



# **Socioeconomic Impacts of the Ten Billion Tree Tsunami (TBTT) Plantation Project on the Participating Communities**

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## Abstract

Tree plantations are regarded as one of the key components to fight the environmental challenges. Such plantations may impact the livelihoods of the local populations in both positive and negative ways. The Ten Billion Trees Tsunami (TBTT) project is being carried out in Pakistan to counter the climate change, with additional goals to also generate economic stimulus in the participating areas. There is scarcity of research work on how the livelihoods of the participants of the project are getting affected because of the project. This thesis work investigates the socio-economic impacts of the TBTT project on the workers and participants of the project, and judges whether the project has been beneficial to the people or not. Semi-structured interviews were conducted with the onsite laborers and local women entrepreneurs running associated small-scale nurseries. The results indicate that the project has made some strides in incrementing the capital assets and capabilities of the participating populations and has also been successful in reaching the marginalized segments of the society like women – though vital problems related to the wages, working conditions and wholistic monitoring remain. Moreover, the results indicated that the prosperity is reached through a myriad of ways – depending upon how the improved assets and capabilities are utilized. The results fill a gap regarding the implications of TBTT for the local communities in terms of livelihood enhancement. The lesson for other plantation projects is that such projects have the potential to positively affect the socioeconomic conditions of the native populations – especially if project is avoiding many of the pitfalls at the outset and by making a concerted effort to reach the marginalized segments of the society like women. Nevertheless, concrete improvements in the operational and management aspects of the project must also be made for the socioeconomic benefits to reach their full potential.

*Keywords:* tree plantation, socioeconomic, rural livelihoods, sustainable livelihood framework

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## Abbreviations

CMN	Central Model Nursery
Covid 19	Corona virus disease 2019
FAO	Food and Agriculture Organization
FLR	Forest Landscape Restoration
IUCN	International Union for Conservation of Nature
KPK	Khyber Pakhtunkhawa province, Pakistan
PTI	Pakistan Tehreek-e-Insaf
REDD	Reducing emission from Deforestation and forest Degradation
TBTT	Ten Billion Tree Tsunami
TMOC	The Ministry of Commerce
UN	United Nations
UNEP	United Nation Environmental Program
WWF	World Wildlife Fund

# 1. Introduction

This thesis seeks to investigate the socio-economic impacts of the 10 Billion Tree Tsunami (TBTT) in the province of Khyber Pakhtunkhwa (KPK), Pakistan on the population adjoining the plantation sites. It scrutinizes the current economic conditions of the local community participating in the project and analyses the impact the project is having on the livelihoods of the people. The end goal is to try to judge if and to what extent the TBTT is benefitting the local communities.

## 1.1 Aim of Research

My research aims to understand livelihood development, possible new occupations, and assessing the working conditions of the participants in the project – where population is mostly rural. My study aspires to contribute and enrich the existing knowledge regarding the central drivers of the Ten Billion Tree Tsunami. This shall enable policymakers to better understand the perspectives of the local participants of the project and use this as a steppingstone to better structure the policies for future initiatives regarding forestation in Pakistan. Since the project is still on-going till 2023, the authorities and the academia will get to know if their strategic goals are being operationalized in the right way or if there is a need for reevaluation of the current guidelines and protocols.

Forest regeneration and restoration practices are greatly linked with emerging needs of the society that further helps to cater the human and climatic necessities (Wagner et al., 2018). Afforestation is likely to enhance livelihood and income security. This is mainly achieved through household's access to forest products and improved aspects of resilience and adaptability (Mansourian and Parrotta, 2019). Also, tree planting can be positive for the population's livelihood if people are given jobs to plant trees and maintain their local sources of income enhancement by food production (Fleischman et al., 2020: 949). Furthermore, authorities and policymakers need to understand any damage and expense incurred by a non-strategic afforestation project which does not take the social, economic, and political conditions of the plantation site and its people into consideration (Fleischman et al., 2020: 947). Through the information gathered for my research, I am aiming to evaluate whether the project benefits the local populations. In other words, the research is evaluating the people-centeredness of the project. My research hopefully serves as constructive criticism of the plantation project and brings to surface the experiences of the participants of the project. It aims to make contributions in presenting the knowledge and evidence regarding whether the plantation projects intending to fight to climate change can also benefit the people living in those landscapes, and to what extent and in which shape these benefits reach the local people.



## 1.2 Study Relevance

There is a need for additional studies concerning the sustainable management of forests and the impacts on livelihood of plantations (Ota et al., 2020b: 439). Past studies have discussed the impacts of extensive forest plantations on livelihood, but these analyze livelihood from a much wider lens than I hope to do in my thesis. One such study based in Guatemala focused on policies regarding land use and large-scale commercial activities on plantation sites to measure livelihood improvement (Shriar, 2014). Another study based in Mozambique scrutinized the experiences of the local people with reference to water and firewood availability in the plantation sites (Kosenius et al., 2019). Moreover, a study in New Guinea highlighted the importance of community-based approach for afforestation with regards to landscape restorations, land tenures and social capital (Baynes et al., 2017). My research will however revolve around income generating opportunities, personal satisfaction, and an assessment of working conditions the participants are subjected to.

The studies focusing on the socioeconomic impacts of TBTT project are quite scarce. Although one study specifically focused on similar aspects of the TBTT, it primarily highlighted the factors that ultimately hinder farmers' participation and input sharing. The study also identified the key elements which lead to the active contribution of the local community (Ullah et al., 2021). Thus, the existing research lacks data regarding the nature of employment opportunities and how they contribute to the livelihood enhancement of these communities in TBTT, hence, I aim to bridge this gap in knowledge through my work. TBTT is an ambitious and large-scale project which is ongoing, thus the information and analysis regarding the working conditions and livelihood effects for the local communities would help build the evidence regarding how such projects, which are primarily driven by climate related ambitions, may be beneficial to the wider society in other ways as well.

The overarching research questions surrounding my research are:

1. What extent was the project able to enhance livelihood opportunities in KPK through the Billion Tree Tsunami project?
2. How do workers perceive the quality of the employment opportunities?
3. Have these jobs improved livelihood opportunities of marginal groups, especially women?

## 2. Background

This section starts by presenting an overview of how forestation activities are being used to fight climate change. It goes into discussing that tree plantations have also been made for commercial reasons as well. Further, it discusses the potential of tree plantation activities for improving the livelihoods of the local participants. Later it discusses the need to have more studies related to charting the socioeconomic impacts of large-scale plantations on the livelihoods of local people. The second part details the background related to the TBTT plantation project.

### 2.1 Global Perspective

Forest restoration is regarded as a pressing matter, driven by the requirements of climate-change mitigations, improving biodiversity, together with rehabilitation of degraded and deforested landscapes (van Oosten, 2013). Restoring the productiveness of world's degraded and degenerated lands has now also become one of the primary goals of numerous United Nations Conventions and thus seen as a global priority (UN, 2012; UNCCD, 2013). International Conventions along with international policies urge a strong emphasis to protect trees and enhance forest regeneration activities, since forests diversify ecosystem services and aid in the climate change mitigation (FOA, 2018). According to World Resource Institute, nearly 2 billion hectares of land is suitable while considering various kinds of forest restoration initiatives (Silva et al., 2019). Thus, the plantations play a vital role in mitigating climate change by *carbon sequestration* (storing CO<sub>2</sub> from the atmosphere) specifically in woody biomass (Kröger, 2016). One of the main ways restoration activities are being carried out is through tree plantation, and therefore the tree plantation activity is also the focus of this study.

Tree plantations can have a variety of motivations, including an ever-increasing process in response to high demands for wood products, mitigation of climate change along with restoration of degraded lands (Lamb, 2010; Lamb, 2014). Large-scale tree plantations were also used as a substitute of raw material, predominately for tree-based vendible and commodities (Evans, 2009). For instance, Chile experienced significant growth by opting industrial tree plantations and timber is considered as the backbone of its economy (CONAF, 2013). Many tree plantation initiatives can have a mix of motivations, including serving the main purpose of growing commercial demands, along with the curtailment of natural forest exploitation (Kröger, 2016).

Tree plantations also hold potential to contribute towards boosting of local livelihoods and the community in general, as Chazdon et al. (2016a) have put it while discussing forest trees. This could be accomplished by acquiring benefits from ecosystem services and goods like food, timber, and soil formation services (ibid.). Numerous developing countries are currently adopting forestry

to accomplish economic development especially in rural areas – thus, facilitating such areas to generate income. For instance, forest sector exports form a considerable chunk of the export basket in Chile (Anríquez Nilson et. al, 2021: 166). While discussing developed countries, estimations have been made by the World Bank that forest resources reinforce the well-being of nearly 1 billion people rural and indigenous people (Bhargava, 2006). Furthermore, around 500 million people in villages primarily rely on a combination of forest resources, crop production and farming in order to earn their living (Maginnis and Jackson, 2005). Additionally, in rural areas, access to such resources provides great deal of benefits to local people by enhancing resilience through the adaptation of forest-based structures along with the usage of current agricultural arrangements (ibid.). Nonetheless, biodiversity conservation and economic circumstances can only be improved in such plantation schemes when both internal work and external interventions work in tandem. For instance, internal work could be done by local community, whereas external help involves various policy interventions, capital investment, infrastructure etc. (Tallis et al., 2008).

The term Forest Landscape Restoration (FLR) is being used to describe the projects when the intension is to recover ecological integrity along with upgrading human welfare – particularly in degraded forested territories (Chazdon et al. 2016a). In this aspect, it portrays a vital part in reconciling conservation and development aims. Therefore, many renowned international commitments like Bonn challenge, REDD, and Aichi Target 15 of the Convention of Biological Diversity are involved with such initiatives (ibid.). Likewise, numerous Payments for Ecosystem Services (PES) mechanisms have been initiated to develop incentives in order to cater forest restoration particularly by incorporating programs like REDD+ (Pagiola and Bosquet, 2009). Numerous global, regional as well as national organizations have come forward and established a set of targets in order to achieve large scale forest restoration. For instance, the great green wall of Sahara and the Sahel initiative in African intends to encompass the areas with trees and vegetation, where China alone desired to plant an approximately 6.7 million hectares of forest within a time span of one year (Cernansky 2018). Another example of community-based tree planting project is named as Scolel'te project “tree that grows.” The project has included more than 1400 farmers who are approximately managing 9000 hectares of land in Mexico (Esquivel et al. 2017).

Information is still lacking in relation to the connections between tree plantation related activities with socio-economic circumstances, where speculations have been made about how socio-economic conditions are usually elevated precisely at local level (Coomes et al., 2008). Respectively, there are some indications of a “possibility” that large scale forest plantations could provide significant socio-economic developments in the shape of employment and livelihood betterment (Obidzinski et al., 2013). On the other hand, it is highlighted by Schoneveld et al. (2011) that even though forest regeneration initiatives offer employment opportunities, they can only provide livelihood circumstances to very limited number of households compared to the households losing their land to the plantation activities.

Nearly all available literature highlights the advantages of the current forests, while relatively limited literature concerning forest-based livelihoods through the lens of forest land restoration and rehabilitation of deforested sites is available (Weston et al., 2015). Also, there is a substantial amount of research on forest livelihood and socio-economic impacts of industrial forestry (Gerber, 2011) but less about tree planting in particular. Therefore, uncertainties are still existent concerning the improvement of human well-being when considering the tree plantation schemes. For instance, it is

also emphasized by Charnley (2005) that forest activities are strongly seasonal, where local employees are usually hired for short-term labor. Furthermore, there are chances that the laborers might be laid off after the initial planting phase – thus, limiting the local employees to enhance their well-being (ibid.). Therefore, this thesis aims to make contributions in filling gaps in research data regarding the implications on the livelihoods of participants of such schemes, by concentrating on the execution of this tree plantation project in the Amangarh region.

## 2.2 Background of the TBTT Project

Pakistan's forests have been steadily shrinking due to decades of felling that has in turned contributed to flooding, landslides, and other ecological challenges. According to UN, Pakistan has less than 12% of forest cover, and is listed among the top six countries which will be severely impacted by global warming (Hutt, 2018). To restore the country's depleted forests, Pakistan's KPK government decided to inaugurate the Billion Tree Tsunami Project with a total budget of \$169 million. It was primarily aimed to be an afforestation project to combat climate change and some of its supplementary aims included improving the economic conditions of the associated populations. The project was inaugurated under the supervision of the Territorial Forest and Wildlife departments (Ten Billion Tree Tsunami Programme, 2022). The initial Billion Tree Tsunami project was completed in 2017 and managed to restore 348,400 hectares of forests and degraded land. The government then went on to expand this project by introducing the Ten Billion Tree Tsunami which aims to plant 10 billion trees throughout Pakistan by 2023, with a total expenditure of Rs. 109.38 billion (Ten Billion Tree Tsunami Programme, 2022).

The chief objectives of the TBTT include the rejuvenation of forests across KPK, the strengthening of wildlife resources, and the proper conservation of protected areas (Ten Billion Trees Tsunami Programme, n.d.). Other than the climate related goals, amplification of livelihood opportunities is also said to be one of the objectives of the project (Root, 2021). The project also seeks to enhance various aspects of sustainable livelihood. The project has not restrained itself to ecosystem conservation and preserving country's natural capital but also reinforces livelihood and employment opportunities. It is claimed by the Forest and Wildlife Department that they have successfully stimulated green jobs and nearly 84,000 daily wagers are currently working under TBTT (ibid.). In addition to short-term job creation, the government has also promised 7,000 long-term jobs (Pakistan's Ten Billion Tree Tsunami, n.d.). The project is also said to have helped the local communities near the plantation sites during the global pandemic (ibid.). According to an estimate, 63000-65000 workers were employed after being economically affected from the distressing consequences of the global pandemic. Another aspect of the project has been the creation of 13,000 private tree nurseries. People have argued that it has helped to empower women and youth and lead to the creation of other employment opportunities as well.

The project has received financial support through the World Economic Forum together with United Nations Environmental Program (UNEP). The project has also received attention at the international level, with environmental organizations like International Union for Conservation of Nature (IUCN) and Bonn Challenge praising the efforts: "We from Food and Agriculture Organization (FAO) are interested in this project so that we can take these lessons from

Pakistan and try to use it also in other countries.” (Gul, 2020). Furthermore, Dechen Tsering, UNEP ‘s Regional director for Asia and Pacific recently indicated that “Large scale restoration initiatives such as The Ten Billion Tree Tsunami Project are central to Pakistan’s efforts to support the UN Decade and to increase ecosystem restoration” (Pakistan’s Ten Billion Tree Tsunami leading the way in ecosystem restoration decade | Stockholm+50, 2022). In this aspect, KPK seemed to be the first sub-national entity which enrolled itself with the Bonn Challenge and actualized its commitment of the restoration of 348,400 hectares of land. In fact, Pakistan finished this challenge in half the planned time (Pakistan exceeds Bonn Challenge commitment with Billion Tree Tsunami, 2022). Also, an independent audit was conducted by World Wildlife Fund (WWF) Pakistan, where the initial phases of the project were declared to be a success in terms of its meeting the stated direct tree plantation and secondary small-scale nursery-based initiative goals (Third Party Monitoring of Billion Trees Tsunami Afforestation Project in Khyber Pakhtunkhwa, 2016).

One of the challenging features of the TBTT project has integrated actors (like United Nations environmental program (UNEP), Bonn Challenge commitment, REDD+ mechanism) that particularly target climate change initiatives and sustainability acceleration activities, whereas relatively less focus has been made regarding its achievements in livelihood enhancement. Moreover, most of the positive feedback the project gained revolves around forest restoration and conservational aspects. However, challenges could emerge when analyzing the socioeconomic impacts on the local communities. For instance, the manifesto of the TBTT is usually discerned to put a lot of emphasis in restoring the fractured aspects of the Pakistani forests, but much less content is available related to its impacts on the participating community’s livelihood activities. Although, the project claims to have apparently accomplished the task by restoring more than 350,000 hectares of land and planting many billions of trees until now (Dean, 2022), but some crucial doubts still crop up when it comes to the questions of integrity of job creation, employment enhancement and other impacts on the socioeconomic situation.

### 3. Theoretical Approaches and Concepts

This section presents the theoretical approach as well as a number of relevant concepts which would be used to discuss and anchor the findings from the field work. As mentioned by O'Reilly (2015), theoretical orientation carries vital importance specifically in social science since it supplies an analytical framework which aids in the analysis of social phenomenon. Estimating socioeconomic effects regarding developmental projects needs a multidimensional frame of references. One such framework that precisely recognizes this perspective on the livelihoods of people is ***Sustainable Livelihood Framework (SLF)***.

Sustainable Livelihood Framework is an extensively used approach for reflection on household and community structures (Pound, 2017: 77). Also, SLF is a relatively good structure when it comes to analyzing holistic poverty alleviation and livelihood enhancement projects. According to Chamber and Conway (1992), a ***livelihood*** includes the capabilities, activities, and assets (involving not only material but social resources as well) that are necessary to obtain a decent living. Further, a livelihood is ***sustainable*** one when it is able to deal with and recuperate from the stresses and strains and recover from traumas by enhancing one's livelihood. It can also preserve or uplift its assets and capabilities without compromising its natural resource base. Livelihood resources can further be categorized into five types: natural capital, economic capital, human capital, social capital, and natural capital. It would also be helpful to clarify various components making up the definition of livelihood: According to Ellis (2000), livelihood ***assets*** are a resource base of a community and can be seen as a form of capital which individuals draw upon to earn a living. ***Activities*** would refer to the actions required to earn a living (ibid.). Ellis (2000) defines ***capabilities*** as the possible achievements of a person with their economic, social and personal attributes. Some other researchers (Sen, 1993; Chambers and Conway, 1992) have indicated capabilities as the potential of a person that can be achievable by utilizing their personal, social, or economic characteristics.

The concepts of diversification, vulnerability, and resilience also come into play when discussing livelihoods in the context of SLF. ***Diversification*** is referred as the mechanism through which the people can attain new and different activities and assets for surviving and improving the living standards (Ellis, 2000). Whereas ***vulnerability*** is defined as being exposed to risks, shocks, and stress (ibid.). ***Resilience*** is the ability to come back from stress or shocks (ibid.). One of the primary elements of sustainable livelihood is how it copes and gets better with stress and shocks. In bad or traumatic circumstances, resilience acts a coping mechanism and acts as a key to gain both livelihood adaptation and survival (Davies 1996). Ones who are not able to cope whether in the

terms of temporary or longer adjustments are most likely to become vulnerable and unlikely to gain sustainable livelihood.

Various capitals categorizing the livelihood resources are discussed next:

The concept of **natural capital** refers to country's stock of natural assets. Natural capital (involves forests, agricultural land, woodlands, pastures) is specifically fundamental for those individuals that make a part of their livelihood from natural resource base practices along with advantages from natural resource activities. (Sharafi et al., 2018).

The traditional composition of **social capital** reflects “the internal social and cultural coherence of society, the norms and values that govern interactions among people and the institutions in which they are embedded. Social capital is the glue that holds societies together and without which there can be no economic growth or human well-being” (Safdar et. al., n.d.: 762). Social capital is also seen as the capital which is embedded in social ties and has an absolute linkage with growth ventures (Stam, Arzlanian, and Elfring 2014). Scoones (1998) defines social capital as social resources like network and social relations through which individuals draw on while pursuing different livelihood strategies. While considering an individual level, social capital encompasses shared visions, trust as well as social recognition (Chengke & Junshu, 2013). Social capital can further be categorized into bonding, bridging and linking social capitals. **Bonding social capital** refers to social relations within a group or with people having similar characteristics as oneself – such as within the groups based on kinship or community (Agger & Jensen, 2015; Mathews, 2021). **Bridging social capital** refers to social relations between people crossing social or demographic boundaries (ibid.). It can also be described as *between-group connections* or *local-local connections* (Lancee, 2010; Pretty & Ward, 2001). **Linking social capital** describes relations crossing the boundaries of wealth and power, referring to ties with institutions or people in (financial or political) power (Agger & Jensen, 2015; Mathews, 2021; Riemer, 2018). It has also been described as *local-external connections* (Pretty & Ward, 2001).

**Human capital** is one of the most intrinsic as well as acquired assets of people that is composed of one's abilities and skills. This idea further refers to good health, as well as ability to perform different tasks that helps people to attain various life goals (Nasrnia and Ashktorab, 2021: 2). Moreover, Human capital encloses assets such as investment in knowledge, skills, competency gained by education and health metrics. Some economists also define human capital as internalized capabilities where such accumulated capabilities eventually enhance and protect economic production in an effective manner (ibid.)

**Physical capital** indicates as an access to services along with infrastructure. It also includes necessary facilities like equipment, electricity, technology, gas as well as numerous facilities that contribute to local environment (Nasrnia and Ashktorab, 2021: 3).

**Economic capital** refers to moneys, which can in the forms of savings, loans, income, or pension (Dent et. al, 2002: 16).

One of the fundamental benefits of SLF reflects that it acts as a vital toolkit while accessing the livelihood enhancement of the local household and allows the analyst to deeply conceive and figure out the complexities of the local people. SLF also facilitates in comprehending the strategies of livelihood, and how different components are interconnected. In this specific study, the livelihood framework helps to analyze how TBTT has affected the livelihoods of the participants and the above-mentioned livelihood capitals would be used to evaluate the respective positive and negative impacts on the lives of people. In my work, I have thus assessed how TBTT impacted the human capital in case of acquiring new skills and knowledge through TBTT. Another important type of capital which the government of KPK claims to have positively impacted is the economic capital of the community (Khan et al., 2016: 35). Economic capital includes man-made and financial assets (OECD, 2020). Through conducting interviews, I have become able to better understand the changes in economic, human, social capital of the participants because of TBTT, i.e., generation of job opportunities, increase in household income or creation of complementary flows of income. Furthermore, the assessment is not just limited to the means gained and advancements engendered by the workers but also how laborers utilized such options and services in order to improve their livelihood in relation to TBTT.

In conjunction with SLF, another important term used by the thesis is *people-centeredness*. In people-centered development, the focus is on the needs of the people (Antonio, 2001: 67). Moreover, in this form of development, people are empowered to be active participants in the developments (Wedchayanon and Chorkaew, 2014: 826), rather than just passive recipients. Additionally, Scoones (2009: 180) states that a development approach can be people-centric when the process of policy making is based on the actual struggles of the poor and ensures their participation in the decision-making process. Moreover, in such an approach the poor would have the ability to influence the institutional structures and processes. In this thesis, its more overarching interpretation is used which is to mean whether or not the project has been beneficial for the people. In other words, if the information disposed by the informants indicates positive growth of human, social or economic capitals, or any other form of assets – the sustainable livelihood framework will then also indicate a successful degree of people-centeredness.



## 4. Research Design and Methodology

### 4.1 Data Collection and Interviews

This thesis is mainly based on a qualitative field study conducted in Nowshera region in Peshawar district in the month of February 2022. The data acquisition process was carried out with the support of the Ministry of the Climate Change and the Khyber Pakhtoonkhawa (KPK) Forestry department, which are two of the main departments involved in the plantation project. Permissions had to be acquired from the government departments before being able to carry out the research. Nonetheless, once the permissions got granted, the officials immensely supported the field research work. The Forest Department assisted me by assigning a village located in Nowshera, a district near KPK's capital city, Peshawar. Moreover, the forestry department also proved to be very accommodating since they provided a direct contact with the workers. The officer along with an assistant went to the plantation sites with a further journey of around 3 hours ahead of Peshawar.

My younger sister acted as the data acquisition and field work mediator. A semi-structured questionnaire was formulated, most responses were recorded, while also taking additional notes. The hospitable government contacts provided transport to the sandy mountainous terrains of Cherat Hill Station, where the plantation site is located. The plantation site was located near a village called Amangarh and was therefore known as the Amangarh plantation site. The officials informed that there was no feasible path that linked the village to the top of the hill station before the project started, and tractors had to be used to carve out a path in the hilly terrain. The hill station was located at an elevation compared to the nearby villages. The terrain seemed dry and arid.

The Forestry Department had managed to gather all the on-site respondents (30 wage workers). During the interviews, some of the local men displayed shyness at being interviewed by a woman. Once the spokesperson introduced them to the topic of inquiry and the goal behind it, the workers started to talk freely and enthusiastically, some even making an eye-contact.

Prior to interviews, I assembled a list of employment opportunities and TBTT's ongoing projects in collaboration with the forestry officials. This helped the mediator to prompt additional questions regarding income sources and job creation opportunities. Furthermore, as the workers did not seem to be familiar with the interview schedule in advance, it reflected that the interviews were genuine and not previously planned or biased.

### 4.1.1 Interviews with the workers

Through the help of my mediator (my sister) on the ground in Nowshera, I finally managed to conduct 30 semi structured interviews, utilizing a questionnaire that I had designed, as part of a thorough discussion with her in the prior week. My queries revolve around the positive or negative changes that have occurred in the livelihood of people due to the implementation of this TBTT project. Of the 30 semi structured interviews, nearly 27 of them accepted to be recorded, dialogues of which offer notable insights and in-depth personal experiences of the local community. Therefore, the availability of audio recordings made it much easier to understand the participants. The mediator was provided with a translator so that there was no need required to cross transcribe the recorded interviews from the local Pashto language to the national Urdu language, which is understood by the mediator and myself.

I sought to understand the role of the afforestation project and its impacts on the workers. The questions were formulated to inquire on economic gains (if any), personal experiences, future perspectives, effects on livelihoods as well as protracted expectations in relation to TBTT project, its management and governance so far. Apart from concentrating on the lives of the individuals, I also sought to capture the possible collective viewpoints at the community level regarding any socio-economic benefits or losses that TBTT contributed to the area. Additionally, the interviewing approach stimulated the participant involvement, since questions were flexible and open-ended. My mediator recorded the conversations digitally with their consent for additional auxiliary analysis. This allowed me to further cross-check the information, together with the field notes, and serve as a permanent record.

Qualitative analysis facilitates the design of new research questions further in the project if needed (Gibbs, 2018: 4). And the customization of questions according to the environment of the field can better help observe the apprehensions and hopes of the local community regarding the project (Silverman, 2015: 171). Therefore, the material gathered from semi-structured conversations allowed me to analyze the influence of afforestation on livelihood and working conditions.

### 4.1.2 Interviews with the Forestry Officials and Local Women

To further conceive possible perspectives considering governments take, government officials were also interviewed in person. They provided some insights regarding TBTT's emerging conditions and future perspectives. Also, interviews with the local women entrepreneurs working with TBTT were done via phone calls. It was difficult to get in contact with the women directly through forest officials due to certain purdah concerns, so with a distant relative from Peshawar area assisted us to hold interviews through landline calls. Interviews were conducted with 8 local women entrepreneurs, who personally own and run the plantation nurseries. They further provided us with some useful information regarding their colleagues. This facilitated me to grasp their entrepreneurship stories and how TBTT has affected their livelihoods.

### 4.1.3 Secondary Data Sources

In March 2022, following field study, I also opted for some secondary qualitative data collection. The forestry department had provided me some limited information. So, I had to personally search any publicly available information. For instance, previous financial statements, administration strategies and protocols, reports by governments etc. Moreover, I went on to make further analysis of the TBTT policy briefs, abstracts by community-based organizations and feasibility studies in order to additionally help me understand the compiled primary data. Such sources of data accumulation also seem vital particularly in contextualizing the present situation of the forest-based community while reflecting the contradictions or similarities gathered on the ground.

### 4.1.4 Additional Notes

I have tried to listen the voices of the forest-based community as a way of acknowledging their existing experiences towards TBTT project. Therefore, I have integrated the phrases of voices of the workers in order to capture the reality of the plantation scheme. Covid restrictions had induced many mobility issues for the students particularly while going for field research. Mena & Hilhorst (2020) have also reflected that prior to corona virus pandemic, remote research was used as a significant tool for conducting research when fieldwork seems to be a risky or inconvenient one. Nevertheless, my research was not completely remote as the field work was actually done using my sister as a proxy. My sister had recently completed her Cambridge A-level exams (equivalent to Gymnasieskola in Sweden) and was therefore available to carry out the field work. She was not able to travel on her own and was therefore accompanied by my father at all times, who is himself a retired government servant from the Punjab province.

While reflecting my personal background, I am a born Pakistani and thus have idea of the bureaucratic procedures and complex circumstances of such mega projects. Hence, I have tried to utilize my understandings of the existing socio-economic conditions of a typical Pakistani neighborhood. This facilitated me to equip my thesis with the detailed descriptions of the outcomes and the working conditions of TBTT.

Since covid crises creates serious travelling inhibitions therefore, I was mediated by my sister who currently resides in Pakistan, in Lahore district. She had personally travelled to Peshawar with my father for a total time span of four days. The overall environment was very hospitable, where government contacts provided transport to the sandy mountainous terrains of Cherat Hill Station upon which the plantations are done. The government officials had prepared for mediator's visit prior to the arrival and informed the workers to gather for interviews

## 4.2 Ethical Concerns

One of the integral ethical concerns is the respondents' consent and protection of their privacy. To build trust with the respondents that their data will not be shared with a third party and that it will be solely used for an independent research project, my sister (acting as the mediator on my behalf)

showed them as well as the government officials the authorization letter from SLU that I had acquired. Secondly, the purpose of the research was made clear to the participants. The questionnaire was available in a printed format to elucidate both orally and in a written way with full consent from the participants, so that they could sign and keep its copy. As stated before, the audio of the interviews was only recorded with the participants' consent. Another important point to note is that to protect the privacy of individuals, names have been changed when presenting the findings.

Researcher's subjectivity also plays a significant role in creating biased results. Therefore, I have tried my best to keep my personal judgments apart and be open-minded to diverse perceptions of the respondents. Constraints may also arise while carrying the interviews where researcher could bias the answers in the natural settings of the respondents. (Creswell & Creswell, 2018). Therefore, my mediator made sure not to interfere and let the respondents communicate openly without any fear of retribution.

### 4.3 Validity

Validity refers to the process where researcher tries to draw accurate results from the collected data (Creswell & Creswell, 2018: 313). In order to generate the most relevant and authentic conclusions, my mediator was appointed with one competent field assistant who functioned as the guide to the plantation site. Before initiating the analysis, she had a general discussion with the respondents so as to reduce any discomfort or bias related to field assistant as an intermediary – as the fields workers could have been under pressure to not accurately answer the interview questions.

Through the triangulation of data<sup>1</sup> from different age groups, I have tried to assemble coherent justification for the themes which I portrayed in my study, since the afforestation project may affect some individuals differently than others. The synthesis of information gained from multiple perspectives of the daily-wage workers, women entrepreneurs running nurseries and directly from government officials has made data triangulation possible in this research. Furthermore, I have examined previous data sources which facilitated me in understanding identical questions investigated by past researchers. For instance, similar research was done on a large teak plantation in Java, Indonesia (Ota et al., 2020b: 440). The researchers investigated power relations among various stakeholders, distribution of resource opportunities, as well as division of incentives to evaluate community development and livelihood sustainability (ibid.).

In addition to these practices, I have employed a descriptive writing style in my qualitative research, which can encapsulate the emotions of the respondents and transport the readers into the lives of the diverse residents of Nowshera district. Furthermore, as Bernard (2006: 370) formulated participant observation as “immersing yourself in a culture and learning to remove yourself every day from that immersion so you can put it into perspective and write about it convincingly.” Thus, such approach

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<sup>1</sup> Data triangulation refers to the fact when multiple sources of data are used, or multiple perspectives are included (Flick, 2018).

to detachment is hence connected to proceeding towards impartiality and objectivity. Though, I was not physically present there to take interviews with the plantation workers, but the mediator has attempted to capture this spirit by making the participants at ease, taking descriptive notes, and recording audio.

## 4.4 Limitations

As a self-sponsored research project, financial limitations only permitted my mediator to travel to KPK, Pakistan for a duration of 4 days. Moreover, to preserve the quality of the research material, I had to limit my sample size to 28-30 participants – allowing my mediator to have in-depth conversations with the participants. Furthermore, the interviewees were remarkably open in answering of the questions and bringing forth the problems faced by them, even in the presence of other project related people during the interview phase – also, they had initially confused the visit with an effort by the government to redress the employees. Nevertheless, bias cannot be completely ruled out in the answers as some people might have been reluctant to talk freely with an outsider – especially with a girl in a conservative area. Further, another limitation is that the mediator visited the plantation site for a relatively brief period of time and did not get to interact with the workers over a longer period – as might happen in a long-term ethnographic fieldwork. Similarly, access to local women living around the plantation sites was not possible, as the government officials could only facilitate the access to the plantation site and remoteness of the area meant it was not possible for the mediator to visit the nearby villages herself. Therefore, no direct data was collected from them, though data from women entrepreneurs running small-scale nurseries is still part of this project. Thirdly, economic conditions are a sensitive matter for many to talk about. Participants may have felt uncomfortable discussing their financial matters with a total stranger, although an effort was made by the mediator to make the participants at ease. Another similar aspect is that not conducting interviews of the women entrepreneurs physically in Peshawar and instead conducting telephonic interviews restricted me to elicit more natural responses from the participants, as a natural in-person conversation might have put the participants at more ease.

In addition to these concerns, Pakistan is a politically polarized country where political identity is an integral part of the lives of many and deeply influences their outlook on different issues. One Billion Tree Tsunami was introduced by the provincial government controlled by the political party PTI in 2014. PTI won Pakistan's general elections in 2018 and went on to become the ruling party of the country (Withnall and Liuhto, 2018). PTI's federal policies had become unpopular amongst different sections of the population and had lost seats in the local body elections were held on 19th December 2021 in KPK. However, after the survey was conducted, the ensuing turn-of-events has helped the party with a major resurgence of its support, not only in KPK but the whole country. This resulted in the party winning the second phase of local body elections in KPK. Therefore, political beliefs of the respondents regarding separate issues like inflation, currency devaluation and governance-related problems of the presiding government might have influenced their opinion of TBTT, while ignoring its merits or de-merits.

An effort was made to analyze and interpret the data while recognizing the above-mentioned limitations. And despite the limitations, this work provides an important and valuable insight into the challenges and benefits perceived by the participating communities in the plantation project.

## 4.5 Data Analysis and Interpretation

I have followed a phenomenological approach in order to analyze and interpret my data. In a phenomenological approach, questions usually deal with the experiences of the participants with regards to the situation or context in which they were experienced by the participant (Creswell & Creswell, 2018: 218). This approach works in illuminating the paradigm of personal knowledge to get various interpretations in the form of interviews and participant scrutinization. Phenomenological research also encourages to state descriptive questions and to unveil the meanings of the statements given by respondents (Creswell & Creswell, 2018: 233). Hence, this approach is ideal to deeply examine the personal experiences of the local workers of the afforestation project. Furthermore, by formulating my telephonic interviews, I managed to grab how women entrepreneurs saw this campaign, how their life changed (towards betterment or retreatment) and what are their strategies and working conditions.

In Yin's perspective, an intensive analysis of an individual unit (person or community) is necessary, when research addresses explanatory questions – ‘How or why did something happen?’ (Yin 2012, p. 5). To follow this approach, firstly I have transcribed the interviews and organized the field notes to reinforce easier navigation of text analysis, as suggested by Gibbs (2018: 2). It is recommended for the researcher to read the transcriptions four times (Macaulay and Deppeler, 2020), and highlight different perspectives such as the cultural framework in which it was spoken or the relationship dynamic of the stakeholders (Mauthner and Doucet, 1997). I have thus reflected on the overall meaning of the information provided and tried to identify patterns and key terms used by the respondents. The next step involved coding the data. Coding refers to the process by which researchers organize similar chunks of information into individual categories (Creswell & Creswell, 2018: 306). The labels of these categories are derived from the original language used by the informants (ibid.). This technique facilitated me to diagnose the outcomes of the plantation campaign with respect to socio-economic conditions of the local community.

Once I have the labels for each theme noted, I continued to render detailed descriptions of the informants, the themes, and the settings of the interview in each theme. These descriptions included key quotations and direct evidence to support statements regarding the afforestation project. These themes are later used as the headings in the findings section of my thesis. Furthermore, I have tried to arrange these themes to form a qualitative narrative around the TBTT and present the experiences of the local community in a cohesive manner.

Moreover, I have categorized the statements in correspondence to the questions which seeks to examine and delve into several sub-themes. Finally, I attempted a comparative scrutinization of the texts and statements from many different angles to evaluate any divergences or convergences of the

perspectives of the interviewees. Direct quotes of the informants made it comparatively easy to develop an examination basis of first-hand experiences of the informants. I took advantage of utilizing the direct quotations in a way that they aided in accumulating the richness of voices by engaging an emic approach which involves how people think. This approach is what Café (2012) further elaborates as the way of understanding the originality of thoughts, aspirations perspectives, backgrounds, and experiences.

## 5. Findings

### 5.1 Workers' Socioeconomic Background and Working Conditions on Site

The empirical findings consist of the responses and observations gathered at the plantation site through in-depth, semi structured interviews and field observations.

#### 5.1.1 A Background of Workers

The economic background of the onsite laborers suggests that they belong to the lower class. In terms of the family structures, most of them are living with the immediate or extended families. The mean family size is around 6-8 members. Most are sole bread earners – with very few working alongside their families. The age groups suggest that more than half of the workers were in their mid-twenties or teenage. A couple of middle-aged men were working as guards. A few of the workers were under the age of 18. A number of different types of professions were encountered at the plantation site, for instance, gardeners, guards, custodians, and government officials. The central task of the onsite laborers is digging shallow planting holes or trenches, followed by planting the assigned seeds.

Almost all laborers were supporting their families and stated that there was no other profession or job opportunity to pursue near their homes located near Amangarh. The commute to different places in Nowshera, Peshawar or adjoining cities was simply too expensive. In fact, working in cities far away meant additional rental expenses and being away from their families. In terms of wage rates, the laborers earned an estimated PKR 15000 a month (on average) through a daily wage of PKR 500. This average amount included any salary earned through double shifts as well as working over the weekends. This was below the government mandated minimum wage, which is PKR 21000<sup>2</sup> a month (Directorate of Labour - Khyber Pakhtunkhwa - Minimum Wages, 2022).

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<sup>2</sup> In Jan 2022, 1 USD was equivalent to 178 Pakistani Rupees



The literacy rate of the workers along this plantation site was also very low. Some statistics are as follows: No formal education (17), primary (9), secondary (3), higher secondary (1) and university (0). Only 1 participant out of 30 was earlier studying to get a diploma but had to quit to earn for his family after his father got injured in an accident and lost his foot. Being the eldest with five younger siblings, he started earning the livelihood for his family. Three or four youngsters were also found to be working, after dropping out of schooling before passing the high school.



Figure 1: A plaque marking the Amangarh plantation site



Figure 2: Landscape around the plantation site

The officials also informed us that the plantation mostly consisted of olive trees, which at the time were just pits since they had been planted only about a year ago. Huge risk of plantation failures arises particularly with the selection of inappropriate tree species or with the deficiency of early stand management. (Lamb et al., 2005). Therefore, TBTT managed to import its olive saplings exclusively from Spain, considering that their ecological restoration gets enhanced due to its suitability with the local environment. Thus, hundreds of acres of land are envisaged to be covered with olive tree plantations in the coming years. The primary reason for the selection of olive tree plantation was that it makes an ideal environment for food production since olive is drought tolerant. Moreover, olive plantations do not get affected by extreme weather conditions. Also, the soil that is needed for olive trees is usually favored to be well-drained, with occasional water requirements. Hence, olive plantations have an edge of growing up even in nutritionally bad soil conditions. Nevertheless, I am not aware if any study was made to assess the adverse effects of alien trees to the local biodiversity. Lastly, while reflecting the status of female workers, it was evident that no women were present at the plantation site. Upon inquiry, the mediator was told that the women were not present at the site since it was a remote and barren place. It was informed that the women were working at nurseries, which is discussed in the second part of the findings.

### 5.1.2 Livelihood Enhancement and Employment Opportunities

When PTI (Pakistan Tehreek-e-Insaf) came into power in 2018, the government promised to uplift the myriad of socioeconomic problems faced by working class Pakistanis. However, in recent years, high levels of inflation in the country have made buying basic necessities a big challenge and has led to public discontent.



*Figure 3: Another view of the plantation site*

During the pandemic, Pakistan ranked as the country at number four in the world with regards to inflation. In addition to high levels of inflation, there is a shortage of job opportunities for a rapidly growing population. The present job crisis in Pakistan means that even the slightest measures to introduce venues of employment can make a stark difference for working class families. Despite their harsh economic situation, vast majority of the site informants explained that they were grateful

that they could still survive with even less than bare minimum amounts of per month salary. This less-than-minimum wage could at least provide them with essentials to attain food among other household necessities. For instance, clothing, children's needs, and essential food items. Quite few of them managed to save some amount from their salaries and were making the most of it. Workers opted for TBTT due to unavailability of low-skilled jobs near the plantation site, Amangarh. The available jobs were either low-paying daily mechanical labor jobs or temporary daily-waging at the Cherat Cement Factory overlooking the hill station. One respondent currently works at Cherat cement factory, which could be seen from the hill station, but it does not offer many employment opportunities, since it seldom has new openings for daily wagers. Prior to TBTT, some of the workers used to work in more economically stable regions like Pakistan's capital city, Islamabad. The informants told us they were working as restaurant staff, car mechanics, and rickshaw drivers. Jobs with higher income used to enhance their standard of living, but much of their income got spent at rental or commuting expenses and came at the cost of being away from their families. Thus, one of the most significant and productive outcomes of TBTT project is the opportunity and availability of jobs for the workers in their native areas. In this way, they do not need to opt for an odd or off farm job. Off farm jobs and employment opportunities are usually accessible in distant metropolitan city areas which ultimately expand migration rates. Also, laborers were earlier working on hourly rates, where exploitation was a general trend. "Additional one downside related to our previous work was the lack of predictability along with revenue stability," as narrated by one young laborer.

Surprisingly, it is something quite normal in private jobs (especially within odd and non-specialized jobs) that the employer could remorselessly make changes in the fixed salary rates. For instance, one middle-aged informant (Shahnawaz Deen) who previously worked in a restaurant, was found to be severely complaining regarding the sporadic episodes of decreased hourly income. "I was unable to get a steady paycheck and there was no one whom I could go to and negotiate these biased arrangements. There was also a constant sense of uncertainty considering downsizing and job security issues especially post covid 19." He said with a distressed face and lowered eyebrows.



*Figure 4: Mediator (along with our father) taking notes*



*Figure 5: A view of the plantation site*

Moreover, the wider problem that laborers previously faced was the earlier slowdown in economic activity that affected the daily wages of individuals. In such vulnerable situation, TBTT appeared to have supported laborers since the wider concern during initial days of coronavirus pandemic was the sudden evaporation of work of the daily wagers. In this respect, TBTT was found to be giving the employment opportunities without very demanding skillset.

“As a consequence of coronavirus and since Pakistan imposing an increasingly strict lockdown, all the cities were shut down and we were left empty handed. All the work was vanished because all workplaces other than those selling medicines and grocery were completely shut down. Dozen other daily wagers including me, who already lived a hand-to-mouth life could not earn a single penny for almost two consecutive months. My household that relied on the income of daily wage got tremendously hit; I even went to bed hungry sometimes.” says (Yahya Hussain, 25). “I would always be sitting next to normally bustling Kalma Chowk Road by hoping that someone will drive by and offer me some kind of work,” he added.

One informant also faced discriminatory conduct and prejudicial treatment at a previous factory outlet of children garments, since workers are “Pathans”<sup>3</sup>, and some people could unfortunately perceive them as unprogressive and old-fashioned. Another laborer was found to be abruptly replaced by another employee without having any warning or admonition letter regarding poor performance or bad conduct at a local men’s salon. In laborers’ opinion, their deficient qualification created huge obstacles to join corporate ladder, meaning it was almost an impossible task to improve their socio-economic conditions. As these laborers were unqualified for white-collar office jobs, TBTT was still providing the laborers a sense of conviction and job safety without having a certain criterion of higher degrees and diplomas. In this respect, TBTT is also catering underprivileged candidates without having the demands of any practical experience.

Upon quitting their jobs and joining TBTT, they stated that despite various kinds of difficulties, they could still fulfil their family obligations like taking care of elders and younger siblings, and sleep under the roofs of their own homes. Some youths stated that it was their first job and this way

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<sup>3</sup> Pathans, Pakhtuns or Pashtoons are an ethnic group native to areas of Pakistan and Afghanistan who predominately speak Pashto language.

they could help their families with some supplementary income without having to travel too far away. These workers were at least getting a predictable paycheck in TBTT, and the workers looked satisfied with this job since the skills and knowledge needed for this job were not complex. Two Afghan refugee brothers also shared their experience working in the TBTT plantation as guards, where they stayed overnight. They split their working hours equally and guarded the plantation for the whole day. Afghan refugees in Pakistan can have a difficult time finding jobs due to the competitive nature of jobs in a crumbling economy, and a sense of xenophobia makes it even harder for them. They expressed that they were grateful that they could earn a living at the plantation site.

It was interesting to observe that after performing demanding work for five consecutive days, 4-5 informants were also performing fractional employment by making efficient use of their remaining time. This was generally done on weekends, in the form of small businesses. Such part-time businesses facilitated their livelihoods to elevate. It can be observed that small part-time business ventures did not just bring opportunities of new career paths for laborers but also provided benefits to their extended family members as well. Workers improved their monthly salary by investing some money and instituting private entrepreneurship ideas.

One worker named Habib Shah, shared his employment story where he managed to save some of his salary in the time span of last 10-11 months and had initiated a small ad-hoc shop of folded leaves named as “paan” (chewing betel leaf). He usually went to weddings on weekends and sold this paan in a traditional way. There is a tradition associated with eating paan on such festive occasions, and it is often regarded as one of the cultural symbols. “I considered it as a good idea of generating money because it is seen as a greeting extended to guests at weddings. But most of the paan shops are distantly located in cities. Besides, I just needed to get one container called as “*paandan*.” The paandan has some additional boxes where other ingredients of paan are placed like *choona* (limestone water), *kaatha*, *chhalia* etc. Sometimes, I also sell sweet pan and that remains in huge demand.”, narrated by Habib while clasping his arms behind his body and speaking in a tone reflecting his personal self-confidence. The overall investment for his business was nearly Rs. 20,000 (262 USD) from which he nearly earns Rs. 1000-2000 (13-26 USD) per wedding. The sum of money is considered to be enough to get groceries for nearly three to five days for a household of four family members. By running this side business only on weekends, he created an additional income of 26-36 percent as compared to his total salary. His sincere emotions made us discern that people of KPK were somehow progressing in life from the generated savings from TBTT.

Another participant initiated a business of Easy Paisa, which is a mobile payment solution and also provided microfinance-based banking facilities. Apparently, there was no cost to register as a merchant and he was earning a small commission depending on the value of transactions that is made through his shop. Similarly, a clean-shaven young informant named Ahsan Khan (age 23.5) invested an earning of Rs. 15000, which is his total monthly salary in a manual merry-go-round swing for children. “Because I live alone and don’t have family related responsibilities, therefore I could manage to invest much of my salary in my small business. My manual swing is a flat looking disk that rotates clockwise and anti-clockwise where there are multicolored bars to hold hands. It gives me an immense pleasure that my merry-go swing attracts a lot of children.” Accompanying soft smile and some wrinkling around his eyes, Ahsan further told that he did not have any fixed schedule to opt this activity. He usually worked on random days, especially on days with pleasant weather. In his opinion, “Part-time business offers direct savings since it has reduced demand for

economic resources. as it requires one-time investment only.” His sum of generated money is nearly Rs. 2500 (32 USD) per month, which is around 16 percent additional income to his total salary.

Likewise, a mature middle-aged informant Sami Khan purchased a small popcorn maker worth Rs. 3000 from his monthly savings of three months. And he started selling popcorns generally in the evening time as a means of extra income. In his opinion, although popcorn was a popular snack among children and his business provided some initial benefits but unfortunately it was not good enough in the longer-term, if continued without any expansion. “Since I could only earn a small sum of money (200 rupees or 2.62 USD daily) that is why I envisaged to buy a bigger popcorn making machine along with cotton-candy machinery. By working in TBTT, I have a relatively steady stream of income and any savings made on the money are enabling me to dream big. Especially this popcorn business could potentially further enhance my livelihood because it looks like a reasonable yet profitable part time business,” Sami said in a low pitch and self-assured manner.

The mediator also met one young informant, Muhammad Afzal (aged 27), who was earlier pursuing his diploma but could not complete it due to financial crises. He was found to be saving part of his monthly salary (ca 20 percent), in order to establish a small tuition center for children above 10. “I have managed to get a white board, soft sheets for sitting purposes and a few stationary items. I cannot buy desks and chairs because they are utterly expensive.” While appreciating his effort, the mediator inquired him that since his salary was already very limited, then why did he need to sacrifice his earnings. In the response Afzal replied with a broad smile and said, “it is only me and my mother; my father is no more, and my sister got married last year. There is a constant encouragement from my mother to do something for the betterment of children, since she is herself illiterate.” This statement left us flabbergasted that even in limited resources people were making big dreams.

44-year-old Naveed Khan formerly worked in Afghanistan at a construction company and made \$700 per month. He had to return to Pakistan because of Afghanistan’s worsening socio-political situation and was greatly distressed by the challenges he had to face back home. He was able to find a job at the TBTT plantation site. It reflects that TBTT is facilitating even marginal segments of the society by providing them an equal access to job opportunities and willing to accept these individuals without having any cultural or ethnic restraints. Although he was thankful to have at least some work, but the rising inflation in the country meant that the earnings were still not enough to easily make the ends meet. For example, it took him PKR 150 (1.97 USD) daily to commute from his house to the plantation site on his motorbike due to steadily rising fuel prices. Moreover, due to his kidney disease, he could not be out from his house for too long. And upon taking medical leaves from TBTT, his salary gets deducted. His current economic situation made it hard for him to afford a proper treatment, and he needed to go to hospitals in neighboring cities when his condition worsens.



*Figure 6: Watering arrangements at the plantation site – with a water tanker getting filled up*



*Figure 7: A view of the manual watering arrangements*

It was unanimously agreed by all the respondents that TBTT had elevated their livelihood to some extent, and they looked forward to participating in future plantations unless they found a better job. They expressed that pursuing higher education would have enabled them to encounter better opportunities, but their circumstances prevented them from fulfilling their educational passions. “A better qualified individual would not have to go through such difficult situations”, expressed by one of the workers. Nevertheless, the workers also unanimously expressed that their demand for an increment in their salaries was not being met, and that they were even not being afforded minimum wages.

### 5.1.3 Widespread Poverty, Scarcity of (Contract Based) Wages

#### **Unaffordability Crisis:**

Pakistan’s economy is excruciating with inflation, credit crunch and decreasing GDP. All participants state that it is becoming beyond their means to afford basic necessities like food and clothing for their families. Two informants also registered their concerns that it was extremely hard for them to pay tuition for their children and maintain their medication expenses. Some of the respondents are also pursuing some part-time work, especially on weekends. This part-time work meant that some were paid laborers, while some were running their small-scale businesses. The workers view the off-plantation work as a beneficial source of employment in the form of supplementary income. Some of the workers also work in extra shifts at the plantation sites in order to meet their ends. The vast majority of the informants do not have any additional sources of income in their families. Only two workers have elders in their family who are currently working in the market of miniature decoration pieces and handmade carpets. The workers at TBTT have jobs based on contracts and each of the participant is going to work for a time period of three years. Afterwards,

the Forestry Department may assign them different tasks at the current plantation site or assign them some other plantation.

### **Salary Issues and Daily Wage Rate**

TBTT does not meet the minimum wage stipulated by the government itself, which PKR 18 000/month (\$100). It instead relies on daily wage system, where the workers are given PKR 500 (\$2.8) daily for around 8 hours of work. This means that they are given approximately PKR 15 000/month (\$84). They are not granted paid leave, and their monthly salary gets reduced if they take days off. The workers complained that their payments could be delayed up to three months, depending on when the government allocates the funding needed for the project. Nearly 27 workers complaint their payments are usually not on time or either gets postponed in a frequent manner, at least thrice a year. In such circumstances, their livelihoods get exacerbated, and survival becomes difficult. In their opinion, these are the most difficult days of the year where sometimes they need to wait for 2-3 months to get their salaries. Moreover, all respondents reported that their payrolls usually get used by the middle of the month, and they then would have to rely heavily on other external sources of income such as extra working hours. Azam Shinwari (30) said, “if we only calculate the monthly expenses of basic commodities like sugar, oil, rice, and wheat: it is nearly the amount of total salary we receive. You can have a better guess how it works for a household of five family members.” Furthermore, in the time of hardships, informants take loans from their relatives or buy commodities on informal credit from local shops. Females are traditionally assigned to get credit from extended family members and acquaintances whereas males usually tend to take informal loans from the kinship groups and try to honor the commitment within given time. “Delayed salaries surely create a sense of anxiety and inevitable apprehensions,” said Hasan Wazeer Khan (27) with a gloomy face and dejected look. He further conveyed a potent message, “if we did not have good relationships with each other, we would not be able to come so far, so we have a fallback option in the form of kinships. This support system is tremendous and plays a fundamental role especially in the time of hardships.”

Almost all informants were found to be jointly complaining that late salaries not only create downstream effects on their finances but tremendously hit their personal budgets (children’s allowances, household expenses, utility bills) as well. “My late payroll sometimes causes me and my fellow colleagues to question the management of this plantation initiative, lowering our morale and also giving birth to a sense of distrust for the long run,” one of the informants (Zia ul Haq, 26) said in an unapologetic manner while also letting out an exasperated sigh.

Another laborer Jummah Khan stated, “5 months ago, my mother got heart attack and needed an instant surgical procedure, and on the top my salary was not paid in time. So, my wife had to sell her gold bangles in order to get her treated.” Jummah’s facial expressions indiscernibly reflected a sense of sorrow in his narrative. Nevertheless, he was still cautiously optimistic because of the amount of ongoing development work connected to the plantation project. In his perspective, better connectivity of this remote area with the rest of the country will definitely arise better job and business opportunities in the future. His overall demeanor was positive because he had bright hopes from the revenue generation from upcoming developments in the project.

In short, periodic delays in salary payments exacerbate the problems associated with already-depleting cash flows for the laborers. “Madam, certain times of the year, our economic situation becomes highly precarious, when our salaries get delayed beyond our due date,” a young informant (Naveed Khan, 22) said in slightly frustrated way while crossing his arms over his chest. He further continued, “since we are wage-based laborers and prolonged delays in already very limited salaries indicate the economic management as very unprofessional. And the most we can do is to drop a reminder to the project manager in order to send our concerns to senior management authorities.” On that account, the mediator could clearly notice a sense of resentment and helplessness in the atmosphere.

### **Positive Correlation between Bad Economic Circumstances with Working Youngsters:**

Pakistan’s socio-economic conditions force children to quit education and work to earn a living for their families – a widespread practice. The minimum age for starting work is 14 years under the Khyber Pakhtunkhwa Prohibition of Employment of Children Act. Nevertheless, trapped in a poverty cycle, youngsters (though above the minimum age) were working at the plantation site; where they were found to be deprived of school as they wanted to pursue studying but they could not. General falls in living standards along with colossal livelihood expenses caused many laborers to let their children support them, since child labor is rooted in poverty. 4 informant children around ages of 16 were found to be working as a means to contribute to the family expenses. While standing in a slouching manner, warm hearted Shah Farmaan stated, “I am working for multiple reasons: I have six siblings and old parents, and the present conditions of my family are extremely vulnerable. I decided to join this plantation work in hopes for a better livelihood.” His drowsy eyes and continuous yawning clearly depicted that he was deprived of sleep, since Farmaan usually worked nearly 9-12 hours a day.

A short heighted, naïve looking youngster (Wali Khan, age 15), dressed in ripped yellow tunic and baggy trousers, was enthusiastically working alongside his father and maternal uncle. Upon inquiry, informant (father) said in a dispirited voice, “we are forced to put our children at work under such arduous and physically demanding circumstances.” He further told, “the rise in poverty, especially after covid-19, eventuated a considerable loss in household earnings. Therefore, our kids are forced to earn for financial stability.” Deep frown lines at the age of 35, drooping body with quivering lips indicated the bodily strains of the tough work.

Two brothers with tall erect postures, wearing grey pant shirts (ages 15, 16) were found to be working at the plantation site for the sake of acquiring skills and traditional knowledge of forestry. Their father (with down cast eyes and apparently looking older than his age, 41) informed us that although these kids were good at studies but somehow their education expenses and tuition fees were getting out of budget. So, to secure their future, he encouraged them to learn this plantation related expertise as well. Another respondent (Khan Baba, 33) voluntarily rushed to join the interviews while ploughing his seedings. He was completely covered with dust and continued with a short exhalation, “this pandemic wreaked havoc on our family expenses and there was no option left for us, apart from resorting our children to labor-intensive work. We are a family of 10 members



and 7 being females.” Khan carried on in a disheartened tone, “it is impossible for me to earn for ten people alone, therefore I took my boy with me and now we are earning enough to have at least two meals a day.” In this respect, it can be judged that the ones with bigger family units are comparatively more vulnerable to worse livelihood circumstances. Through these conversations, it can be deduced that increasing costs of living expenses are forcing families to get younger members to work at an early stage.

## 5.2 Working Conditions

### 5.2.1 Site Dangers, Animal Attacks, Limited to No First Aid

Medical services are not available to the workers, as all the emergency rooms and hospitals are located far from the plantation site. Even if workers are driven to the hospital, the medical bills can be extremely high, and the scarce public medical facilities overcrowded. If a worker is injured, he has to be taken to Peshawar (the provincial capital), which first involves driving all the way from Nowshera to Peshawar and can be potentially fatal if they do not make it on time. The frequency of the site dangers can be guessed from the fact that informants gave us information regarding some safety-related incidents happening around in a short time frame.



*Figure 8: A makeshift hut acting as a resting place for the workers*

As the plantation site is remote, there are a considerable number of wild animals and insects lurking around the place, including wild boars, wild bears, and poisonous snakes. The mediator was told about incidents where workers were bitten by snakes and then their fellow colleagues had to treat them themselves, without the availability of first aid by making a cut and sucking the venom out.

Muhammad Jahanzeb, including 3 other employees, are entrusted with the responsibility of guarding and supervising the plantation vicinity. They need to traverse over sixty acres of land in order to confirm whether saplings are intact and undamaged. Additionally, to resist the aggressive grey wolves, wild boars, and bears at night-time, they have acquired some trained hunting dogs which are escorted from the nearby village. One key point to be captured here is that fear for wild animals in plantation sites is absolutely legitimate.

The afforestation site lacks some necessary equipment and items like search lights, which are essential for the safety of the guards and workers present at night. The workers use regular flashlights and oil lamps instead. One of the laborers explained his ordeal stating, “Everyday, we face problematic situations due to the lack of technological assistance.” Instead of being afraid of

reprisals, informants confidently brought forward their health and safety concerns – even when other government officials were also present on the site.

There was also a shortage of commercial pesticide applicators and spray tractors, as spray of insecticides and fertilizers is predominantly manually done. No standard protocols were apparently getting followed by the laborers while spraying the pesticides and applying insecticides. Limited to no availability of gloves, PPE (personal protective equipment) and masks was also noticed. Not only does it cause environmental contamination but tremendously risks the health of workers too. Limited or lack of spray equipment can cause susceptible health conditions and long/short term adverse health problems. “Long exposures to pesticide made me to cough constantly,” an informant told.

Manual pesticide sprayers are highly unsuitable to cover larger units of areas, where complaints were received that this task needed a larger workforce or advanced machinery to get the desired output. When the workers were asked by the mediator to wear a respirator so that they could be prevented from such respiratory hazards and airborne chemicals, respondents simply answered that there was a limited availability of respirators. As a matter of fact, it was even quite difficult to explain and differentiate a difference between surgical mask and a respirator to the workers with puzzled looks. In their opinion, it was difficult to escape from the inhalation of dust, infectious particles, and other noxious substances since limited availability of necessary equipment was one of their paramount concerns. A few laborers were found to be protecting themselves by adhering to safety protocols through their own means like wearing a piece of cloth (handkerchiefs) over the nose and mouths.

Another informant gave us information related to the availability of technological equipment, “if we to aspire to stock ourselves with basic necessary tools and technological equipment, it requires a substantial funding, which is not available.” He continued, “For instance, there is an instrument which uses some technology similar to infrared and releases specific kind of waves that could repel wild animals and predatory species. However, due to lack of funding, it is not possible to acquire that.”

## 5.2.2 Terrain and Available Resources



*Figure 9: A dirt road leading to the plantation site*

**Dangerous Terrain and Commuting Costs:** Throughout the road trip, there were highly crooked roads in the mountainous regions that were accompanied with rocky terrains. To be specific, lack of transportation facilities accompanied with bumpy roads instantly made us realize how difficult it was to travel. On the way to Amangarh Village (site area), loose stone retaining walls were noticed that were originally made from simple dry stacks of natural field stones. Similarly, in order to protect the saplings, compact fencing was sparsely done through barbed wires. Heavy trucks and mountain jeeps were

observed to be the main means of transport particularly to load and unload the goods. The steep slopes and sharp curves made it really difficult to travel. Also, some of the land appeared to be highly degraded.

There was no formally constructed road that led to the plantation from the village. The mediator was informed that the TBTT team had paved a path to the plantation site themselves. The road present in the village was unpaved and consisted of only gravels, which would make walking on foot extremely hard for the residents. The officials took us to the plantation on their jeep suitable for travel in the mountainous terrain, maneuvered by a skilled driver who made the journey to the plantation daily. The terrain was dry and arid, and small saplings planted through the project could be seen throughout the drive to the top. The adjoining villages were semi-urban, with a mix of stone houses and were underdeveloped. Furthermore, the sanitation situation in some parts seemed deplorable, with residential areas serving as landfills.

The few workers who commuted by using motorcycles complained that their tires got punctured regularly due to the nature of the terrain and had to be replaced, which on an average cost them PKR 1650 (21 USD). Hence, vehicle maintenance could take a portion of their salary. The others who did not own motorbikes had to walk up the terrain without any transportation. While some walked up to 7 kilometers to get to their destination, most walked around 2-3 kilometers from their villages up to the plantation site. The workers reported that they have to depart sometime around the Fajr prayer (Islamic prayer offered at dawn) to get there. These findings clearly reflect the gravity of the situation and how essential it is for these workers to get proper transportation facilities.

**Available Resources:**

Traditionally water for irrigation would be acquired through tube wells, dams, rivers, or canals including other numerous sources. Nevertheless, by virtue of location, there was no availability of electricity or diesel operated tube wells on the plantation site. Because of prevalent energy crises in Pakistan, TBTT has come up with a reliable yet affordable source of supplying water to olive saplings in the form of a few large solar-powered tube wells. Solar pumping seems as the most economical way of extracting water for the irrigation of saplings. Hence, an inexpensive yet sustainable power to the water supply systems at Amangarh plantations is provided.

The water is distributed across the plantations through manual labor with watering cans and pipes. Workers need to make extra efforts in making sure that they are spraying water in the right manner – not causing the soil to get washed off. In such a scenario, chances are high that saplings will either be over or under watered. Also, there were not any high-pressure sprinklers or water-gun systems that make sure the uniform distribution of water and allowing application of water in a controlled manner similar to rainfall. Hand watering and manual irrigation not only creates high chances of water loss but is also extremely labor intensive. While reporting the working situation, the labor force did not seem to have total rejection of the mechanism, but there was at least some sense of objection and disapproval in the air.

At the plantation site, a properly built, small modern restroom with necessary facilities was present. It had a proper sink and sanitation facilities, albeit topped with a wooden roof. Also, a hut was found to be constructed for rest and prayer purposes. This small hut was made of straws, canvas, plastic sheets and other materials. The prayers mats were lain inside it where workers could pray and get rest. There was also a huge blue drum from where workers could get water to drink. Furthermore, workers were supposed to bring their own meals, as no food was provided to them from the forestry department.



*Figure 10: Usage of solar panels for tube wells at the plantation site*

### 5.2.3 Jobs given to Nigehabans (Forest Guards):

In order to secure the plantations, the government enforced an absolute prohibition regarding cutting and chopping of trees in reserved woodlands. Under TBTT's green job initiatives, many forest guards have been hired from the local community, so that they can protect the saplings. For instance, some are protecting the "enclosures" (a large amount of seedling per hectare, that also aids to promote natural regeneration of plants) from grazing, while others are paying their duties by protecting the forests from fire accidents as well as illegal felling of trees. "Since these olive saplings are very young, my job is to keep eye on the plants survival and report any violations to the forest department," told by forest Nigehebaan Ayaz Ul Haqq.

Faraz Khan (60 plus) was a retired schoolteacher, who had now taken up the job of acting as the watchmen. Faraz told that the amount of pension that he got after the retirement was not enough to run family's everyday expenses. Therefore, he took up this job to get some extra earning. Moreover, in his opinion, he was contributing back something to the community by protecting the forest. Few of the Nigehabaans are also earning their income solely by collecting dead wood in terms of clearing the areas. "I am happily protecting this future paradise of trees and my jobs is definitely facilitating me to feed my children. We hope that TBTT will bring something better for our future generations", said by a contended forest guard named Akbar Abrar (40).

## 5.3 Experiences of Women running Private Nurseries

### 5.3.1 Developments and Anecdotes

#### **Brief Background of Women in the Field:**

Gender norms and traditions were widely observed during the field study. The convention throughout Pakistan, and especially in KPK is that men are the figureheads and bread earners of the family, and women stay at home to do chores and to take care of their families. The patriarchal structure demands that women do not leave their house without permission from their fathers/husbands, and men have direct access to land and property ownership and are thus responsible to take all imperative decisions. Most women are not engaged in any formal or informal job, but the ones that do partake in them from their houses or private corners. Women may make handicrafts and valued knitted carpets.

Firstly, the economic background of the local women was found as lower class. While reflecting their family structure, 80 percent women are living with their families and extended families with a mean family size of around 6-8 members. Most of the women are sole bread earners, very few (3-4) were working alongside their families. Also, the age groups of these women vary between 18-42. While highlighting different types of professions, it was observed that mostly women were housewives, few were housemaids prior to nursery initiative, and one was a tailor. Upon inquiry of the underlying reasons for working in TBTT, the mediator was informed that there was limited mobility due to family restrictions, Also, there was lack of education to find alternate jobs, soaring

prices for necessities, very less economic reliability, inadequate housing, and food security. Some used to work as household helps and wanted a more dignified job. As far as education and literacy rate was concerned, young girls (age 20-25) only had matriculation certification (10th grade), whereas women above 30 were largely illiterate. Few of them managed to get vocational education in terms of learning manual techniques to plant saplings. Lastly, their primary usage of obtained income is described as follows: Payment of utility bills and debts, children's tuitions fees, future preparation of dowry, to initiate a "committee" (informal setup run by few women). In a "committee", women deposit a monthly amount to a primary organizing woman. After a fixed period, ladies would get lumpsum money, equivalent to the amount of total sum of money deposited by all women. Since most of the women do not have a direct access to their personal bank accounts, therefore, these once-a-month deposits works as a fund's reservoir to them. One woman purchased a sewing machine of worth (PKR 12000, \$67) to work as a home-based ladies tailor. Some other women were found to reinvest the revenue or part of the profits to maintain and improve their nurseries. In this way, there is a strong indication that apart from fulfilling everyday needs, these women have plans to make further investments and enhance their livelihood.

#### **Brief Background of the Nursery Initiative:**

State-funded nursery plantation is widespread across all regions in KPK, ranging from Northern Chitral to the farthest end of Southern Dera Ismail Khan region. It is known to be helping the families and aiding their economy. 70 percent nurseries are privately owned (by women entrepreneurs), whereas some are built as CMN (Central Model Nursery). At least one CMN covering 5-6 hectares is instituted in each forest division. These central model nurseries are further allocated to plot both tube and bare rooted seedlings, which are often managed by women and thus gives an employment opportunity to local women. Furthermore, various management jobs are allocated to different individuals in central model nurseries. For instance, women perform root trimming and hand watering, older people are responsible to apply fertilizer, whereas youth (above 18) are mainly assigned for the transportation of the saplings to the plantation areas. Thus, CMN nurseries play an important role, since it is utilized as a demonstration site for the ones interested to take part in TBTT as private nursery owners. To our surprise, many women are enthusiastically opting towards these CMN nurseries so that they could learn the basic techniques of plantations in order to start their own small-scale plantations at home.

#### **How Nurseries are Improving Lives:**

Until recently, women were only confined to look after their children and perform household chores and it is a general psyche in Pakistan that domestic work is merely associated with women's responsibility. The stated aim of TBTT is to turn forest restoration into a business model, where nurseries are outsourced to the private sector. Under the government's signature TBTT plantation program, the provincial forest department pays for the initial costs for the saplings.

Months later, the plants (matured saplings) are bought back by the government for reforestation. Likewise, green jobs are given to widows, poor women as well as underprivileged mothers, as government is providing them saplings to plant. With no mobility issues, now local women are encouraging each other to set up tree nurseries and earn a decent livelihood. In this way, TBTT has

provided an adequate foundation to women who acquire skills by bringing more productivity to overall workforce in the plantation project. Also, women are getting saplings from government (working in contract with TBTT), where each woman was found to be growing and looking after nearly 25000 saplings of many different plant species. The good thing is that women do not need to go outside where they are using their small courtyards, even if they have a two-room apartment.

All the initial materials are also provided by the forestry department. For instance, polythene bags so that they could fill it with mud and manure. This handling of necessary materials (plant pots, watering containers, some fertilizer etc.) is followed by seed distribution and some brief training sessions on how to sow and grow different saplings at the CMN nurseries.

These nurseries have provided manifold opportunities for sustenance. For instance, programs like “youth nurseries” target unemployed youth and peasant women. This package helps local women to setup their own private kitchen nurseries since provincial government facilitates them with an initial amount of 25000 saplings for free. Furthermore, youth nurseries are not limited to just the supply of seedlings, but 25% advance budget is also allocated to the owner to help them take the first step to improve their lives. Furthermore, the provincial government has made the acquisition of a monthly income generated from these nurseries varies between PKR 12000 and PKR 16000 (USD 115-143). Although, the income might not be considerable, the sentiment shared among the workers is that some income is better than none.

It was further noted that financial stability of the participants gets elevated with the creation of green jobs through enhanced management of nurseries under TBTT. “Being a garden enthusiast, these nurseries whether central model or private, have provided me and all my community’s girls an excellent way to live a better life”, one female worker summarized it. It is thus described as Pakistan’s “green economic stimulus” that not only provides seasonal employment in the afforestation sites but also creates a fruitful thrive of raising private potted nurseries. Additionally, since the establishment of forest-based enterprises to provide a long-term relief, a surge of a self-employed business has been markedly noticed in the region. Since the cost of establishing a plant nursery enterprise is low, especially with an additional governmental startup subsidization, therefore significant progress has been observed in TBTT with the establishment of self-governing independent nurseries. These nurseries provide batches of matured plants to the government that includes many plant species. In return, private nursery owners gain money from the government, that facilitates local people (private owners: women, youth, old aged) with some income.

Local women were found to get employment from these nurseries and were becoming financially stable. Additionally, there were nearly 244 privately owned nurseries in the region. While reflecting the statistical data, a total of 125 nurseries were witnessed to be privately owned by indigenous women, 92 by youth and 27 by elderly people. Furthermore, senior citizens have also been allocated a budget in the form of advance loans so that they could start their private plantation arrangement. Additional tasks are also performed in these private nurseries, which are giving benefits to underprivileged and jobless men as well, where they are also encouraged to run their own small-scale nurseries. For instance, the introductory training is giving expertise in different skills as

incorporating stuffing of soil in polythene bags, sowing of saplings in p-bags, plant feeding, and relocating of plants.

It was interesting to learn that 45% percent of the recently developed trees had been supplied by small-scale green houses and privately owned nurseries. The remaining 55% percent of forestry plantations had originated under the natural regeneration mechanism. It was also found out that the nurseries that support small-scale business are successfully generating thousands of saplings. Local people are encouraged to take some cash in advance if they do not have enough backing and basic resources to initiate their nursery setup. The highest number of plant saplings to be generated in one unit was specified to be 26000 seedlings. This activity is supporting the beneficiaries by getting payment paybacks and producing green jobs. Likewise, this “Green Job Stimulus” facilitates local people in the form of constructive business ideas and convenient services related to plant transportation, sale of plant food and good quality nutritious soils, and delivery of fertilizers to farmers.

In this way, Nazia (woman aged 39), had setup a small-scale nursery at her home in last September 2021. She is now earning more than Rs12000 monthly (66 USD). “Utilizing our nursery skills aids us to advance our livelihoods and fills the gaps of interminable poverty. Furthermore, the nature of this job does not give too much pressure and we don’t feel overburdened. This money is enough for me to acquire basic household items, but I am saving it and would like to give it to my younger daughter Nigaar, who is pregnant and about to deliver a baby in two months.” Her innate emotional reactions undoubtedly reflected a sense of gratification and reassuring tone towards TBTT.

### 5.3.2 Women Entrepreneurship

Women usually work in nurseries where their main task is to assemble and grow the plant nurseries in their gardens, terraces, or court yards. Once these young plants are fully prepared, they exchange the saplings with a fixed amount of cash to the forestry department. “We usually use our backyards in order to develop an ideal pastoral backdrop. We make a dip in the center of the tube, plant the seed, and cover it with soil”, explained Nazleen Bibi. We also came to know that Lady Community Mobilization teams of the forest department played an important role in establishing women entrepreneurship along with advocacy of skills. These mobilization teams usually work in groups and try to approach each possible women who is living in poor or destitute state. The lady workers then provide local women with initial education and training sessions regarding how to raise a small nursery. Two local women were also found to be sharing their courtyards with the intention of helping each other. The following section details the life stories of different women, describing the myriad of ways the nursery initiative is impacting the women in improving their livelihood situations.

**Even the Smallest Amount Matters:** Bibi Shazia, a mother of four, shared her story. Her husband used to run a barber shop and earned nearly PKR 15000 (196 USD) per month. However, he had polio and his condition started worsening and that made it extremely difficult for him to earn a living. In such circumstances, Shazia and her son Faziullah set up a nursery at their private land.



They started to prepare saplings and managed to fill their pockets within a period of 6 months. Their economic condition improved when they managed to sell the matured saplings after six months. She stated, “We gained our livelihood back when we sold each sapling for PKR 6 to the Government’s Forest Department.” Shazia further explained, “Living conditions in our village are terrible with almost no employment, so even the smallest amount matters.” The tone with which this statement was delivered showed her satisfaction with the nursery developments. While inquiring about how she was using the income generated from the nursery, Bibi Shazia said that one half of the money was already spent on her husband’s treatment, and she would want to save up the future installments for her younger daughter’s education and running the household.

**No More Humiliation:** Shanzay Ismaeil, a former health worker looked much satisfied with her current livelihood situation. She explained how patriarchal standards held by her husband made her quit her job. She stated that her previous profession made her the target of constant verbal abuse from her husband. “Now I can work from the purdah (veil) of my home, my husband has stopped humiliating me.” She added that she was making less income than she did as a health worker but now she was truly at peace.

**Making Ends Meet:** Salma Bibi’s husband’s poultry business came to a sudden end three years ago, following a disease that plagued their whole stock of chickens. There were no other means of employment in their region, and they did not have enough savings to venture into a new business. The family decided to take advantage of the facilities being provided by the government and started a nursery in their backyard. Salma pronounced this narrative with a pleased voice. “The forestry project has enabled us to satisfy our basic needs, where our daily job is to propagate and fill nearly 1100 to 1300 plant tubes (both seedlings and soil), followed by their systematic stacking at the posterior end of the backyard.”

**Liberation:** Two young sisters, Gul Bano and Gul Makai took a major step in the course of their lives by setting up a nursery in 2020. Gul Bano was a divorcee and Gul Makai lived at their family home since their parents passed away. “Although, it took some time to make some profit and feed ourselves, but Alhamdulillah (thanks to God), we are not dependent on any of our extended family members and unhelpful relatives. Gul Bano continued, “Although our Chacha (Uncle) used to give us some allowance, he wanted to marry his illiterate son with Gul Makai in return.” Establishing an independent source of income allowed them to turn their Chacha’s proposal down.

**Dowry Preparation:** Nayab Fatima told us that that preparing a nursery was one of the finest decisions of her life. Although she was uneducated, but she owned this job with full pride. With an emotional sound, Fatima explained “Alhamdulillah! I have managed to arrange my dowry on my own by setting up a nursery in our communal land, and chiefly without getting any financial assistance from anyone. Besides, I have collected some crockery, unstitched suits, 1 sewing machine, some low-budget furniture, and few household utensils.” Nayab also mentioned that she had secured nearly Rs. 10, 000 (USD 80) to get clothes for the groom’s family.

**One-Time Investment:** Mother of 3, Yusra Begum (35) said, “I am generating money by renting out decoration wedding lights which I bought 4 to 5 months ago with a total cost of Rs 14,000 (183 USD). I had some savings from the previous job (local beauty parlor) where my eucalyptus and jamun (plum) nursery helped me to accumulate remaining Rs 5500 (72 USD). It was just one-time investment, as my business venture is hassle-free and there are bright chances of higher returns in long term.” While explaining the management of this additional work, Yusra told in a confident manner, “You can perceive it as a small business where I am doing it in collaboration with my younger brother. Because Ahmad (brother) resides in city area (Lahore), so he is looking after this whole scenario in Lahore. We offer several event lightening packages at very reasonable prices. The monthly money generated from this is 5000 (65 USD) and is divided into two halves. 50 percent is utilized by Ahmed for his hostel expenses whereas the other half is sent to me where I am trying to save in order to establish a small shop to sell samosa (fried or baked pastry) and pakora (deep fried piece of vegetable) within my own small capacity at the first floor of my tiny house. This is mainly because my husband is deceased, and I have huge responsibility to manage everything by myself. Therefore, I eagerly want to start a small food business, particularly for my father-in-law since he cannot perform any physical work due to his arthritis. Additionally, my mother-in-law is an excellent cook, and she is willing to prepare the meals. Running this micro business would definitely bring more substance to our livelihood.” Yusra ended her narrative with a quote of Allama Iqbal (a famous South Asian poet): “Khudi ko kar buland itna ke har taqder se pehle, Khuda bande se khud pooche bata teri raza kya hai.” Its English translation means “Elevate yourself so high that even God, before issuing every decree of destiny, should ask you: Tell me, what is your intent?”

**Implications:** In general, promising facts depicted that despite several constraints that undermine the development of these local women, TBTT is acting to provide new employment opportunities particularly by establishing women labor force. Since women were found to be heavily involved with the nursery initiative, therefore, they were simultaneously balancing their domestic chores together with small-scale entrepreneurship ventures. Also, it was noteworthy to observe that women’s lack of mobility was found to be a significant inhibitor to women’s labor force. Therefore, TBTTs nursery program has resolved this issue in a very effective manner. Also, they do not have to face discriminatory labor market, where society has also started to understand the role of women as something more salient besides being a good mother, daughter, and housewife. Furthermore, the trainings provided to women for establishing their nurseries is an important skill that carries a vital importance in this participatory program. This ensures the overall productivity and livelihood enhancement of the households.

**Additional general details:** It can also be observed that the project was going to require more and timely investment. It clearly seemed that the expenses of the site area have turned out to be more than the expected estimation costs. This became evident after listening to the stories regarding late payments to laborers. Furthermore, no annual increment is allotted to the workers since they are working on a contract-based job. The mediator was also informed that delayed payments were so frequent that laborers were (from time-to-time) becoming quite disheartened to continue working.

## 6. Discussion and Analysis of the Findings

In this section, I am going to discuss the empirical findings by connecting it with the literature where key themes have been extracted about the impact of TBTT. I have set out the theoretical frameworks since the theory is fundamental in examining and scrutinizing the gathered material. The section sets out by discussing some general observations from the TBTT project, compared with similar projects carried out in other parts of the world. Furthermore, in conjunction with Sustainable Livelihood Framework, strong connection is made between the empirical results that originated from the data collection. By referring the theoretical concepts and literature review, this chapter answers the main research questions. Also, comprehensive, detailed answers – constructed on empirical findings – have been observed through the lens of theoretical literature. Furthermore, the qualitative findings are examined and reviewed in comparison to identical studies carried out in different areas of the plantation and restoration projects. Afterwards, an attempt is made to ascertain the overarching question of the people-centeredness of the TBTT project, based on the findings from the Amangarh plantation site and the interviews from women entrepreneurs running their small-scale nursery projects. In the end, based on the findings from the fieldwork, policy and practical implications are presented.

### 6.1 Brief Comparison with other Plantation Projects:

This section details a brief comparison of TBTT plantation project with the finding available from some other historical plantation projects. It is evident from this section and some of the following ones that although TBTT happens to avoid some of the pitfalls, other warning flags clearly indicated in the previous research are missed. Thus, the nature of the project and better planning and management saves the project from some of the pitfalls plaguing the other projects. Nevertheless, as would be detailed in the section regarding the people-centeredness of the project, shortcomings remain – preventing the project from achieving its full potential.

Most of the previous studies found that large scale plantations bring negative implications, particularly while highlighting changes in customary lands and livelihoods (Malkamäki et al., 2018: 100). Contrary to what previous studies suggest, my research works provides limited evidence to support such conclusions, since in the area under research it was a semi-barren wasteland. Likewise, prior research also revealed that large scale tree plantations are seen as a criticism since major problems were linked with the land acquisition, a risk of threatening or displacing customary land uses (Hall et al., 2015); mainly in Southeast Asia and Africa because there is no formal recognition of the land by the state (Inguanzo, 2014). On the contrary, in case of Amangarh plantation site, TBTT is not held responsible for land acquisition because all the land is governmental owned and is not a personal or communal property.

Community-based tree planting project called as as Scolel'te project “means the trees that grows” was carried out in Mexico and thus regarded as the world’s original carbon offsetting project. Apart from protecting the natural capital of the country (protected 8 natural protected areas), Scolel'te project gave employment opportunities to more than 1400 farmers (Esquivel et al. 2017). Similarly, lucrative ecological as well as favorable development restoration programs should encompass a win-win situation, when both environmental and economic advantages are accomplished (Adams et al., 2004). Evidence from our empirical findings suggest that TBTT project seemed to have optimistic implications since it has originated considerable number of advances regarding job creation and uplifting livelihood of the local laborer community and small-scale women entrepreneurs.

Designed to gain environmental, commercial along with economic advantages, a few problems as well were also observed throughout the study. Many workers complained about ineffective forest management system, where considerable room is available to make pertinent improvements not just towards low salary wages problems but rather in absolute values towards their basic facilities. Thus, inaugurating appropriate long-term measures have become indispensable to guarantee and satisfy the local laborers. In comparative terms, with regards to the provision of monthly salary, the situation does not seem any better than other projects being plagued with similar issues. For example, negative impacts of rubber plantations were reported in Laos where only a fraction of workers earned income since their wages were continually adjusted considering to alterations in commodity prices (Baird and Fox, 2015). Local daily wagers in TBTT’s Amangarh plantation do not get their salary negatively adjusted with respect to fluctuations in the commodity prices and technical conditions of the market, but they are only hired for daily work only, with the salary offered being much less than the minimum wages allowed in the province. Similarly, previous research suggests that when contractors undertake the on-ground responsibilities, the working conditions become exacerbated. This also causes fewer guarantees particularly who works as a subcontracted workforce. (ILO, 2016). For instance, outsourcing of plantation jobs to contractors was done at Laos, where subcontractors faced tremendous difficulties, mainly in the context of worst working conditions. (Barney, 2007). Large scale tree plantations firms are also known to be taking advantage of cheap labor along with poor regulatory schemes (Szulecka et al. 2014). In TBTT, although the government departments are supervising all work, still much remains to be done to improve the compensation practices as well as the working conditions for the laborers. Laborers are getting paid below the minimum wages and that too can frequently get delayed. Nevertheless, better compensation practices seem to be getting followed in the nursery initiative. Furthermore, the situation related to health and safety of workers in the Amangarh plantation site in TBTT is also subpar and is requiring concrete steps for improvements.

Studies from Brazil shows that many forest plantations were consequently lost due to poor planning, conflicts, and inefficient management arrangements (Kröger, 2012). As exemplified by projects in Brazil and other locations, the possibility of conflicts cannot be ruled out even in TBTT, especially if the management of the project changes under altering political situation in the country. Going forward, the study reflected that the protection of livelihoods cannot be achieved without devising effective measures to improve the working conditions of the local community, since they are actively participating in this initiative. Also, laborers complained that their voices are not properly heard,

where the feedback mechanism is dysfunctional and has never been actively sought. It is crucial that their opinions and sentiments get respected and their concerns or any deficiencies in the project get resolved.

As reported in southern Chile, planting native species brought more positive impacts of tree plantations, thus established a host of benefits for the local community. (FAO 2011). In contrast, with olive plantations, my research area did not grow native tree species. Similarly, doubts could arise on the olive plantations as a viable form of industrial tree plantations, but it is too early to make any such prediction.

Research around large-scale tree plantation is often localized and usually don't fully capture the main interaction among tree plantation with socio economic impacts over time (Andersson et al, 2016: 126). This could also observe as a limitation in my research since the study is not carried out over the lifetime of the project and only focused on the aspects of laborers and the small-scale women entrepreneurs, having less information on the overall effect of tree plantations on people's economic welfare particularly on societal scale.

Previous studies discuss that large scale tree plantations usually target farmlands and ecosystems that local people relied on to earn their livelihood (Malkamäki et al., 2018). Similarly, it is also highlighted by Lewis et al. (2019) that replacement of croplands with tree plantations could aggregate unemployment especially for agriculture laborers. This is considered as a big challenge for tree plantations, but my research area (Amangarh plantation) did not show any such repercussions. It is mainly due to the fact that the onsite plantation land was solely owned by government. Moreover, past literature reflects that large scale plantations could emerge at the expense of agricultural activity (Azo'car et al.: 2007). In the similar context, Industrial tree plantation not only makes agricultural land scarcer but also prompts out migration from rural areas where agricultural laborer's shows are prone to migrating out as a result (Rudel, 2009). On the contrary, my study area did not resonate without migration and no land wastage was experienced for agriculture. In fact, many laborers returned to their native area in order to work on as part of this project. Further, criticism for large scale plantations has also been directed towards negative environmental repercussions, mainly due to the clearing of natural forest before the establishment of plantation (Liao et al., 2012). However, my information regarding wider environmental impacts is very limited and at least in the case of Amangarh plantation, it was an unutilized wasteland – neither having a natural forest nor being used for any agriculture.

Existing literature (FAO et. al, 2021; Elias et. al, 2021; Chazdon et. al, 2021) also gives warning flags to TBTT with respect to involving local participation and implementing self-governing systems, where the needs and concerns of the inhabitants are taken into consideration in the decision-making processes as well in the (co-)management of the project. These people-centered and participatory approaches enable the long-term success of the project more likely. However, for the Amangarh plantation site, we did not see any evidence of involving native inhabitants in the decision-making or any involvement in the management processes.

## 6.2 Sustainable Livelihoods Framework (SLF) and TBTT Plantation Project:

The plantation program can be said to improve the socio-economic conditions of the local participants if improvements in the capabilities as well as capitals of the people are observed. The sustainable livelihood approach is used by this thesis in assessing TBTT's development policies with regards to increase in assets and capacity, where Pandey et al. (2018) highlighted the importance of capacity building and how it is regarded as one of the important factors to gain sustainable development by eliminating poverty. Considering sustainable livelihood framework, a people centered approach is stressed, and is constructed on five elements namely, human, social, natural, physical as well as financial capital, which are mutually interconnected (Pandey et al., 2017a). The following sections will analyze the effects of TBTT on each of the capitals of the SLF approach.

### 6.2.1 Human Capital:

TBTT has affected the human capital in a multitude of ways as would be explained in this section. It has managed to polish the skills and enhance the skill-based abilities of local people particularly with nursery initiative, while reaching some underrepresented segments of the society. In addition to offering employment, TBTT has provided the plantation laborers with human capital in the form of knowledge and skills. The project has also seemed to work as a catalyst in giving self-confidence to the workers, which in turn has resulted in a number of them starting some entrepreneurship-based activities. The latter category of workers also seemed to have increased self-esteem, coming as a result of their setup of small-scale business ventures – thus, a domino effect in increased human capital can be judged. Thus, the area under research shows that better coping<sup>4</sup> mechanisms to counter the existing challenges are available with the workers and entrepreneurs – thus, showing an increased human capital.

The human capital in terms of women entrepreneurship in Nowshera district shows a promising trajectory for livelihood development because TBTT has invested in improving the knowledge of local women, in the form of plantation skills. Trainings are being provided by the government to the aspiring entrepreneurs in the plantation techniques. Moreover, on-job trainings are also available in the form of Central Model Nurseries. Therefore, in return, both short and long-term livelihood improvements are anticipated to take place mainly through the development of human capital of the laborers and the small-scale nursery entrepreneurs.

TBTT project also caters livelihood diversification since it provides the participants with various emerging ideas of establishing their small private nurseries and small-scale setups. Furthermore, local men who have opened up their small business ventures also play a vital role in enhancing human capital since they have utilized their skills in TBTT and invested the originated money to further earn some additional income, chiefly from part time business activities.

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<sup>4</sup> The term coping suggests as an attempt to diminish, rule out or prevent a condition of suffering, harm or injury (Carver & Conner-Smith, 2010).

Health and safety are considered as critical parts of human capital, as reduced ability to work will mean diminishing human capital (Kusumanti et. al, 2021; Flora et. al, 2015). Thus, through the area under research, negative effects on the human capital are also visible. Although, TBTT has ensured community engagement and this momentum has encouraged locals to come forward. Nevertheless, no first aid facilities especially at the plantation site are available for laborers, which is a very distressing factor and indeed considered as a serious challenge. Illness creates drastic circumstances for the entire family by ultimately hindering the labor force to work on farms (Narayan et al., 1999). Likewise, absence of adequate safety nets could seriously impact and damage the economic stability of the whole household (ibid). Furthermore, with limited to no first aid available at the site, and no access to good health, laborers were lacking human capital since most of the poor workers are heavily relied on physical labor as a sheer means of living. Furthermore, long term illness by animal attack or any other mishap at the plantation site was found to develop a devastating yet lasting drain on the overall resources of the laborer's family. "One of the wild animals' attacks took place in this far-flung area, where there is zero first aid, no hospitals, no ambulance. Including me, many people came to rescue the injured. Unfortunately, the animal crushed his left arm and fractured his bones from multiple places", one informant put it. Without having any external support to confront these problems, laborers are continually trying to *cope* the tough situation and challenges by utilizing their own will power. Similarly, limited availability of adequate equipment used during the spraying of pesticides also poses health hazards – thereby, reducing the ability of the workforce to work. Similarly, periodic delays in the payments also reduces the morale of the workers for some time period.

A sense of security is missing in the terms of healthcare that poses a question on human capital. Participants such as on-site laborers have been valued to an extent, but merely in terms of little amount of cash that they receive. Whereas these workers should be offered a much greater suite of services considering their hectic manual labor hours. Also, the fact is that the workers need to perform their duties in the sun with 30 degrees Celsius (90 F). In addition to increasing the offered compensation to the laborers, better working conditions should also be provided. An example of how urgent better compensation practices and working conditions are needed is that the workers initially became happy after seeing the data acquisition team – confusing them with a government initiative to redress the workers. While considering the welfare terms, sustainability factor can only be reached by reducing the collective pressures on workers and laborers beyond their capacity to produce them. Thus, sustainable measures to achieve health and wellbeing is necessary. In this way, the effectiveness of local participation could also arise some serious doubts about the overall effectiveness of the intervention, as pointed out by Patwary (2018), for similar situations. Thus, it is not enough to just provide some income as reasonable working conditions are also very important.

## 6.2.2 Economic Capital

It is widely recognized that covid 19 hit as a shock to the economy that exacerbated the risks connected to it like loss of jobs, infectious diseases. Thus, spread of covid-19 pandemic caused

unprecedented disruption into the livelihoods and caused detrimental impacts especially on the poor around the globe (Barnett-Howell & Mobarak, 2021). With a devastating flow along with sharp increase in poverty, working populations gets indebted in covid 19 crises where most of the misfortune fell on those in informal and low skilled enrolments. Although, some stimulus packages and prompt relief fundings (RS 12000 monthly) were allocated to the improvised under the banner of EHSAS social protection scheme. But this was not enough for the fragile economy to get their surplus and maintain a hand to mouth living. In such devastating consequences, TBTT continues to act as a resilience and coping mechanism, which caters shocks and stresses – where government have successfully announced stimulus packages in the form of green jobs. Moreover, employment opportunities to rural laborers as well as underrepresented segments of society as women and youth have become available as part of TBTT. This can be seen as a way for economic growth and the means to “built back better” that targets to lessen the effects of unforeseen disasters and shocks of future. When large-scale plantations prioritize poor vs large scale producers, it ultimately enhances their overall socio-economic impacts. For example, China “Grain for Green” program mainly emphasized the poor and the small holder farmers and has evidenced to better livelihood outcome (Uchida et al., 2007). In the same way, the nursery initiative of TBTT has encouraged small scale entrepreneurs.

Moreover, sustainability can be observed since the program is effectively trying to recover the socio-economic conditions of the country by improving capabilities as well as capitals. Also, livelihood resilience is characterized with the capacity of individuals to manage and enhance their wellbeing by catering socio economic or environmental crises (Tanner et al., 2015). This is considered as one of the essential approaches that highlights people’s ability in terms of human empowerment and how people effectively use preventative measures to resist and respond to stressors.

As indicated in report (Managi et al., 2021: 23) TBTT as a global pioneer in plantation looks promising in the job creation since community engagement is motivated. Previous studies also suggest the challenges of the large-scale plantations in terms of its seasonal and precarious job opportunities which is mainly observed while tree planting or land clearing. In this respect, TBTT is not limited to offer seasonal employment and does not just offer temporary work during certain times of year.

Similarly, job deprived underprivileged community members that includes youth, senior citizens as well as women are given work in tree nursery initiative. Recent literature also suggests that forest restoration and regeneration practices are highly connected to rising needs of the society which also facilitates to serve human and climatic necessities. (Wagner et al. 2018). Thus, it creates an enormous difference in their economic circumstances when there were no local work opportunities, prior to this restoration and tree plantation scheme, and an out migration had to be made. Research from South Sumatra indicated that in local people’s perspective, work on plantations provides them with minor yet complementary additional money especially when agricultural work is unavailable (Pirard and Mayer, 2009). In the similar context, women running small scale independent nurseries are getting complementary income from the TBTT project. Similarly, as part of the small-scale



nursery initiative, marginalized groups (like women) are being provided initial financial capital in the form of advance payments.

Recent scholarship in Chile revealed that large scale plantations could generate more poverty for local people since they offer comparatively few employment opportunities for the improvised segments of the community. Plantations jobs usually facilitate semi-skilled labor who could easily operate computer technology along with modern mechanical equipment's (Montalba Navarro et al., 2005). Considering the local interviews in my research, the onsite plantation offers employment opportunities and benefits skilled labor with no requirement of being familiarized with modern machinery. Also, people who reside near the plantation sites and the protected areas are traditionally not very educated, they lack confidence and could not take part in sophisticated work. In this respect, TBTT provided opportunities for the unschooled and unread to earn. Additionally, as evidenced from the findings, the TBTT project did not discriminate in providing job opportunities to any Afghan refugees – some of them can be regarded as the most marginalized.

Studies from Brazil, Indonesia and Mozambique reported that large scale plantations only bring temporary job opportunities with no future incentives as compared to most permanent job contracts (Pirard and Mayer, 2009). Similarly, this could be considered as one of the frequent findings of this thesis since TBTT does not offer stable employment and further benefits whether in terms of early increment, bonuses etc. Thus, this is considered as one of the main challenges since workers are skeptical to have a secured job for long run. The problems of low and infrequent wages to the workers also limit the potential enhancements to the economic capital of the workers in TBTT project. Furthermore, existing scholarship has investigated an array of elements that add to vulnerability, for instance lack of savings and financial resources along with social marginalization (Bennett et al., 2016). However, this mega project, if not fully but up to some extent, created enough resources for some people to save little amount of money and expand their financial resources in the form of small businesses and independent nurseries that ultimately reduces aspects of vulnerability.

More than 60 percent laborers also agreed to the fact that on-farm income was not going to be enough for them. Thus, they would need to diversify income in some way or would need the other household members to share additional economic burden. This highlights what is said by Ellis 2002 that 'rural livelihood diversification', which is about deviating from agriculture and rely on non-farm activities for a means of living. Rural livelihood diversification is defined as "the process by which rural households construct an increasingly diverse portfolio of activities and assets to survive and improve their standards of living" (Ellis, 2000: 15).

It has been observed that the tree plantations also fail to secure substantial benefits for local livelihood because forest bureaucracies mainly focus on internal incentive structures and tree planting targets, where diminishing focus is made regarding long term benefits for the local community (Coleman 2021: 1002). However, there do exist long term plans to enable accompanying economic activity at least in the research area in which I am focusing. For example, there exist long-term plans to nurture olive groves and use the fruit for commercial purposes. Furthermore, with large scale forest plantations, economic growth might occur in less developed regions particularly

with the development of infrastructure and new jobs (Sunderlin et al., 2008). This could be observed in TBTT that economic growth from infrastructure is not witnessed yet, as the development at the research site was still at its initial stages.

### 6.2.3 Social Capital

Given the significance of social capital, the intention of sustainable livelihood framework is to empirically estimate the impact of social capital on socio economic conditions of the local men and women, and how it contributes to sustainable development. Results suggest that (in general terms and without being specific to plantation projects) social capital greatly enhanced the livelihood of local women since social capital is reflected as one of the most important characteristics when it comes to growth and progress, as pointed out by Nasrnia and Ashktorab (2021: 9). Similarly, impacts of social capital concerning the provincial economic progress of Spain was also scrutinized by Palomino and Ausina (2015), reflecting a prominent growth of socio-economic conditions and thus acting as one of the significant transmitters to elevate country's annual GDP.

In progressed countries, women entrepreneurship provides noteworthy contribution to social capital whether its job creation, professional assignment or livelihood and income enhancement activities (Brush and Cooper, 2012). Moreover, as reflected by Kim and Aldrich (2005), social capital plays a central role in women's entrepreneurial achievements along with overall regional growth. This is achieved by reflecting how network linkages combine, enabling the aspects of goodwill, trust as well as exchange of information. Similarly, it is also heightened by Ali et al. (2011), that social capital performs an extremely important part in securing economic and social growth through income distribution. But religious contexts and cultural patterns could prevail in some countries that could establish a prominent obstruction in achieving social capital (Al-Dajani et al. 2015). This happens to be the case in Pakistan, where due to patriarchal domestic relations and cultural norms, traditionally women are not encouraged to earn in Pakistan. Complexities can further arise with the fallacious assumptions that if a married women is working outside, her husband is not able to earn and or he cannot control his wife. This gives rise to endless social stigmas which are prevalent in society. Nevertheless, TBTT has provided women a platform where local women are found to be encouraging each other through social networking that is mainly mediated by social capital. Therefore, social capital positively influences and facilitates entrepreneurs with entrance to various resources that ultimately aids to mobilize those resources for planning small business plans.

The social capital in the context of local women proves to be an enabling factor that yielded benefits where women came to acknowledge their skills and utilized it for uplifting the overall livelihood sustenance. While carrying home-based entrepreneurship, women encouraged each other to get out of their comfort zones and gain employment. Information regarding plantations is spreading by the word of mouth and laborers are found to have access to networking. Thus, social capital established a relationship in the local community as knowledge was generated and spread among the workers. For instance, information on handling out seedlings was spread among women with access to the network providing the relevant information.

By residing in close proximity to each other, these independent women entrepreneurs, developed a sense of mutual trust and an ability to capture advantages by virtue of membership in social networks and socialization process. “We opt reciprocity exchanges that automatically activates the inflow of emerging ideas and positive inputs, thus eventually results our entrepreneurial success”, stated by one female informant. Few local women have also established collaborative production networks where news regarding any further developments of project is exchanged in an optimistic manner. Furthermore, it is not always important to characterize social capital in terms of cohesive social ties/groups/family bonding’s, but also, more significantly, as a way of social conduct, which operates as a form of asset to individuals’ growth and personal development (Lindvert et al., 2017: 760). Therefore, the benefits of social capital in this study can be assessed in a way that women are out to work or somehow managing to run their households by being self-independent and opting self-employment. Thus, this narrative reflects that how social capital in the Pakistani context leads to flourishing consequences for women entrepreneurs in KPK – in the context of the study area.

Social relations among all workers (male and female) were observed to be very much honored since it develops a smooth fallback position for individuals or households while encountering any problematic situation. In Opira’s (2013) perspective, most of trust that is built among rural people is based on manual or rotational labor together with communal work activities. Also, aspects of solidarity through strong ties with positive effects of relationship outside immediate family were shared in the times of crises. In this way, social capital aids to lessen the cost of resources and tragic situations by acting as a friction. This process of creation of mutual trust and new social networks could also be observed in the plantation workers. “Integral for us is to feel optimistic, be with each other, available for anyone who undergoes any animal or accidental crises, our positive vibes could lead this program to utmost success. InshaAllah (God-willing)” (Stated by 43-year-old Nasir Jan). Thus, bridging social capital (in addition to pre-existing bonding capital) was created among the plantation workers as well as women entrepreneurs – leading to the increase of trust among the participants. Especially in case of women entrepreneurs, the reciprocity among the participants was seen to be increasing the connectedness. And possibly the entrepreneurship ideas being pursued by a number of plantation workers can also be attributed (to a certain extent) to the increased bridging capital. The workers by sharing their experiences of diversifying their income by doing some other part-time work, other comrades were seemingly also getting some encouragement to also pursue similar diversification activities. Furthermore, interactions with the government departments and officials also led to the creation of linking capital. Although the participants are not able to influence the policies of the departments, however, this link has resulted in better access to information as well as resources (e.g., trainings provided in the nursery project) and some level of trust built-up (where much improvement can be done in the case of daily wagers).

The following example of Jannat shows how the increasing social capital helped her to start small-scale nurse-based business: The livelihood of Jannat begum took a positive turn since she got earnings from the nursery initiative. “Apart from family and kinship, knowing the right person who can recommend you how to get out of poverty makes an immense difference in someone’s lives.” Moreover, the income gained from the nursery plantation acted as a buffer which aided her to cope with shock and unexpected damages or any tragic situation. This story reflects that TBTT facilitated

in not only strengthening but also in further spreading social capital since my women folks were reached on the strength of the social capital.

There can be negative social capital in case of marginalization of certain segments of society or when inequalities are perpetuated. However, the nursery initiative illustrates how a concerted effort was made to reach the underrepresented segments of the society. For example, the Lady Community Mobilization teams (as part of TBTT project) played an important role in reaching the underrepresented (and often vulnerable) women of the society. Furthermore, the plantation project also reached the uneducated segments of the society by not requiring any earlier plantation experience, while Afghan refugees were also observed to be working on the site.

## 6.2.4 Natural Capital

This section details the impacts of TBTT at the national scale in Pakistan, as I could not get access to local data in this regard. Pakistan is considered to have been blessed with rich biodiversity, wetlands, and diverse ecosystems (IUCN 2020). However, considering recent literature, studies suggest that Pakistan has encountered significant depreciation and degradation of natural capital. The shrinkage and diminishing of Pakistan's forest cover was remarkably noticed in 2018 where average decline of Pakistan's natural capital was nearly 5 percent as estimated by IWI calculations, Managi and Kumar (eds.) 2018. Furthermore, Pakistan's agriculture was susceptible to climate change due to irregular climatic patterns. Therefore, TBTT is supposed to provide a resilient ecosystem so that it would act as a buffer in case of any stress/ shocks like those of natural disasters.

To enhance country's natural capital, TBTT is aiding in the mitigation of the harmful effects caused by climate change by opting for forest carbon sequestration. Also, policies have been implemented regarding the preservation of land and soil degradation problems (IUCN 2020). The project managed to accomplish its initial target in both half the designated time and budget, although the availability of limited relevant data means that any exact guesses about the relevant performance parameters like survival rates or micro-climate improvements etc. cannot be made. As highlighted by (IUCN, 2017), the project has envisaged to restore<sup>5</sup> more than 350 million ha of degraded territories by 2030. Things also looks promising as UN Food and Agriculture Organization pointed out that from 2014-2019, these developments have created a total of 6.3 per cent of forest cover in Khyber Pakhtunkhawa province, from 20.31 million Ha to 26.6 million where a whole planted, rejuvenated, and regenerated space is nearly 593 292 ha (Food and Agriculture Organization of the United Nations [FAO], 2020). The information from the workers also revealed that since the area was previously barren as well as remote, the local people did not utilize it for grazing of cattle or cultivation. However, there also weren't any plans or mechanisms to provide the native populations any access to the plantation areas once the olive plantations have grown – only the local guards (Neghebans) have some access to collect firewood.

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<sup>5</sup> Both restoration and plantation activities are part of the wider TBTT project.

### 6.2.5 Physical Capital

Narayan (1999) regarded physical capital as a building block of livelihood. It mainly involves the basic infrastructure as well as manufactured goods required to support livelihoods (ibid.). KfW (Kreditanstalt Für Wiederaufbau) a German Development Bank, is planning to initiate livelihood development in Garhi Chandan plantation near the plantation site within Feb-April 2022, which will involve laborers getting livelihood opportunities. Although, wide-scale plantations have been done in Ghari Chandon (part of Billion tree Tsunami Project) back in 2017 but now the project aspires to move forward with some further developments on a bigger scale, like development of ecotourist spots and honey plantations. In order to achieve this, the establishment of roads and tracks are vital to this massive man-made forest and therefore should be regarded as project's one of fundamental priorities. As mentioned by Löff (2017), technological advances along with mechanical site preparation plays a fundamental part in enhancing the workers safety and overall output of the target plantation.

Unfortunately, a striking absence of infrastructure was found at the plantation site. It could be witnessed in the form of unpaved roads and traditional huts made of straws for the workers, although some infrastructure work to improve the roads seems to have been in progress. For example, before the plantation project had been initiated, even an unpaved road was not available. But the mediator could also witness that the construction of a new paved road was in its initial phases. The construction of better infrastructure will definitely improve the livelihood prospects of the local population by opening up additional economic activity in the area. The mediator noted a sense of happiness in the workers when they had mentioned that now at least an unpaved road was available. As mentioned by (Byerlee et al., 2017) that roads and infrastructure could benefit from land-based investments by external investors. Similarly, there are prospects of external investment coming up in the form of tourism related projects. Thus, there is a considerable room to operationalize sustainable development by implementing improved physical capital. The overall objectives of TBTT also needs to consider that there is an imminent need for the policy makers to prioritize to invest sufficient resources in the infrastructure.

If a comparison is made with a plantation project in Indonesia, it can be seen that the socio-economic impacts of large-scale plantations vary as they relied on plantation management, opportunities offered and infrastructure (Pirard et al., 2017). Therefore, in this respect, it will be too early to predict what impacts this particular area of TBTT will have since it is difficult to foresee how the management of the project as well as any infrastructure associated with it is going to evolve over time.

### 6.3 People-Centeredness of TBTT Plantation Project:

The overarching question that this project set out to answer was to ascertain whether TBTT plantation project could be called as being people-centered or people-oriented. The Sustainable Livelihood Framework (SLF), as discussed in the previous section, provides as an excellent

mechanism to determine this fundamental question. This is because SLF puts people at the center of the discussion, and its main aim is to reduce the vulnerabilities of the local population by enhancing their capacities through the advancements of the capital assets (Rutherford et. al., 2002: 124). Drawing upon the discussion in the preceding section, it is clear that TBTT has made strides in increasing different capital assets. In terms of human capital, TBTT has contributed to increasing the skills of both the plantation workers as well as the women entrepreneurs – at least in the region under study. Similarly, TBTT increased the economic capital by producing direct employment and small-scale entrepreneurship activities, although discrepancies related to better wages and working conditions remain – especially in the plantation part of the project. Moreover, the project also has also stimulated the growth of social networks and a sense of community among the participants, thereby increasing the social capital. Furthermore, the tree plantations have certainly also augmented the natural capital of the country. Also, the physical capital is getting enhancements in the form of better infrastructure, although much still remains to be done. However, the assets form one aspect of SLF – though, arguably a very important one.

Another important aspect of SLF is Policies, Institutions and Processes. They concern the organization of resources, services available to the people, power relation and rules for gaining access to resources – among other components (Scoones, 2009). The policies should be designed in such a way that they work to enhance the access of the poor to the social, political, and economic resources (ibid.). Moreover, such policies should aim to increase social equity – including gender equality (Ota et. al, 2020a). Furthermore, researchers believe that a plan to fight climate change could only be called sustainable if local knowledge is included in it (Mabon et. al, 2021). However, in case of TBTT project, it can be seen that a traditional top-down model of management is being used for development processes. The involvement of local community at the plantation site was reduced to the workers that were directly involved in the plantation drive, and in general there was no involvement of the native communities in the management or consultation processes. Even in the case of local workers, there was a scarcity of any clear redress mechanism that could help to improve the working conditions and issues related to delayed wage payments. The policies of TBTT should also ensure that the needs and the concerns of the local workers as well as wider population are taken into consideration.

Inclusive governance of resource with the participation of the local community as well as social fairness and equity are the principles on which any eco-system restoration project should rest, according to the United Nations (FAO et. al, 2021). Elias et. al (2021) expand this in Ten People Centered Rules for Socially Sustainable Ecosystem Restoration and state that inclusive and participatory governance of resources is important criterion to judge where a restoration project could be called people centered. Such a system would ensure that needs and concerns of the local community are given importance through co-management. Further, it will help to address social asymmetries by giving empowerment to local communities – especially to its disadvantaged members. Moreover, it is important to have local self-governing restoration systems in place as opposed to a top-down approach, as some researchers (Chazdon et. al, 2021) have argued that the only the presence of such systems could ensure that the effects of such a project remain long-lasting when faced with political, climate and social upheavals. The effects of political upheavals are especially pronounced in case of Pakistan when development projects could get cancelled at the whims of political leaders. Therefore, such participatory management of TBTT would not only

ensure increased benefits but also the longevity of the project. This would mean engaging the local communities living around the plantation site, directly or using the local plantation workers as intermediaries, explaining and identifying the benefits of the project, educating them, finding ways to enable the local participation in the decision-making processes (possibly with the help of local teachers, village councils and/or local-level political leaders), empowering them and making them feel as equal owners of the project. Also, this means that more concerted efforts would be made for the villagers living in the vicinity of Amangarh that improvements in their quality of life could be made as well.

The provision and implementation of holistic monitoring, evaluation and learning mechanisms ensure that the focus of the project remains people centered (Elias et. al, 2021: 6). This means effective mechanisms to ensure better working conditions as well as addressing complaints for the local on-site workers are in place. Moreover, it also means that the success of TBTT could not be judged by only the number of planted or restored trees within area, rather that the monitoring processes should include a measure of the effects (positive or negative) that have been made on the local communities (including on-site workers) as well. This will ensure that a continuous and conscious effort gets made to ensure that benefits keep on reaching the local communities, while any adverse effects are minimized or averted.

One positive policy area visible in the plantation project is the concerted effort to reach underrepresented and disadvantaged segments of the society as the women and the youth. As the previous research shows that the women often lack access to financial, social, and human capitals (Ota et. al, 2020a), therefore, prioritizing women by providing trainings for initiating small-scale nurseries, as well as making some initial financial capital available in the form of advance-payments is indeed a welcome policy step. As noted in previous paragraphs, such directed interventions are needed to bring and promote social equity. The findings show that even relatively small financial benefits can help to improve the livelihoods. Moreover, the initiative has helped to increase self-esteem and give a feeling of liberation to women who would not have been able to run any business by stepping outside of their homes. Additionally, as evidenced from the findings, TBTT has also been providing employment opportunities to the local unskilled or semi-skilled workers and thus also curbing the trend of out-migration.

In short, it can be concluded that although the TBTT project is making strides in improving the socio-economic conditions of the local communities as well as the marginalized sections of the society, however, several important challenges remain stopping the project to be ascertained as completely people oriented. These challenges include better and on-time wages as well as better working conditions. Only after utilizing participatory management approaches, improved poor-friendly policies and institutions, and holistic monitoring can the TBTT project be called as completely being people centered.

## 6.4 Policy and Practical Implications:

Based on the findings and discussion in the preceding sections, a number of policy and practical implications can be deduced, some being more generic in nature, others being specific to TBTT project:

1. Ecosystem restoration and plantation projects as TBTT can reduce the vulnerabilities and increase the resilience of the local populations, as well as helping to diversify their livelihood activities. The life stories of many participants in the data acquisition process are a proof of that.
2. Improving the livelihood assets and capabilities of the participants in plantation projects can cause to improve their livelihoods in multiple ways. These multiple ways include availability of jobs in the local area, savings to start a part-time business, increased personal satisfaction – in case of unemployed women in traditional settings – or some combination of these.
3. Interventions (keeping in view the local traditions) targeting the disadvantaged groups do work to increase the social, economic, and human capitals and capabilities of such groups, while also increasing the social sustainability of the project by reducing societal inequities. This can be seen in case of micro-finance schemes and trainings provided for small-scale nursery's women entrepreneurs.
4. Usage of traditional or forested lands for large-scale tree plantations can possibly lead to many problems related with land disputes and disturbing the existing patterns of land utility. Therefore, selection of underutilized or semi-barren land for plantation projects works to not only increase the natural capital but also prevents many of the potential problems associated with customary and forested land as can be witnessed in case of the plantation being done at Amangarh plantation site as part of TBTT.
5. Only some limited advantages of a plantation and reforestation project can reach the local communities through the traditional top-down management approaches. This is evidenced from TBTT as the involvement of native communities remain limited to only providing limited workforce for the plantation drive. Collaborative and inclusive management, policies and institutions are needed to ensure that a wider portion of local population gets their livelihoods assets and capabilities enhanced. Such schemes will also ensure that any benefits of the projects are long-term and equitable, and do not get adversely affected by haphazard policy changes – as is often the case in Pakistan.
6. People-oriented policies should be made making sure that the local populations are given some form of access to the plantations, e.g., by allowing limited collections of firewood. In the case of TBTT, currently the plantation area remained off limits to the local population, and there was no indication of any future changes in this policy.
7. Better regulatory and holistic monitoring schemes should be implemented, ensuring that reasonable and on-time wages are provided to the local workers and working conditions be improved. Moreover, a functioning complaint and redress mechanism needs to be in place. Moreover, the success of the project should not only be judged by the direct environmental effects, but the socio-economic benefits received by the local workers and the wider communities should also be made an integral part of a monitoring mechanism.

## 6.5 Conclusion:

The goal of my thesis was to identify the socio-economic impacts of the TBTT on the livelihoods of local workers. The project is primarily designed to counter the effects of climate change by tree plantations – with the additional goals of being also able to help improving the socioeconomic conditions of the participating communities. Generally speaking, such large forest restoration projects were mostly only planned for climate or ecosystem restoration – with the livelihood impacts getting no or superficial importance. Therefore, the projects have mostly caused negative socioeconomic effects or at best the positive effects have been limited. Therefore, the goal of this thesis work has been to ascertain the impact on the participating populations – especially since there



has been a dearth of such information. Usage of sustainable livelihood framework helped my analysis to grab how workers are getting benefits with the TBTT program or if laborers are disadvantaged by the current system. Moreover, the thesis attempted to answer whether or not the TBTT project can be ascertained as being people-centered, based on the findings at the plantation site and the interviews from women entrepreneurs running small-scale nurseries.

Firstly, the study reflects how workers have experienced the TBTT and its effects on their livelihoods and wellbeing. The findings show that the impacts have brought multifold advantages to local women and men who particularly run some part time business activities. However, challenges also remain in the form of deficient working conditions, lack of reasonable wage rates and lack of modern equipment. My thesis also revealed that apart from generating economic capital from job opportunities, workers are progressively using social and human capital in order to obtain livelihood. Furthermore, sustainable livelihoods framework unveiled the diversity of entrepreneurial activities which workers (male and female) have adopted in the study area to earn their living. Thus, the socio-economic impacts of TBTT showed a wide scope and acted as a remedy to conspicuously increase livelihood opportunities. The data also reflects that apart from bearing household responsibilities, local women are now securing food for the family that ultimately aids to mitigate negative livelihood circumstances. The findings showed that the TBTT project is increasing assets of the local population, which is in turn translating into livelihood activities. TBTT has caused to decrease the vulnerability of the local population by increasing their resilience and has caused the people to diversify their livelihood activities – in effect reducing the poverty. Moreover, TBTT has attempted to reach the underrepresented and possibly more vulnerable segments of society as women and youth. Thus, TBTT is helping to increase livelihood security and also helping to curb outmigration by providing employment and business opportunities in the native areas. However, several vital challenges remain before the project can be called as completely as being people centered. These challenges include a traditional top-down management approach, no involvement of the local population in the decision making and management processes, far from ideal working conditions of local plantation workers and indifferent policies to asymmetries of power. Large scale tree plantations are considered to be complex issue since it still remains a contentious matter between many researchers and practitioners (Baral et al.: 2016). However, the key message gained from this thesis is that while designing policy strategies, administrative levels need to accelerate the provision of basic welfare by understanding that a reliable working environment promotes long term sustainability. Moreover, the green investments and policy developers need to consider the low wage rate, therefore, there is an imminent need to increase labor wages while weighing decisions regarding investments. Economy cannot boom if it undermines the basic human necessities, therefore policies should make a mindful investment which is inclusive of basic income, medical care, shelter, and infrastructure. Finally, I hope that the data from this research, collected during the third year of TBTT, contributes to a growing body of empirically rooted evidence on how TBTT is experienced at local level mainly by firsthand workers.

# References

- Adams, W.M., Aveling, R., Brockington, D., Dickson, B., Elliott, J., Hutton, J., Roe, D., Vira, B., Wolmer, W., 2004. Biodiversity conservation and the eradication of poverty. *Science* 306, 1146–1149.
- Agger, A. and Jensen, J.O., 2015. Area-based initiatives—and their work in bonding, bridging and linking social capital. *European Planning Studies*, 23(10), pp.2045-2061.
- Al-Dajani, H., S. Carter, E. Shaw, and S. Marlow. 2015. “Entrepreneurship among the Displaced and Dispossessed: Exploring the Limits of Emancipatory Entrepreneurship.” *British Journal of Management* 26 (4): 713–730.
- Al-Hashemi, Z.S.S. and Hossain, M.A. (2016). Biological activities of different neem leaf crude extracts used locally in Ayurvedic medicine. *Pacific Science Review A: Natural Science and Engineering*, 18(2), 128-131.
- Ali, R., Naseem, M.A. and Farooq, M.M., 2011. Social capital impact on economic development (a theoretical perspective). *International Journal of Business Management & Economic Research*, 2(4), pp.270-277.
- Andersson, K., Lawrence, D., Zavaleta, J. and Guariguata, M.R., 2016. More trees, more poverty? The socioeconomic effects of tree plantations in Chile, 2001–2011. *Environmental management*, 57(1), pp.123-136.
- Anríquez Nilson, G., Toledo Roman, G. and Arriagada Cisternas, R. (2021) “Hidden welfare effects of tree plantations,” *Environment and Development Economics*. Cambridge University Press, 26(2), pp. 151–168. doi: 10.1017/S1355770X20000303.
- Antonio, D., 2001. The challenges for Africa: a culture of peace, good governance and people-centered development. *Asia Pacific Review*, 8(1), pp.63-74.
- Azócar, G., Romero, H., Sanhueza, R., Vega, C., Aguayo, M. and Muñoz, M.D., 2007. Urbanization patterns and their impacts on social restructuring of urban space in Chilean mid-cities: The case of Los Angeles, Central Chile. *Land Use Policy*, 24(1), pp.199-211.
- Baird, I.G. and Fox, J., 2015. How land concessions affect places elsewhere: Telecoupling, political ecology, and large-scale plantations in southern Laos and northeastern Cambodia. *Land*, 4(2), pp.436-453.
- Baral, H., Guariguata, M.R. and Keenan, R.J., 2016. A proposed framework for assessing ecosystem goods and services from planted forests. *Ecosystem Services*, 22, pp.260-268.
- Barnett-Howell, Z., Watson, O.J. and Mobarak, A.M., 2021. The benefits and costs of social distancing in high-and low-income countries. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 115(7), pp.807-819.

Barney, K., 2007. *Power, Progress and Impoverishment: Plantations, Hydropower, Ecological Change and Community Transformation in Hinboun District, Lao PDR, a Field Report*. York University, York Center for Asian Research.

Baynes, J., Herbohn, J. and Unsworth, W., 2017. Reforesting the grasslands of Papua New Guinea: the importance of a family-based approach. *Journal of Rural Studies*, 56, pp.124-131.

Bernard, H.R., 2006. *Research Methods in Anthropology: Qualitative and Quantitative Approaches*. Rowman Altamira

Bennett, N.J., Blythe, J., Tyler, S. and Ban, N.C., 2016. Communities and change in the anthropocene: understanding social-ecological vulnerability and planning adaptations to multiple interacting exposures. *Regional Environmental Change*, 16(4), pp.907-926.

Bhargava, V. 2006. Introduction to global issues. In W. Bank. ed. *Global issues for global citizens: an introduction to key development challenges*, pp. 1–20. World Bank, Washington, District of Columbia

Brush, C. G., and S. Y. Cooper. 2012. "Female Entrepreneurship and Economic Development: An International Perspective." *Entrepreneurship & Regional Development* 24 (1–2): 1–6.

Byerlee, D., Masters, W.A. and Robinson, D.S., 2017. From land grabs to land development. *Agriculture and Rural Development in a Globalizing World: Challenges and Opportunities*

Café, D.P., 2012. The Transcontextualization of Sustainable Development in a Mining Exploration Milieu: A Transect on the Alangan Mangyans. *Journal of Sustainable Development*, 5 (5), 150

Cambridge English Dictionary, 2022. RESILIENCE. [online] Available at: <<https://dictionary.cambridge.org/dictionary/english/resilience>> [Accessed 17 April 2022].

Carver, C., & Conner-Smith, J., 2010. Personality and coping. *Annual Review of Psychology*, 61, 679-704. doi:10.1146/annurev.psych.093008.100352

Cernansky R., 2018. How to rebuild a forest. *Nature* 560:542–544

Chengke Yu. Junshu Du. , 2013. *A Literature Review of the Effects of Social Capital -From the Personal Network Perspective*. University of Science and Technology

Chambers, R. and Conway, G., 1992. *Sustainable rural livelihoods: practical concepts for the 21st century*. Institute of Development Studies (UK).

Chambers, R., 1995, 'Poverty and livelihoods: whose reality counts?', IDS Discussion Paper 347 \_\_ 1997, 'Responsible well-being – a personal agenda for development', *World Development*, 25: 1743-1745

Charnley, S., 2005. Industrial plantation forestry: do local communities benefit? *J.Sustain. For.* 21 (4), 35–57.

Chazdon, R.L., Brancalion, P.H., Laestadius, L., Bennett-Curry, A., Buckingham, K., Kumar, C., Moll-Rocek, J., Vieira, I.C.G. and Wilson, S.J., 2016. When is a forest a forest? Forest concepts and definitions in the era of forest and landscape restoration. *Ambio*, 45(5), pp.538-550.

Chazdon, R.L., Wilson, S.J., Brondizio, E., Guariguata, M.R. and Herbohn, J., 2021. Key challenges for governing forest and landscape restoration across different contexts. *Land Use Policy*, 104, p.104854.

Coomes, O.T., Grimard, F., Potvin, C. and Sima, P., 2008. The fate of the tropical forest: Carbon or cattle?. *Ecological Economics*, 65(2), pp.207-212.

Coleman, E.A., Schultz, B., Ramprasad, V., Fischer, H., Rana, P., Filippi, A.M., Güneralp, B., Ma, A., Rodriguez Solorzano, C., Guleria, V. and Rana, R., 2021. Limited effects of tree planting on forest canopy cover and rural livelihoods in Northern India. *Nature Sustainability*, 4(11), pp.997-1004.

Corporación Nacional Forestal (CONAF). 2013. Por un Chile Forestal Sustentable. Corporación Nacional Forestal, Santiago, Chile. Retrieved from [http://www.conaf.cl/wp-content/files\\_mf/1382992046CONAFporunChileForestalSustentable.pdf](http://www.conaf.cl/wp-content/files_mf/1382992046CONAFporunChileForestalSustentable.pdf)

Creswell, J.W. & Creswell, J.D., 2018. *Research design: qualitative, quantitative, and mixed methods approaches*. Fifth edition. Los Angeles: SAGE.

Davies, S., 1996, *Adaptable Livelihoods. Coping with Food Insecurity in the Malian Sahel*, London: MacMillan

Dasgupta, P. 2021. *The Economics of Biodiversity: The Dasgupta Review*. London: HM Treasury

Dean, Z., 2022. The UN's Decade of Environmental Restoration – An example in Pakistan's 10 Billion Tree Tsunami Project - Red Sea Search. [online] Red Sea Search. Available at: <<https://www.redseasearch.com/the-uns-decade-of-environmental-restoration-an-example-in-pakistans-10-billion-tree-tsunami-project/>> [Accessed 11 February 2022].

Dent, D, Dubois, O, Dalal-Clayton, B, & DuBois, O 2002, *Rural Planning in Developing Countries: Supporting Natural Resource Management and Sustainable Livelihoods*, Taylor & Francis Group, London. Available from: ProQuest Ebook Central. [22 May 2022].

de Souza Minayo, M.C., 2017. Limits and possibilities to combine quantitative and qualitative approaches. *Qualitative versus Quantitative Research*, pp.87-99.

Dol.kp.gov.pk. 2022. *Directorate of Labour - Khyber Pakhtunkhwa - Minimum Wages*. [online] Available at: <<http://www.dol.kp.gov.pk/min-wages.html>> [Accessed 14 August 2022].

Elias, M., Kandel, M., Mansourian, S., Meinzen-Dick, R., Crossland, M., Joshi, D., Kariuki, J., Lee, L.C., McElwee, P., Sen, A. and Sigman, E., 2021. Ten people-centered rules for socially sustainable ecosystem restoration. *Restoration Ecology*, p.e13574.

Ellis, F. 2000. *Rural Livelihoods and Diversity in Developing Countries*. Oxford University Press. Available online < assets/publications-opinionfiles/2881.pdf

Esquivel E, Quechulpa S, Trujillo R 2017. 2015-2016 Combined annual report. Mexico: Ambio,

Scolel'te, Plan Vivo; [accessed 2022 Mar 6]. <https://www.planvivo.org/docs/Scolelte-2015-2016-Annual-Report-GDPR-web.pdf>

Evans, J., 2009. The History of Tree Planting and Planted Forests. In: Evans, J. ed. *Planted Forests: Uses, Impacts, and Sustainability*. Rome: Food and Agriculture Organization of the United Nations / Centre for Agriculture and Bioscience International, pp. 5–22. <https://doi.org/10.1079/9781845935641.0000>

Evans, J. and Turnball, J.W., 2004. *Plantation forestry in the tropics: the role, silviculture and use of planted forests for industrial, social, environmental and agroforestry purposes*. Oxford.

FAO, 2018. *The state of the world's forests 2018—forest pathways to sustainable development*. Rome. License: CC BY-NC-SA 3.0 IGO

FAO, I.C., SER. 2021. *Principles for ecosystem restoration to guide the United Nations Decade 2021–2030*. Rome: FAO.

Food and Agricultural Organization [FAO]. 2011. *Standing Tall: Exemplary cases of sustainable forest management in Latin America and the Caribbean*. Food and Agriculture Organization of the United Nations, Rome, Italy. Retrieved from <http://www.rlc.fao.org/en/publications/exemplary-cases-of-sustainable-forestmanagement/>

Food and Agricultural Organization of the United Nations (FAO). 2020. *Forestry sector review: Pakistan*. Islamabad. <https://doi.org/10.4060/ca4869en>

Fleischman, F., Basant, S., Chhatre, A., Coleman, E.A., Fischer, H.W., Gupta, D., Güneralp, B., Kashwan, P., Khatri, D., Muscarella, R. and Powers, J.S., 2020. Pitfalls of tree planting show why we need people-centered natural climate solutions. *BioScience*, 70(11), pp.947-950.

Flick, U. 2018. What is triangulation?. In *Doing triangulation and mixed methods* (pp. 11-24). SAGE Publications Ltd, <https://dx.doi.org/10.4135/9781529716634.n2>

Flora, CB, Flora, JL, & Gasteyer, SP 2015, *Rural Communities: Legacy + Change*, Taylor & Francis Group, Available from: ProQuest Ebook Central. [18 August 2022].

Gibbs, G.R. 2018. *Analyzing Qualitative Data*. Qualitative research kit, Second ed. 55 City Road, London: SAGE Publications Ltd. Available at: <<http://www.doi.org/10.4135/9781526441867>> [Accessed 03 Mar 2022].

Gerber, J.-F., 2011. Conflicts over industrial tree plantations in the south: who, how and why? *Glob. Environ. Change* 21 (1), 165–176.

Gul, A., 2020. *Pakistan Plants 500 Million New Trees in Drive Against Climate Change*. [online] Voice Of America News. Available at: <[https://www.voanews.com/a/south-central-asia\\_pakistan-plants-500-million-new-trees-drive-against-climate-change/6196767.html](https://www.voanews.com/a/south-central-asia_pakistan-plants-500-million-new-trees-drive-against-climate-change/6196767.html)> [Accessed 4 April 2022].

Hall, R., Edelman, M., Borrás Jr, S.M., Scoones, I., White, B. and Wolford, W., 2015. Resistance, acquiescence or incorporation? An introduction to land grabbing and political reactions ‘from below’. *Journal of Peasant Studies*, 42(3-4), pp.467-488.

Hutt, R., 2018. Pakistan has planted over a billion trees. [online] World Economic Forum. Available at: <<https://www.weforum.org/agenda/2018/07/pakistan-s-billion-tree-tsunami-is-astonishing/>> [Accessed 11 February 2022].

International Labour Organization (ILO), 2016. Non-standard employment around the world: Understanding challenges, shaping prospects.

Inguanzo, I., 2014. Indigenous Peoples' Rights in Southeast Asia. *Asian Journal of Political Science*, 22(1), pp.45-70.

International Union for Conservation of Nature (IUCN). 2017. Annual Report Pakistan. Karachi: IUCN. [https://www.iucn.org/sites/dev/files/2017\\_annual\\_report\\_iucn\\_pakistan.pdf](https://www.iucn.org/sites/dev/files/2017_annual_report_iucn_pakistan.pdf)

IUCN, 2020. IUCN, FAO and WWF Pakistan join hands with Ministry of Climate Change to monitor the largest afforestation programme in Pakistan, 22 September. <https://www.iucn.org/news/pakistan/202009/iucn-fao-and-wwf-pakistan-join-hands-ministry-climate-change-monitor-largest-afforestation-programme-pakistan>. Accessed 18 May 2022.

IUCN. 2022. Pakistan exceeds Bonn Challenge commitment with Billion Tree Tsunami. [online] Available at: <<https://www.iucn.org/news/pakistan/201708/pakistan-exceeds-bonn-challenge-commitment-billion-tree-tsunami>> [Accessed 11 February 2022].

Kosenius, A.K., Kniivilä, M., Pitiot, M. and Horne, P., 2019. Location of forest plantations in Mozambique: Gains and losses in water, firewood and land availability. *Land use policy*, 88, p.104175.

Kim, P. H., and H. E. Aldrich. 2005. “Social Capital and Entrepreneurship.” *Foundations and Trends® in Entrepreneurship* 1 (2): 55–104

Khan, M., Shah, B., Muhammad, I., Hussain, S., Waseem, M., Khan, S., Saad, H., Rukh, G. and Ahmed, M., 2016. Third Party Monitoring of Billion Trees Tsunami Afforestation Project in Khyber Pakhtunkhwa. [online] WWF-Pakistan. Available at: <[https://wwfasia.awsassets.panda.org/downloads/bttap\\_third\\_party\\_monitoring\\_report\\_1.pdf](https://wwfasia.awsassets.panda.org/downloads/bttap_third_party_monitoring_report_1.pdf)> [Accessed 5 January 2022].

Khan, I.H., Javaid, A., Al-Taie, A.H., Ahmed, D. 2020. Use of Neem leaves as soil amendment for the control of collar rot disease of chickpea. *Egyptian Journal of Biological Pest Control* 30(98). <https://doi.org/10.1186/s41938-020-00299-w>

Khan, M., Shah, B., Muhammad, I., Hussain, S., Waseem, M., Khan, S., Saad, H., Rukh, G. and Ahmed, M., 2016. Third Party Monitoring of Billion Trees Tsunami Afforestation Project in Khyber Pakhtunkhwa. [online] WWF-Pakistan. Available at: <[https://wwfasia.awsassets.panda.org/downloads/bttap\\_third\\_party\\_monitoring\\_report\\_1.pdf](https://wwfasia.awsassets.panda.org/downloads/bttap_third_party_monitoring_report_1.pdf)> [Accessed 5 January 2022].

Kröger, M., 2012. Global tree plantation expansion: a review. *ICAS review paper series*, 3, pp.1-24.

Kröger, M., 2014. The political economy of global tree plantation expansion: a review. *Journal of Peasant Studies*, 41(2), pp.235-261.

Kröger, M., 2016. The political economy of ‘flex trees’: a preliminary analysis. *The Journal of Peasant Studies*, 43(4), pp. 886-909. <https://doi.org/10.1080/03066150.2016.114064>

Kusumanti, M., Ferse, S. and Glaser, M., 2021. Sustainable livelihoods frameworks in investigating household assets in Jakarta Bay, Indonesia. *Aquaculture, Aquarium, Conservation & Legislation*, 14(1), pp.204-217.

Lamb D. 2010. *Regreening the Bare Hills: Tropical Forest Restoration in the Asia-Pacific Region*. Springer, New York

Lamb D. 2014. *Large-scale forest restoration*. Earthscan, London

Lamb, D., Erskine, P.D., Parrotta, J.A., 2005. Restoration of degraded tropical forest landscapes. *Science* 310, 1628–1632

Lancee, B., 2010. The economic returns of immigrants’ bonding and bridging social capital: The case of the Netherlands. *International Migration Review*, 44(1), pp.202-226.

Liao, C., Luo, Y., Fang, C., Chen, J. and Li, B., 2012. The effects of plantation practice on soil properties based on the comparison between natural and planted forests: a meta-analysis. *Global ecology and biogeography*, 21(3), pp.318-327.

Lindvert, M., Patel, P.C. and Wincent, J., 2017. Struggling with social capital: Pakistani women micro entrepreneurs' challenges in acquiring resources. *Entrepreneurship & Regional Development*, 29(7-8), pp.759-790.

Löf M (Ed.), 2017. Program and book of abstracts of the IUFRO 3rd restoring forest: regeneration and ecosystem function for the future. Lund, Sweden 12–14 September 2017. Report 51. Swedish University of Agricultural Sciences, Southern Swedish Forest Research Centre, Alnarp, pp 109. ISBN-978-91-576-9517-9

Mabon, L., Nguyen, S.T., Pham, T.T., Tran, T.T., Le, H.N., Doan, T.T.H., Hoang, T.N.H., Mueller-Hirth, N. and Vertigans, S., 2021. Elaborating a people-centered approach to understanding sustainable livelihoods under climate and environmental change: Thang Binh District, Quang Nam Province, Vietnam. *Sustainability science*, 16(1), pp.221-238.

Macaulay, L. and Deppeler, J., 2020. 'Eighteen just makes you a person with certain privileges': the perspectives of Australian Sudanese and South Sudanese youths regarding the transition to adulthood. *Identities*, pp.1-20.

Malkamäki, A., D'Amato, D., Hogarth, N.J., Kanninen, M., Pirard, R., Toppinen, A. and Zhou, W., 2018. A systematic review of the socio-economic impacts of large-scale tree plantations, worldwide. *Global environmental change*, 53, pp.90-103.

Managi, S., Islam, M., Zhang, B., Holmes, A. and Khurshid, M., 2021. *Inclusive Wealth of Pakistan: The Case for Investing in Natural Capital and Restoration*. [online] United Nations Environment Programme (UNEP) and Urban Institute at Kyushu University. Available at: <<https://wedocs.unep.org/bitstream/handle/20.500.11822/36257/IWP.pdf>> [Accessed 4 April 2022].

Managi, S., and Kumar, P. (eds.) 2018. *Inclusive Wealth Report 2018: Measuring Progress Towards Sustainability*. Oxford: Routledge, Taylor and Francis Group. <https://doi.org/10.4324/9781351002080>.

Mauthner, N., and Doucet, A. 1997. Reflections on a Voice-Centred Relational Method of Data Analysis: Analysing Maternal and Domestic Voices. In: *Feminist Dilemmas in Qualitative Research: Public Knowledge and Private Lives*, pp. 119–146.

Mansourian S, Parrotta J. 2019. From addressing symptoms to tackling the illness: reversing forest loss and degradation. *Environ Sci Policy*. 101:262–265. doi:10.1016/j.envsci.2019.08.007.

Maginnis, S. and Jackson, W., 2005. Balancing restoration and development. *ITTO Tropical Forest Update*, 15(2), pp.4-6.

Mena, R. & Hilhorst, D. 2020. COVID-19 | Remote research in times of COVID-19: considerations, techniques, and risks. <https://www.iss.nl/en/news/remote-research-times-covid-19-considerations-techniques-and-risks>



Mathews, M.C., 2021. How village leaders in rural Amazonia create bonding, bridging, and linking social capital configurations to achieve development goals, and why they are so difficult to maintain over time. *World Development*, 146, p.105541. Ministry of Climate Change (Government of Pakistan). n.d. Ten Billion Trees Tsunami Programme. [online] Available at: <<http://www.mocc.gov.pk/ProjectDetail/M2QzOWJmMjUtZTU3MC00NmFkLWE4YmMtZDFhMmRlOGU2NGRh>> [Accessed 2 January 2022].

Montalba Navarro, R., Araya Cornejo, J. and Carrasco Henríquez, N., 2005. *Contexto económico y social de las plantaciones forestales en Chile: el caso de la Comuna de Lumaco, región de la Araucanía* (No. 504.03 MON).

Mocc.gov.pk. 2022. Ten Billion Tree Tsunami Programme. [online] Available at: <<http://www.mocc.gov.pk/ProjectDetail/M2QzOWJmMjUtZTU3MC00NmFkLWE4YmMtZDFhMmRlOGU2NGRh>>

Narayan, D., 1999. *Bonds and bridges: Social capital and poverty* (Vol. 2167). Washington, DC: World Bank.

Narayan, D. and Pritchett, L., 1999. Cents and sociability: Household income and social capital in rural Tanzania. *Economic development and cultural change*, 47(4), pp.871-897.

Nasrnia, F. and Ashktorab, N., 2021. Sustainable livelihood framework-based assessment of drought resilience patterns of rural households of Bakhtegan basin, Iran. *Ecological Indicators*, 128, p.107817

Obidzinski, K., Takahashi, I., Dermawan, A., Komarudin, H., Andrianto, A., 2013. Can large scale land acquisition for agro-development in Indonesia be managed sustainably? *Land Use Policy* 30, 952–965.

O'Reilly, Karen. 2015. "Migration theories: A critical Overview" in Triandafyllidou, Anna (ed), Routledge, *Handbook of Immigration and Refugee Studies*

OECD, 2020. Economic Capital. In: *How's Life? 2020: Measuring Well-being*, OECD Publishing, Paris. Available at: <<https://doi.org/10.1787/a9262634-en>> [Accessed 03 Jan 2022].

Opira, O. 2013. Trust, identity and beer. Institutional arrangements for agricultural labour in Isunga village in Kiryandongo district, midwestern Uganda. Uppsala, Sweden: Swedish University of Agricultural Sciences.

Ota, L., Herbohn, J., Gregorio, N. and Harrison, S., 2020a. Reforestation and smallholder livelihoods in the humid tropics. *Land Use Policy*, 92, p.104455.

Ota, M., Masuda, M. and Shiga, K., 2020b. Payment for What? The Realities of Forestry Benefit Sharing Under Joint Forest Management in a Major Teak Plantation Region of Java, Indonesia. *Small-scale Forestry*, 19, pp.439-460.

Palomino, J. and E. Ausina. 2015. Social Capital, Investment and Economic Growth: Some Evidence for Spanish Provinces. *Spatial Economic Analysis* 10:1, 102–126.

Pagiola S, Bosquet B. 2009. Estimating the costs of REDD at the country level. Report for the forest carbon partnership. the World Bank, Washington D.C.

Pandey, R., Jha, S.K., Alatalo, J.M., Archie, K.M., Gupta, A.K., 2017a. Sustainable livelihood framework-based indicators for assessing climate change vulnerability and adaptation for Himalayan communities. *Ecol. Ind.* 79, 338–346. <https://doi.org/10.1016/j.ecolind.2017.03.047>.

Pandey, R., Alatalo, J.M., Thapliyal, K., Chauhan, K., Archie, K.M., Gupta, A.K., Jha, S.K., Kumar, M., 2018. Climate change vulnerability in urban slum communities: investigating household adaptation and decision-making capacity in the Indian Himalaya. *Ecol. Ind.* 90, 379–391. <https://doi.org/10.1016/j.ecolind.2018.03.031>

Patwary, M. H. 2008. Assessing Stakeholder Participation in Co-management Activities at Chunati Wildlife Sanctuary. In J. Fox, B. Bushley, S. Dutt, & (eds), *Connecting communities and conservation: Collaborative Management of Protected Areas in Bangladesh*. (pp. 231–250). East West Centre, Nishorgo Programme of Bangladesh Forest Department, USAID.

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Pirard, R., Petit, H. and Baral, H., 2017. Local impacts of industrial tree plantations: An empirical analysis in Indonesia across plantation types. *Land Use Policy*, 60, pp.242-253.

Perring, M.P., Erickson, T.E., Brancalion, P.H.S., 2018. Rocketing restoration: enabling the upscaling of ecological restoration in the Anthropocene. *Restoration Ecology* 26(6), 1017-1023. <https://doi.org/10.1111/rec.1287>

Piya, L., Maharjan, K.L. and Joshi, N.P., 2019. *Socio-economic issues of climate change: A livelihood analysis from Nepal*. Springer.

Pirard, R. and Mayer, J., 2009. Complementary labor opportunities in Indonesian pulpwood plantations with implications for land use. *Agroforestry systems*, 76(2), pp.499-511.

Pound, B., 2017. Farming-Related Livelihoods. In: *Agricultural Systems: Agroecology and Rural Innovation for Development: Second Edition*, pp. 73–91. Available at: <https://doi.org/10.1016/B978-0-12-802070-8.00003-7> [Accessed 03 Jan 2022].

Pretty, J. and Ward, H., 2001. Social capital and the environment. *World development*, 29(2), pp.209-227.

Riemer, O., 2018. *Social capital as a determinant of farmlevel sustainable land management adoption a case study of smallholder farmers in Northern Benin*. Uppsala: Sveriges lantbruksuniversitet.

Root, T., 2021. Pakistan's mission to plant 10 billion trees across the country. [online] *The Washington Post*. Available at: <https://www.washingtonpost.com/climate->

Rudel, T.K., 2009. Tree farms: Driving forces and regional patterns in the global expansion of forest plantations. *Land use policy*, 26(3), pp.545-550.

Rutherford, S., Harper, M. and Grierson, J. 2002. Support for Livelihood. In: Lloyd-Jones, T, & Rakodi, C 2002. eds. *Urban Livelihoods: A People-Centred Approach to Reducing Poverty*, Taylor & Francis Group, London. Available from: ProQuest Ebook Central. [23 May 2022]

SAFDAR, S., KHAN, A., SHAHEEN, F. and MUNIR, S., Effect of Social Capital on Economic Growth: A Case Study of Pakistan (1980–2016).

Scoones Ian. 1998. *Sustainable rural livelihoods a framework for analysis*. IDS working paper 72

Scoones, I., 2009. Livelihoods perspectives and rural development. *The journal of peasant studies*, 36(1), pp.171-196.

Szulecka, J., Pretzsch, J. and Secco, L., 2014. Paradigms in tropical forest plantations: a critical reflection on historical shifts in plantation approaches. *International Forestry Review*, 16(2), pp.128-143.

Sen, A.K. 1993. “Capability and well - being” in, A.K. Sen and M. C. Nussbaum, *The quality of life*, Oxford: Clarendon Press.

Sen, A., 1987, *The Standard of Living*, Cambridge: Cambridge University Press

Schoneveld, G.C., German, L.A., Nutakor, E., 2011. Land-based investments for rural development? A grounded analysis of the local impacts of biofuel feed stock plantations in Ghana. *Ecol. Soc.* 16 (4), 10.

Sitari, T., 2005. *Forestry, Community and Biodiversity in Zanzibar. Interaction between Forest Plantation and Community and its Impact on Biodiversity (Final Report)*. Department of Geography, University of Turku, Turku90.

Silva LN, Freer-Smith P, Madsen P. 2019. Production, restoration, mitigation: a new generation of plantations. *New For.* <https://doi.org/10.1007/s11056-018-9644-6>

Silverman, D., 2015. *Interpreting qualitative data*. Sage.

Sharafi, Z., Nooripour, M., Karamidehkordi, E., 2018. Assessing livelihood capitals and their sustainability in rural households (the Case of the Central District of Dena County). *Iran. Agri. Ext. Edu. J.* 13 (2), 51–57 (In Persian).

Shriar, A.J., 2014. Theory and context in analyzing livelihoods, land use, and land cover: Lessons from Petén, Guatemala. *Geoforum*, 55, pp.152-163.

Stam, W., S. Arzlanian, and T. Elfring. 2014. "Social Capital of Entrepreneurs and Small Firm Performance: A Meta-Analysis of Contextual and Methodological Moderators." *Journal of Business Ventu*

Stockholm+50. 2022. *Pakistan's Ten Billion Tree Tsunami leading the way in ecosystem restoration decade | Stockholm+50*. [online] Available at: <<https://www.stockholm50.global/news-and-stories/pakistan-leading-way-ecosystem-restoration>> [Accessed 4 April 2022].

Sunderlin, W.D., Dewi, S., Puntodewo, A., Müller, D., Angelsen, A. and Epprecht, M., 2008. Why forests are important for global poverty alleviation: a spatial explanation. *Ecology and society*, 13(2).

Tanner, T., Lewis, D., Wrathall, D., Bronen, R., Cradock-Henry, N., Huq, S., Lawless, C., Nawrotzki, R., Prasad, V., Rahman, M. and Alaniz, R., 2015. Livelihood resilience in the face of climate change. *Nature Climate Change*, 5(1), pp.23-26.

Tallis, H., Kareiva, P., Marvier, M. and Chang, A., 2008. An ecosystem services framework to support both practical conservation and economic development. *Proceedings of the National Academy of Sciences*, 105(28), pp.9457-9464.

Ullah, A., Sam, A.S., Sathyan, A.R., Mahmood, N., Zeb, A. and Kächele, H., 2021. Role of local communities in forest landscape restoration: Key lessons from the Billion Trees Afforestation Project, Pakistan. *Science of The Total Environment*, 772, p.145613.

Uchida, E., Xu, J., Xu, Z. and Rozelle, S., 2007. Are the poor benefiting from China's land conservation program?. *Environment and development economics*, 12(4), pp.593-620.

UN (United Nations General Assembly). 2012. Rio+20: the future we want. <http://daccess-ddsny.un.org/doc/UNDOC/GEN/N11/476/10/PDF/N1147610.pdf> (accessed 4 May 2022)

UNCCD (United Nations Convention to Combat Desertification), 2013. Zero net land degradation: a sustainable development goal for Rio+20. UNCCD Secretariat Policy Brief. UNCCD, Bonn, Germany

United Nations Economist Network, 2020. Report of the UN Economist Network for the UN 75th Anniversary: Shaping the Trends of our Time. New York.

UNEP, 2021. Making Peace with Nature: A Scientific Blueprint to Tackle the Climate, Biodiversity and Pollution Emergencies. Nairobi. UNEP <https://www.unep.org/resources/making-peace-nature>

United Nations Environment Programme (UNEP). n.d. Pakistan's Ten Billion Tree Tsunami. [online] Available at: <<https://www.unep.org/news-and-stories/story/pakistans-ten-billion-tree-tsunami>> [Accessed 2 January 2022].

Wagner RG, Gonzalez-Benecke CA, Nelson AS, Jacobs DF, 2018. Forest regeneration in changing environments. *New For* 49:699–703

Wedchayanon, N. and Chorkaew, S., 2014. The sufficiency economy and people-centered development: The case of the Huay Sai Royal Development Project in Thailand. *European Journal of Training and Development*.

Weston, P., Hong, R., Kaboré, C. and Kull, C.A., 2015. Farmer-managed natural regeneration enhances rural livelihoods in dryland West Africa. *Environmental management*, 55(6), pp.1402-1417.

Withnall, A. and Liuhto, M., 2018. Official results confirm Imran Khan has won the Pakistan election. [online] The Independent. Available at: <<https://www.independent.co.uk/news/world/asia/pakistan-election-2018-imran-khan-win-results-official-victory-pti-a8465741.html>> [Accessed 5 January 2022].

World Wildlife Fund (WWF) Pakistan. 2016. Third Party Monitoring of Billion Trees Tsunami Afforestation Project in Khyber Pakhtunkhwa. [online] Available at: <[https://wwfasia.awsassets.panda.org/downloads/bttap\\_third\\_party\\_monitoring\\_report\\_1.pdf](https://wwfasia.awsassets.panda.org/downloads/bttap_third_party_monitoring_report_1.pdf)> [Accessed 14 February 2022].

van Oosten, C., 2013. Restoring Landscapes—Governing Place: A Learning Approach to Forest Landscape Restoration. *Journal of Sustainable Forestry*, 32(7), pp.659-676.

Yin, R.K., 2012. *Applications of Case Study Research*. Los Angeles: SAGE.

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