their businesses as compared to large organizations. However, they have disadvantaged due to a lack of knowledge or information to bring changes through sustainable practices (Condon, 2004).

### **Environmental Sustainability**

Environmental sustainability requires the firm to have a positive ecological impact by protecting natural resources and trying to preserve the balance of the eco-system (Guneregin, Penbek & Zaptcioglu., 2012). The environmental performance of the industry is an essential topic of study, and it remained an under-researched area for environmental sustainability. Most of the authors are more interested to see the impact of large organizations on the environment and ignore the most crucial area of study such as SMEs and their impact on the environment. However, there is some up-gradation in Europe in SMEs for the protection of environmental sustainability; however, still, the large organizations are implementing more practices than SMEs (European Observatory, 2002)

According to Labuschagne, Alan, and Ron (2005) model of sustainability, environmental sustainability has four dimensions, including air resources, water resources, land resources, and mineral and energy resources. In the strategy development phase, the firm develops its organizational strategy. During this phase, the firm should develop a strategy that is integrated with its environmental strategy. Today the environment faces many problems, such as climate change, ozone layer deflation, all the pollutions, industrial waste problems, and gradual depletion of natural resources. Thus, the firms integrate the environmental development strategy with the organization strategy to protect the environmental (Banarjee, 2002). Moreover, according to Banerjee (2002), researchers have developed different models that justify that those firms are more sustainable in the long run, which develops an integrated environmental strategy with organizational strategy. The firm should take determinant actions for environmental issues to balance between nature and humans. The firm should invest in manufacturing environmentally friendly products. Moreover, SMEs should invest in pollution prevention campaign for sustainable development. Similarly, to achieve sustainable competitive advantage, the firms aspire to innovative, differentiated products to "respond to

the environmental concerns of the public" (Kurtulus, 2013). Therefore, sustainability practices motivate enterprises to redesign their products, services, and processes for environmental performance (Nulkar, 2014).

In any organization or firm, all the functions are aligned with the organizational strategy. In the same way, an organizational strategy should be aligned with environmental strategy. Today the world is facing ozone deflation, climate change, waste problems, pollution, and depletion of natural resources. All such problems make a firm response to align strategic planning with environmental issues (Genc, 2013). By integrating environmental and social performance, an SME can achieve its strategic business goal and bring innovation with rapid learning (Moore & Manring, 2009).

There are many studies on environmental sustainability and its relationship with the other components. For instance, Jayeola (2015) investigate the impact of environmental sustainability on the financial performance of SMEs. The findings of the study concluded that the relationship between environmental sustainability and financial performance of an SME depends upon the variable of focus. Masurel (2007) raises the question "why SMEs invest in environmental sustainability measures," the findings indicate that it improves employees' performance and motivation. Accordingly, implementing an environmental management system improves the environmental performance of SMEs (Hillary, 2004). Zhou (2009) examined the external motivational factors that motivate the greening SMEs in China. SMEs implement environmental strategies due to regulatory compliance and remain reactive to pollution prevention programs (Aragon-Correa, Hurtado-Torres, Sharma & Garcia-Morales, 2008). Similarly, organizations' environmental performance may be increased through green organizational culture. Managers can play an essential role in enabling an organizational culture that helps in environmentally aware employees (Roscoe, Subramanian, Jabbour, & Chong, 2019). Kerr (2006) investigated how SMEs develop strategies and policies to manage pressures for environmental issues.

### *Air Resources*

According to the standards of air protection, air quality can be affected by the company. The assessment criteria include acidification and toxicity of the regional air quality as well as in the global air quality, such as global warming and ozone layer (Labuschagne et al., 2005). Most manufacturing enterprises are operating in the industrial zone. Such enterprises discharge smog, toxic gasses, greenhouse gas in the air due to the abundance of transportation, manufacturing, and dense settlement resulting in threatening the life and health of the human and environment (Granek & Hassanali, 2006). Air quality is deteriorated by air pollution by different industrial units throughout the world, and it is a primary source of disclosure to a wide variety of toxic chemicals. The causes of air pollution comprise consumer and industrial use of chemicals (Zeliger, 2011). Manufacturing SMEs pollute the air through all grinding operations, such as cement manufacturing, mining, smelting different metals product, pigment grinding, solids mixing into paints are few examples (Westerholm, Ahlmark, Maasing & Segelber., 1986). Hazardous chemicals emitted to the environment by different activities of SMEs may cause specifically human health and in general, to the environment. Air pollution has severe effects on human health, different distressing systems, and organs, and it can cause many diseases (Kampa & Castanas, 2008). Although in some industrial estates, there is the facility of treatment plants. By installing a treatment plan can lower the

pollution level (Zhang, 2008). Government intervention is indispensable for a sustainable environment. In this regard, the government must design environmental sustainability policies that obstruct the enterprises from pollution emission (Li, Chen, Chen, Wei & Wang., 2017). Public and private investment can provide services for air pollution protection to ensure environmental sustainability (Vaioa, Varrialeb, & Alvi, 2018).

### ***Water Resources***

Research into water resources sustainability (WRS) is important for regional sustainable development. Sustainable management strategy must be devised for limited resources and extreme exploitation of water (Xu, Bin, & Xu, 2019). Balochistan government is strongly committed to working on sustainable water management projects to develop this critical resource (The World Bank, 2019).

The groundwater resources of Balochistan are reached to grave pressure due to haphazard installation of pumping and tube-wells. The water table is declining and almost exhausted in most of the areas (Ashraf & Sheikh, 2017). Balochistan is facing water shortage; even some areas are facing drought and scarcity of water. According to "Daily Times" (2015), "The province of Balochistan is once again passing through another serious phase of drought fast affecting livestock and agriculture of the province which are the mainstay of the economy of the province. According to the Provincial Disaster Management Authority, 29 out of 32 districts were affected by the drought".

Water is the basic need for human and living animals. Therefore, the quantity and quality of water for all human beings is indispensable. So the criteria to assess the impact of the company on the quantity and quality of water, water usage, and releases and its effect on the pollution of water should be defined (Labuschagne et al., 2005). Manufacturing firms are the leading cause of water pollution. Metal manifesting plants, chemical manufacturing plants, textile manufacturing plants, plastic manufacturing plants, and many other manufacturing industrial operations are the leading cause of toxicants to the aquatic environment. Most of the SMEs releases toxic chemicals into the ground and aquatic environment. Such chemical releases are hazardous for aquatic animals as well as for human beings because toxic chemicals turn into groundwater (Zeliger, 2011). Thus, it is the responsibility of the SMEs to boost environment protective practices to protect the natural resources, minimize the toxic releases, and support the ecological sustainability (Harmon & Gerald, 2007).

### ***Land Resources***

For the sustainability of land resources, the company's "impacts on the quantity and quality of land resources, including sub-criteria of land-usage and transformation (and subsequent impacts on biodiversity), direct and indirect releases of soil pollutants, etc." (Labuschagne et al., 2005, p.378). Management of land is one of the important subjects in different disciplines. It includes soils, pure, water, wildlife, and forest, which is the Centre-focus for humans society. It provides 95% human food, wood, fuel, and clothing material. Human society and its industries are dependent on the land resources either directly or indirectly (Food and Agriculture Organization of the United Nations).

Land resources are playing a significant role in the protection of the environment. The sustainability of land use is defined as "to achieve production combined with conservation of

the natural resources on which production depends” (Anthony, 1998). Similarly, TerrAfrica (2005) defined sustainable land management as "the adoption of land-use systems that, through appropriate management practices, enables land users to maximize the economic and social benefits from the land while maintaining or enhancing the ecological support functions of the land resources." Solution for sustainable land management (SLM), the use of land resources for the production of goods, to meet varying human needs, while guaranteeing the long-term productive capacity of these resources and protecting the natural environment (UNDP, 2019). Pakistan is amongst those countries which are relentlessly affected by desertification and land degradation Sustainable Land Management Project, 2019). For a land-use system to be sustainable requires, first that it should meet the needs of farmers and other land users; and, secondly, that it should achieve conservation of the whole range of natural resources, including climate, water, soils, landforms, forests, and pastures (Anthony, 1998).

### ***Mineral and Energy Resources***

In the 1960s and 1970s, it became apparent to many thoughtful individuals that global populations, rates of resource use, and environmental degradation were all increasing so rapidly. These rapid changes would shortly encounter the limits imposed by the finite productivity of the global ecosphere and the geological availability of mineral and fossil fuel resources (Barlett, 2011). “Pakistan has been gripped by severe energy shortages for some years with parts of the country facing electricity cuts for long hours a day (Pakistan Economic Survey, 2019). SMEs are facing chronic situations due to energy crises. Energy crises harm the production, revenue, and employment of the SMEs (Ali, Alvi & Hunjra., 2015). There is a need to control the degradation of the resources for future use. The organization should allocate its financial resources for efficient energy production to achieve environmental sustainability (Vaioa, Varrialeb, & Alvi, 2018). Pakistan's indigenous energy resources with its current production/availability are not abundant in achieving the expected energy demand. Thus, for optimum benefits, both renewable and non-renewable energy resource expansion should be restructured (Rehman et al., 2017).

### ***Stakeholder's Theory and Sustainability***

Stakeholder theory' is derived from ethics and organizational strategy of managerial conception (Donaldson & Preston, 1995). According to stakeholder theory, the success of an organization is dependent on its relationship with key groups such as employees, suppliers, customers, communities, financiers, and others that can be affected due to operational activities of the organization. Therefore, an organization should well manage all these groups while performing its duties. Moreover, in the organization, the management job is to maximize stakeholder's value while balancing with the interest of the organization. In the long run, the organizational goal is the maximization of the stakeholder's value while balancing it with the interest of the organization (Mitchell, Agle & Wood., 1997).

“Stakeholder theory provides the micro framework in which specific, identifiable groups may express interest in a firm’s sustainable development activities” (Cormier, Gordon & Marnan., 2004, p.146). Many scholars study the concept of corporate social responsibility from the perspective of corporate governance. Therefore, the researcher focus shifts from the study of business and society to the understanding of ways to govern a complex system of a firm. This perspective directed one of the problems of the stakeholder theory, which is the problem of

value creation and trade. (Freeman et al., 2010). Here we can refer to the acknowledgment of the Ullmann (1985) that stakeholder theory grounded in the conceptual model of the sustainability and corporate social responsibly in SMEs.

## METHODOLOGY

### Population

The population of this study is manufacturing firms of SMEs in the province of Balochistan, Pakistan. Although Balochistan is geographically the largest province of Pakistan. However, compare to other provinces, there are few industrial estates. The largest industrial estate is Lasbela Industrial Estate Development Authority (LIEDA). Under the umbrella of LIEDA, there are five industrial estates, Hub Industrial and Trading Estate, Marble City Gaddani, Winder Industrial and Trading Estate, Special Industrial Zone Winder, and Uthal Industrial Estate. Similarly, in Quetta, there are two industrial estates. The data for this study were collected from industrial estates such as Hub Industrial and Trading Estate, Marble City Gaddani, Sirki Industrial Estates Quetta, and Eastern Bypass Industrial Estates Quetta.

### *Sampling Strategy and Sample Size*

A convenience sampling technique was used to collect data. Due to the non-availability of the sampling frame (Raziq & Wiesner, 2016), sample firms were first contacted by phone in order to confirm that the subject firm falls under the definition of SME. The data were collected from 30 manufacturing SMEs. As for in-depth understanding, it is not possible to collect data from a large number of samples. Therefore, the small sample size was selected to answer the research question and achieve research objectives accordingly (Patton, 2002). A small number of samples facilitate the researcher to understand the respondent viewpoint in-depth in a naturalistic setting and "enhance the validity of the fine-grained" (Crouch & McKenzie, 2006).

Table1 summarizes the data collected from varies industries in Balochistan. The data were collected from significant cites of Balochistan, such as Hub, Quetta, and Gaddani.

**Table 1:**  
*Description of the Sample-size Distribution*

Sector	Small	Medium
Food	1	4
Automobile	0	3
Steel	2	1
Pharmaceutical	1	2
Home appliance	2	2
Plastic	2	0
Mineral	3	1
Beverages	2	0
Apparel	1	0
Wood	1	0
Tobacco	0	1
Miscellaneous	0	1
Total	15	15

This study used a qualitative approach. Therefore, semi-structured interviews were conducted. Qualitative researchers mostly use open-ended questions to probe out the participant views in detail and gather the information personally and interpret it without researcher biasness (Creswell, 2014). In a semi-structured interview, the interviewer has a pre-set type and order of questions, but the researcher can add more questions and can vary the theme of the interview (Currie, 2005).

### **Data Collection Strategy**

Data were collected by conducting semi-structured interviews by visiting all the sample firms. It took us thirty to forty minutes for a single interview. The most challenging part of the data collection was to make an appointment with the firms. LIEDA chamber of commerce was cooperative in taking appointments and data collection from various industrial estates.

To reduce interview biasness, we tried to create a trust-building environment and make sure that the data would be used for research purposes only, and their name will be anonymous. Moreover, to reduce biasness data were recorded based on interviewee perception, and more time for each interview has been taken to acquire more information. Similarly, to reduce biasness, the interviewer put aside his personal experience, assumptions, belief, values, and feelings. Moreover, the interviewer took descriptive notes during the interview about what the interviewee has seen, heard, experienced, and thought about interview questions.

## **RESULTS**

### **Environmental Sustainability Practices**

In this section, a qualitative analysis of environmental sustainability practices is presented. Table 2 is the frequency table for qualitative analysis. In the following table, there are four themes in the results, including reduction of air pollution, water waste reduction, optimum use of land resources, and energy resource-saving.

**Table 2:**  
*Environmental Sustainability Practices of SMEs*

S.No	Theme	Responses	Small firms	Medium-size firms
1	Reduction of air pollution			
	a. Installation of chimneys for polluted air		0	4
	b. Employee effort to minimize air pollution		2	2
	c. Hired a global environmental company for the development of air pollution system		2	0
	d. Environmental protection agency certificate		2	4
	e. Machine filters for polluted air		2	5
	f. Dust collector machine		0	3
	g. Dust spray		0	1
	h. Do not know		0	0
	i. Not applicable		7	3
2	Water waste reduction			
	a. Water waste deposited in the ground		2	2



	b. Recycle wastewater	0	4
	c. Water filters	2	2
	d. Water waste reduction	2	2
	e. Septic tank for water waste	3	0
	f. Dilute chlorine for water purification	2	0
	g. Don't know	0	0
	h. Not applicable	5	5
3	Optimum use and safeguarding the land resources		
	a. Optimum use of territorial land	4	5
	b. Safeguard the soil	2	2
	c. Multi-purpose shades for maximum use of land	2	0
	d. Cultivation of extra land	0	4
	e. Don't know	0	3
	f. Not applicable	6	1
4	Energy resource-saving		
	a. Installation of Power factors	8	11
	b. Load shading of energy a menace	5	9
	c. Energy savers	2	5
	d. Light-emitting diode (LED)	0	4
	e. Best cables to save line loses	4	0
	f. Machine tuning	0	4
	g. Turn on operational area bulbs	0	4
	h. Converted some energy on Solar energy	0	2
	i. No development from Lasbela Industrial Estate Development Authority (LIEDA)	1	0
	j. No initiatives	0	1
	k. Do not know	0	0
	l. Not applicable	0	0

### **Theme one**

#### ***Reduction of air pollution***

Most of the medium firms were trying to protect the air from pollution, whereas small firms were less concerned with air pollution (Table 2). For the reduction of air pollution, five medium-size (Food, Tobacco, Automobile) firms installed machine filters, whereas only two small (Plastic, Pharmacy) firms installed it. Four medium (Food, Automobile, Steel) firms have installed chimneys for the polluted air. In contrast, no small firm has installed it.

According to Table 2, four medium-size (Food, Pharmaceutical, Steel) firms have an Environmental Protection Agency (EPA) certificate, while only two small (Plastic, Mineral) firms have this certificate. While interviewing, some firms agreed that they do not need this certificate. Others have some personal linkages with the environment department, according to the managers of small wood manufacturing and food manufacturing firms.

*"There is no need for environmental sustainability. If you need EPA certificate, bribe the environment department officials, and they will issue a certificate to you. Most of the steel manufacturing firms are giving bribes to EPA officials. As these firms are violating the rules and regulations of environmental sustainability,".*

As most of the data were collected from LIEDA Hub. In LIEDA, there were some Steel factories. They were manufacturing steel products. The researcher tried to interview them, but they refused. For the production of steel products, they burn old tires as a fuel. Due to the burning of tires, black smokes emit in the environment and affect most of the other firms' manufacturing process. According to the manager of medium-size food manufacturing firms.

*"As our product is food, manufacturing and it requires clean external and internal environment. We have control over the internal environment and make it clean as possible. Nevertheless, some steel manufacturing factories are emitting black smoke in the air. They use burning tires as fuel for manufacturing steel products. Generally, black smoke is hazardous for the environment of the industrial zone; specifically, it is severely affecting our manufacturing process. We complaint many times to the LIEDA and environmental protection Agency, but they are not taking any action against these smoke emitting companies."*

For the protection of environment and reduction of air pollution, three medium-size (Food, Automobile) firms have dust collector machine, and one food manufacturing firm have dust spray, while no small firm have this machine. Employee's education and training for the protection of the environment are also essential. Two small (Mineral, Plastic) and medium-size (Food, Steel) firms do assert to this point that employees' effort to minimize air pollution also plays a vital role in the reduction of air pollution. Moreover, there were many small and medium-size firms asserted that the reduction of air pollution does not apply to their firms.

## **Theme Two**

### ***Water waste reduction***

Based on the results presented in Table 2, four medium-size (Food, Steel, Pharmaceutical) firms recycle the wastewater and reuse it. While none of the small firms recycle the water. Justification of small firms for not recycling the wastewater is the cost. They said the recycling machine is costly and they cannot afford it. Two small (Beverages, Pharmaceutical) and medium-size (Home appliances, Pharmaceutical) firms deposit the water waste in the ground. The reason for depositing in the ground is toxic material in the water. Two small (Apparel, Wood) and medium-size (Automobile, Food) firms installed filters for the purification of water.

Similarly, a small beverage firm dilutes chloric for the purification. Moreover, three small (Pharmaceutical, Food, plastic) firms dump the water waste in the septic tank, but none of the medium-sized firms use it. According to the manager of some medium-sized firms.

*"We are disturbed due to the toxic smell from sewerage lines. They have a complaint that their adjacent and some other firms are discharging toxic water waste in the sewerage lines. Due to water waste discharge, is producing bad smells in the environment and hazardous for human health. Although it is prohibited from the LIEDA and BEPA these firms are not*

*implementing the directed pattern of water waste disposition.”*

As mentioned above that Balochistan is facing a permanent position of drought. Therefore, in the Hub dam, there is a drought. Similarly, the groundwater level in the Quetta is also depleting. Due to the drought in the Hub dam, the Lasbela Industrial Zone is facing a scarcity of water. While interviewing most of the SMEs manager said that,

*“Daily, we bought one tank water from Karachi for Rs. 12,000. Many firms said that the tank is enough for a few days. Therefore, due to the additional cost of the water, the production cost is increased, and demand decreased. If the drought prevails for a longer period, there is a possibility of shut down of many firms; the position prevailed in Quetta Industrial zones also.”*

### **Theme Three**

#### ***Optimum use and safeguarding the land resources***

While interviewing, most of the managers were not aware of the land resources. Therefore, it was required to understand them about the land resources before interviewing. Five medium-size (Food, Steel, Pharmaceutical, Tobacco) and four small (Steel, Pharmaceutical, and Mineral) firms said that they try to use the maximum territorial land of the industry.

Similarly, four medium-size (Food, Automobile) firms cultivate the extra land, while none of the small firms do this practice. One of the medium-size food manufacturing firms set a rule that cultivated vegetables will be used only by the lower staff because they are needier than the higher staff. According to the manager of a medium-sized food processing company.

*“We have extra land beside the processing plant. The company decided to cultivate vegetables on the extra land. The decision was taken by the higher authority that the vegetable would be only for the lower staff. The upper staff or managers do not have the right to use vegetables. By doing so, the company is using the land resource and performing social sustainability for their employees”.*

Two small (Pharmaceutical, Food) and medium-size (Food, Tobacco) firms said that they try their level best to safeguard the soil from toxic waste. Two small (Steel, Plastic) firms have multi-purpose shades for the maximum use of the land, while none of the medium-firm does this practice. Six small and one medium-size firms commented that it is not applicable in their organizations. According to the manager of a small steel manufacturing firm;

*“The company is producing steel products and selling them throughout the country. The company products are in bulk size. We required a wide range of areas for our products. Because the production and storage of finished products cover a wide area. Another problem is that the finished products and process can not be operated in the open air; it required shaded areas. Therefore, we constructed multi-purpose shades for the production process and storage of finished products”.*

### **Theme Four**

#### ***Energy resource-saving***

For energy resource-saving, eleven medium-sized and eight small firms installed the power factors (Table 2). It is the most profound technique used in industries for sustainable use of

energy. As most of the firms were using this technique to save energy. Another reason for installing the power factor is the "cost of the energy." In Pakistan, energy is costly for commercial purposes. That is why most of the firms try to save energy to minimize the electricity bill.

Similarly, five medium-size (Automobile, Food, Pharmaceutical) and two small (Apparel, Plastic) firms use energy saver for light. In the same way, another new technology is Light-emitting diode (LED), four medium-size (Automobile, Food, Pharmaceutical) firms use it to save energy, while no small firm is using it. The reason for not using LED is the high price of this product.

As mentioned above, Pakistan is facing the menace of energy crisis for the last many years, and it will prevail for years in the future. Therefore, most of the firms were disappointed due to energy crises. Nine medium-size and five small firms agreed that they were facing the menace of energy load shading. According to the LIEDA office in the last six years, the firms decreased from above 300 to 90 only. According to the owner of a small plastic manufacturing firm:

*"I am the owner of this firm, and my father established this plastic manufacturing firm many years ago. Most of our machines are operating on gas energy. During the Musharraf era, we were producing at our full capacity, but from the last five years, we are facing huge losses due to the gas load shading. Our production has decreased from producing a one-week manufacturing order in one month. We are facing this situation for the last five years. I want to shut down the firm, but my father wants that I even operate it in loss. I cannot shift this machinery to any other industrial city because it requires a huge amount. "Still, I think what to do."*

Similarly, according to the manager of a medium-size automobile firm:

*"I am working as a manager in this firm for the last eight years. In the Musharraf era, there was no load shading, and we were producing at maximum capacity, but now, due to load shading, we cannot produce at full capacity. Due to using standby generators, the cost is increasing. Therefore, it is my request to the government that please provide the electricity and gas so that we can produce at our full capacity and contribute to national gross domestic product (GDP)".*

For sustainable use of energy and machines, four medium-size (Food, Pharmaceutical, Tobacco, Home appliances) firms do the practice of machine tuning regularly. Another most profound practice is turning off the non-operational area bulbs, and machines, four medium-size (Food, Home appliances, Automobile) firms are doing this practice. Solar energy is the cheapest energy in sunny areas in the world. Pakistan is the most suitable country for solar energy. Therefore, two medium-size (Automobile, Pharmaceutical) firms converted their some energy on solar energy, and it is the most sustainable practice for industries.

Hence, it is concluded that SMEs bring innovations in environmentally sustainable practices. However, SMEs are facing problems regarding water and energy shortage for sustainable development. According to the managers of many firms, there is a possibility of shutdown due to water shortage and energy crises.

## DISCUSSION

For the protection of the environment and reduction of air pollution, three medium-size (Food, Automobile) firms have a dust collector machine, and one firm has dust spray, while no small firm has this machine. Two small (Mineral, Plastic) and medium-size (Food, Steel) firms do assert to this point that employees' effort to minimize air pollution also plays a vital role in the reduction of air pollution. The results are consistent with the finding; environmental training plays an essential role in sustainability practices (Faber & Jorna, 2005). However, some steel manufacturing firms are polluting the air quality by emitting black smoke in the open air for burning old tires. Due to black smoke in open-air food manufacturing and some other industries are severely affected. Their production quality is affected due to the black smoke. Many times they complain to the LIEDA, chamber of commerce, and BEPA but all in vain. None of the authority is taking any action against these black smoke emitting steel industries for burning the old tires as a fuel.

According to the analysis, four medium-size (Food, Steel, Pharmaceutical) firms recycle the wastewater and reuse it, while none of the small firms recycle the water. Two small (Beverages, Pharmaceutical) and medium-size (Home appliances, Pharmaceutical) firms deposit the water waste in the ground. The results are consistent with findings that "there is a great need for the development of a suitable, inexpensive and rapid wastewater treatment techniques and reuse or conservation methods in the present century" (Gupta, Ali, Saleh, Nayak & Agarwal., 2012, p.6380). However, some of the firms have a complaint with their adjacent firms that they are discharging the toxic water waste in the sewerage lines. Therefore, it is affecting the environment of the industrial zone. Another technique for water waste in a small firm is the septic tank. Two small (Pharmaceutical, Food) and medium-size (Food, Tobacco) firms said that they try their level best to safeguard the soil from toxic waste. The results are consistent with findings that, "it is obvious that the environment is highly contaminated by these toxic chemicals derived from the recycling processes" (Wong et al., 2007). However, most of the firms are facing a shortage of water supply from LIEDA. As mentioned above, the HUB dam water is depleting due to drought in the Balochistan region. Therefore, the firms are facing a shortage of water and fear of shutdown due to the additional cost of buying water and a decrease in demand due to high prices.

To save energy, eleven medium-sized firms and eight small firms installed the power factors. Similarly, five medium-size (Automobile, Food, Pharmaceutical) and two small (Apparel, Plastic) firms use energy saver for light. In the same way, another new technology is Light-emitting diode (LED), four medium-size (Automobile, Food, Pharmaceutical) firms using LED to save energy, while no small firm is using it. The reason for not using LED is the high price of this product. For sustainable use of energy and machines, four medium-size (Food, Pharmaceutical, Tobacco, Home appliances) firms do the practice of machine tuning regularly. Therefore, in Balochistan, SMEs have invented different ways of protecting the environment and sustainable use of the resources (Ministry of Environment, 2005). However, Pakistan is facing a shortage of energy and affecting the production capacity of industries. Most of the firms have a complaint about load shading of electricity and gas supply as most of the firms are operating on electricity and gas. The firms are facing even fear of shutdown due to the load shading of electricity and gas. If the situation prevails, the decreased number of firms in the LIEDA industrial zone may reach to few. According to the LIEDA office in the last six years, the firms decreased from above 300 to less than 90 only. Moreover, the finding

showed that four small firms and six medium-size firms implement an environmental management system to protect the environment of the organization. The results are consistent with the findings that “EMSs enhance an organization's environmental performance” (Darnall, Jolley & Handfield, 2008).

## **CONCLUSION**

This study analyzes the sustainability practices of SMEs in Balochistan. Although Balochistan is not an industrial province as compared to other provinces, there are few industrial estates. The survey revealed that SMEs were engaged in environmental sustainability practices. Most of the firms were in the opinion that they have measurable targets for reducing waste, energy, water, and carbon. As in Pakistan, there is an energy crisis, and most of the industries shut down in LIEDA was due to the energy crises. Another important issue for the majority of industrial estates in Balochistan was the scarcity of water. As for most of the industries, water is raw material, so; they are facing the chronic problem of water shortage. To reduce air pollution, the installation of chimneys, machine filters, and dust collector machines were prominent environmental practices in that region. Similarly, for reducing energy usage, innovative practices are power factor installation, light-emitting diode, machine tuning, turn off non-operational area bulbs, and converted some of the energy on solar.

In the same way for maximum use of land resources, firms use territorial land optimally, multipurpose shades for maximum use of land, and cultivation of extra land was innovative sustainability practices. Hence it is concluded a few small, and the majority of medium-size firms were implementing environmental sustainability practices. However, SMEs are facing problems regarding water and energy shortage for sustainable development. Similarly, few SMEs were violating environmental protection agency (EPA) rules and regulations for environmental sustainability. According to the managers of many firms, there is the possibility of shutdown due to water shortage and energy crises.

Like other researches, this study is also not exempted from limitations. First, the data has been collected from the manufacturing sector of SMEs in Balochistan. Another important sector of the SME is the service sector. Therefore, for the generalizability of the data, both manufacturing and service sector data can be collected and broaden the scope of the research. Second, this study has been conducted in the Province of Balochistan. Whereas, Pakistan has four Province Punjab, Sindh, and Khyber Pakhtunkhwa and Balochistan. Another critical issue is that there are very few industrial estates in Balochistan as compared to other provinces. Therefore, for the generalizability of the data, the study can be conducted in the major industrial estates of all provinces, both in the manufacturing and in-service sector of SMEs in Pakistan.

Third, the data has been collected from the managers who presented the sustainability practices of the organization. To increase the validity of the data, the owners or CEOs of the firms can better present their sustainability practices.

Fourth, the study has been conducted in a developing country, and its culture is quite different from the developed counties. Therefore, to increase the external validity, the study can be compared to similar studies conducted in developing countries and a similar culture.

Fifth, due to the limitations of time and money, the data were collected from only thirty organizations. Therefore, to increase the reliability and validity of the research, the data can be collected from a large sample from various industrial estates.

Lastly, the data has been collected from the manufacturing SMEs. To enhance the scope of research, the data can be collected from large organizations and can compare the findings of small, medium, and large organizations' sustainability practices.

## REFERENCES

- Abbasi, M. N. (2012). Sustainable practices in Pakistani manufacturing supply chains: Motives, sharing mechanism and performance outcome. *Journal of Quality and Technology Management*, 8(2), 51-74.
- Ali, B., Alvi, M., & Hunjra, A. I. (2015). The impact of electricity crisis and prices on the consumption behavior of small and medium enterprises (SMEs). *Bulletin of Energy Economics*, 3(1), 25-40.
- Anthony, Y. (1998). *Land Resources: Now and for the future* (First ed.). Cambridge, United Kingdom: University Press, Cambridge.
- Aragon-Correa, J., Hurtado-Torres, N., Sharma, S., & Garcia-Morales, V. (2008). Environmental strategy and performance in small firms: A resource-based perspective. *Journal of Environmental Management*, 88(1), 88-103.
- Ashraf, M., & Sheikh, A. A. (2017). *Sustainable Groundwater Management in Balochistan*. Islamabad: Pakistan Council of Research in Water Resources.
- Banarjee, S. B. (2002). Organizational strategies for sustainable development: Developing a research agenda for the new millennium. *Australian Journal of Management*, 27(1), 105-117.
- Bansal, P. (2002). The corporate challenges of sustainable development. *The Academy of Management Executive*, 16(2), 122-131.
- Barlett, A. A. (2011). The meaning of sustainability. *Teachers Clearinghouse for Science and Society Education Newsletter*, 31(1), pp. 1-17.
- Bros-Brouwers, H. (2010). Corporate sustainability and innovation in SMEs: Evidence of themes and activities in practice. *Business Strategy and the Environment*, 19(7), 417-735.
- Collins, E., Lawrence, S., Pavlovich, K., & Ryan, C. (2006). Business networks and the uptake of sustainability. *Journal of Cleaner Production*, 15(8-9), 729-740.
- Condon, L. (2004). Sustainability and small to medium-sized enterprises, how to engage them. *Australian Journal of Environmental Education*, 20(1), 57-67.
- Cormier, D., Gordon, I., & Marnan, M. (2004). Corporate environmental disclosure: contrasting management's perceptions with reality. *Journal of Business Ethics*, 49(2), 143-165.
- Creswell, J. (2014). *Research Design; Qualitative, Quantitative, and Mixed Methods Approaches* (4 ed.). USA: Sage Publication, Inc.
- Crouch, M., & McKenzie, H. (2006, December). The logic of small samples in interview-based qualitative research. *Social Science Information*, 45(4), 483-499.
- Currie, D. (2005). *Developing and applying study skills: Writing assignments, dissertations, and management reports*. CIPD Publishing.
- Daily Times. (2015, July 29). *Daily Times Newspaper*. Retrieved from <http://www.dailytimes.com.pk/national/17-Mar-2015/drought-in-balochistan-affecting-livestock-and-agriculture>

- Darnall, N., Jolley, G., & Handfield, R. (2008). Environmental management systems and green supply chain management: complements for sustainability. *Business Strategy and the Environment*, 17(1), 30-45.
- Donaldson, T., & Preston, L. (1995). The Stakeholder theory of the corporation concept, evidence, and implication. *Academy of Management Review*, 20(1), 65-91.
- Environmental Protection Agency. (2014). EPA. Retrieved from the United States Environmental Protection Agency, Sustainability: <http://www.epa.gov/sustainability/basicinfo.htm>
- European Observatory. (2002). *Observatory of European SMEs; European SMEs and social and environmental responsibility*. European Commission.
- Faber, N., & Jorna, R. (2005). The sustainability of "sustainability": A study into the conceptual foundations of the notion of sustainability. *Journal of Environmental Assessment, Policy, and Management*, 7(1), 1-33.
- Food and Agriculture Organization of the United Nations. (n.d.). *Biodiversity*. Retrieved January 01, 2016, from the Food and Agriculture Organization of the United Nations: <http://www.fao.org/biodiversity/components/plants/en/>
- Freeman, R. E., Jeffery, S. H., Andrew, C. W., Bidhan, L., & Simon, D. (2010). *Stakeholder theory*. Cambridge: Cambridge Press.
- Genç, K. (2013). Natural environment as a strategic issue for firms: Theoretical perspectives. *9<sup>th</sup> International Strategic Management Conference*. 99, pp. 143-153. Giresun: Procedia-Social and Behavioral Sciences.
- Gladwin, T., Kennely, J., & Krause, T. (1995). Shifting paradigms for sustainable development: Implications for management theory and research. *Academy of Management Review*, 20(4), 870-907.
- Goodland, R., & Daly, H. (1996). Environmental sustainability: universal and non-negotiable. *Ecological Applications*, 6(4), 1002-1017.
- Granek, F., & Hassanali, M. (2006). The Toronto Region Sustainability Program: insights on the adoption of pollution prevention practices by small to medium-sized manufacturers in the Greater Toronto Area (GTA). *Journal of Cleaner Production*, 14(6-7), 572-579.
- Guneregin, M., Penbek, S., & Zaptcioglu, D. (2012). Exploring the problems and advantages of Turkish SMEs for sustainability. *8<sup>th</sup> International Strategic Management Conference*. 58, pp. 244-251. Procedia-Social and Behavioral Sciences.
- Gupta, V., Ali, I., Saleh, T., Nayak, A., & Agarwal, S. (2012). Chemical treatment technologies for waste-water recycling-an overview. *An International Journal to further the Chemical Sciences*, 2(16), 6380-6388.
- Harmon, A. H., & Gerald, B. L. (2007). Position of the American Dietetic Association: food and nutrition professionals can implement practices to conserve natural resources and support ecological sustainability. *Journal of the American Dietetic Association*, 107(6), 1033-1043.
- Hillary, R. (2004). Environmental management system and the smaller enterprise. *Journal of Cleaner Production*, 12(6), 561-569.
- International Institute for Sustainable Development. (1992). *Business strategies for sustainable development*. Retrieved Jun 2014, from iisd: [http://www.iisd.org/business/pdf/business\\_strategy.pdf](http://www.iisd.org/business/pdf/business_strategy.pdf)
- Jayeola, O. (2015). The impact of environmental sustainability practice on the financial performance of SMEs: A study of some selected SMEs in Sussex. *International Journal of Business Management and Economic Research*, 6(4), 214-230.



- Kampa, M., & Castanas, E. (2008). Environmental pollution. *4<sup>th</sup> International Workshop on Biomonitoring of Atmospheric Pollution (With Emphasis on Trace Elements)*, 151, pp. 362-367.
- Kerr, I. (2006). Leadership strategies for sustainable SME operation. *Business Strategy and the Environment*, 16(1), 30-39.
- Khan, H. U. (2014, January-June). Entrepreneurship. *SME Observer*, 3(3 & 4), pp. 5-8.
- Kurtulus, Y. G. (2013). Natural environment as a strategic issue for firm: Theoretical perspectives. *9<sup>th</sup> International Strategic Management Conference*. 99, pp. 143-153. Turkey: Elsevier Ltd.
- Labuschagne, C., Alan, C. B., & Ron, P. (2005). Assessing the sustainability performances of industries. *Journal of Cleaner Production*, 13(4), 373-385.
- Lasbela Chamber of Commerce and Industry. (n.d.). Retrieved from <http://lasbelachamber.com/>
- Lasbela Industrial Estates Development Authority. (n.d.). Retrieved from <http://www.lieda.gov.pk/>
- Lawrence, S., Collins, E., Pavlovich, K., & Arunachalam, M. (2006). Sustainability practices of SMEs: the case of NZ. *Business Strategy and the Environment*, 15(4), 242-257.
- Li, J.S, Chen, B, Chen, G.Q, Wei, W.D, & Wang, X. (2017). Tracking mercury emission flows in the global supply chains: a multi-regional. *Journal of cleaner production*, 140, 1470-1492.
- Lin, N. (2002). *Social capital: A theory of social structure and action*. New York: Cambridge University Press.
- Marri, H. B., Gunasekaran, A., & Sohag, R. A. (2007). Implementation of advanced manufacturing technology in Pakistani small and medium enterprises: an empirical analysis. *Journal of Enterprise Information Management*, 20(6), 726-739.
- Masurel, E. (2007). Why SMEs invest in environmental measures: sustainability evidence from small and medium-sized printing firms. *Business Strategy and the Environment*, 16, 190-201.
- Ministry of Environment. (2005). *National Environmental Policy*. Retrieved from Government of Pakistan, Ministry of Environment: <http://environment.gov.pk/NEP/Policy.pdf>
- Mitchell, R., Agle, B. R., & Wood, D. (1997). "Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts.". *Academic Management Review*, 22(4), 853-886.
- Moore, S., & Manring, S. (2009). Strategy development in small and medium-sized enterprises for sustainability and increased value creation. *Journal of Cleaner Production*, 17(2), 276-282.
- Nulkar, G. (2014). SMEs and environmental performance – A framework for green. *Procedia-Social and Behavioral Sciences*, 133, 130-140.
- Pakistan Economic Survey. (2019). Annual Report 2018-2019. *Energy*. Retrieved from [http://www.finance.gov.pk/survey/chapters\\_19/14-Energy.pdf](http://www.finance.gov.pk/survey/chapters_19/14-Energy.pdf)
- Patton, M. (2002). *Qualitative research and evaluation methods* (3rd ed.). Oaks: Sage.
- Raziq, A., & Wiesner, R. (2016). High performance management practices and sustainability of SMEs. Evidence from manufacturing and services-based industries in Pakistan. *Journal of Management Sciences*, 3(2), 83-107.
- Rehman, S. A., Cai, Y., Mirjat, N. H., Walasai, G. D., Shah, I. A., & Ali, S. (2017). The Future of Sustainable Energy Production in Pakistan: A System Dynamics-Based Approach for

- Estimating Hubbert Peaks. *Multidisciplinary Digital Publishing Institute*, 1-24.
- Roscoe, S., Subramanian, N., Jabbour, C. J., & Chong, T. (2019). Green human resource management and the enablers of green. *Business Strategy and the Environment*.
- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students (5<sup>th</sup> ed.)*. Edinburgh: Pearson.
- Seidel, M., Seidel, R., Tedford, D., Cross, R., Wait, L., & Hammerie, E. (2009). Overcoming barriers to implementing environmentally benign manufacturing practices: Strategic tools for SMEs. *Environmental Quality Management*, 18(3), 37-55.
- SLMP. (2019, October 5). *Barriers to Sustainable Land Management in Pakistan*. Retrieved from Sustainable Land Management Project: <https://www.slmf.com.pk/wp-content/uploads/2016/12/barriers-to-slm-in-pakistan-eng.pdf>
- Spence, L. J., Agyemang, G., & Rinaldi, L. (2012). *Environmental aspects of sustainability: SMEs and the role of the accountants*. Association of Chartered Certified Accountants. London: Certified Accountants Educational Trust.
- TerrAfrica. (2005). *Land Resources*. Retrieved from Food and Agriculture Organization of the United Nations: <http://www.fao.org/nr/land/sustainable-land-management/en/>
- The World Bank. (2019, March 29). World Bank Statement on Balochistan Integrated Water Resource Management and Development Project. Retrieved from <https://www.worldbank.org/en/news/press-release/2019/03/28/world-bank-statement-on-balochistan-integrated-water-resource-management-and-development-project>
- Ullmann, A. (1985). Data in search of a theory: A critical examination of the relationship among social performance, social disclosure, and economic performance. *Academy of Management Review*, 10(3), 540-577.
- UNDP. (2019, October 5). *Sustainable Land Management Programme to Combat Desertification in Pakistan (SLM) - Phase II*. Retrieved from UNDP Pakistan: <https://www.pk.undp.org/content/pakistan/en/home/projects/SLMP-II.html>
- Vaioa, A. D., Varrialeb, L., & Alvi, F. (2018). Key performance indicators for developing environmentally sustainable and energy efficient ports: Evidence from Italy. *Energy Policy*, 122, 229–240.
- Westerholm, P., Ahlmark, A., Maasing, R., & Segelber, I. (1986). Silicosis and risk of lung cancer or lung tuberculosis: a cohort study. *Environ. Res*, 41(1), 339-350.
- Wong, M., Wu, S., Deng, W., Yu, X., Luo, Q., Leung, A., et al. (2007). Export of toxic chemicals – A review of the case of uncontrolled electronic-waste recycling. *Environmental Pollution*, 149(2), 131-140.
- World Wildlife Fund. (2008). Living planet report. World Wildlife Fund.
- Xu, K., Bin, L., & Xu, X. (2019). Assessment of water resources sustainability in mainland China in terms of water intensity and efficiency. *Environmental Management*, 63(3), 309-321.
- Yuan, Y. (2013). Adding environmental sustainability to the management of event tourism. *International Journal of Culture, Tourism and Hospitality Research*, 7(2), 175-183.
- Zeliger, H. (2011). *Human toxicology of chemical mixtures* (2nd ed.). Oxford, UK: Elsevier.
- Zhang, G. (2008). Analysis of the “polluter pays principle” in China. *Economic Tribune.*, 13, 123-124.
- Zhou, S. (2009). External motivating factors for greening small and medium-sized enterprises in china. *The International Institute for Industrial Environmental Economics*, 1-47.