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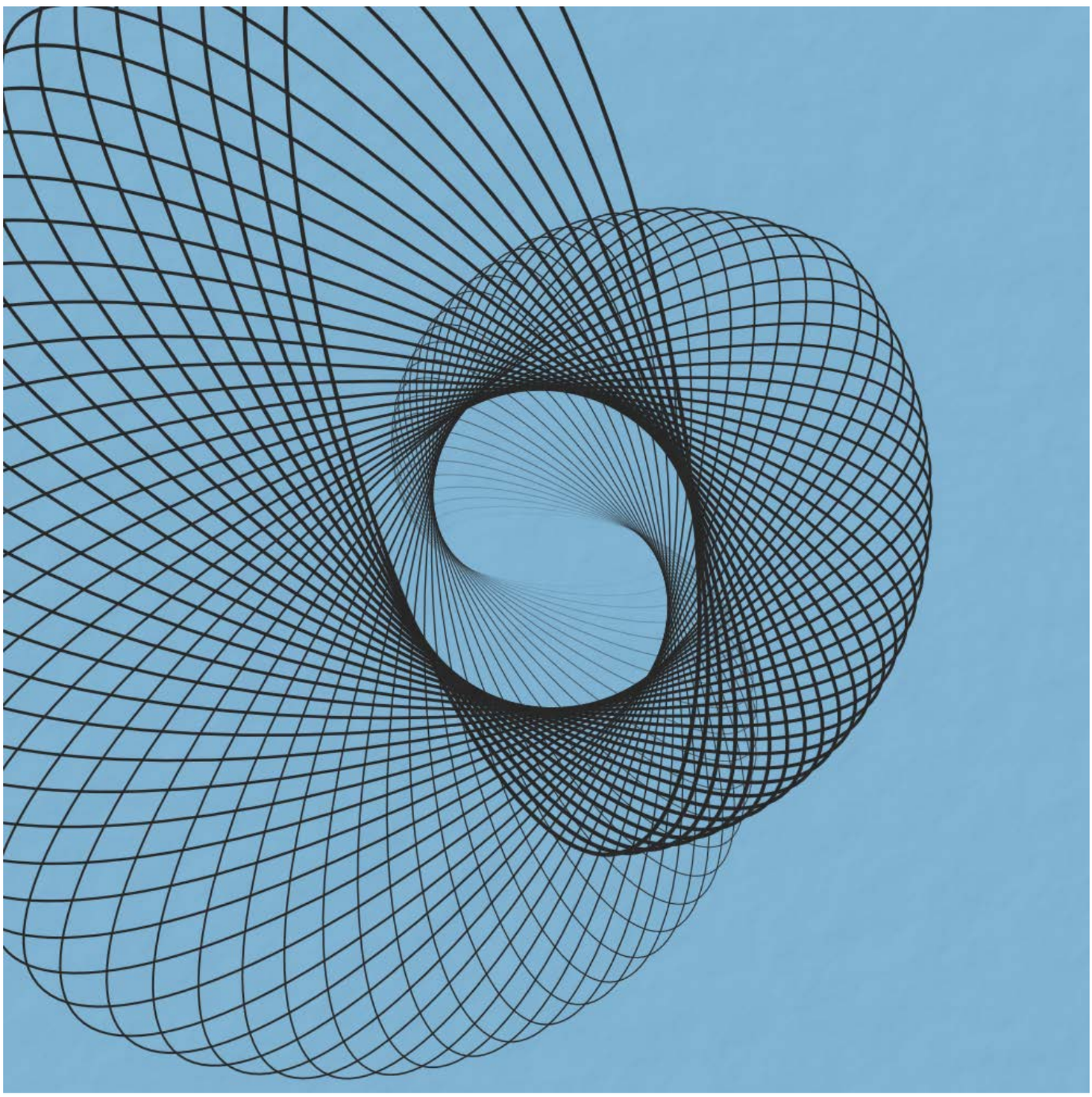

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Editor's Preface

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As another year passes, the time has come to issue this 6th volume of the Global Resource Management (GRM) Journal compiled through the immense hard work of all involved.

As the 7-year Leading Graduate School Program financially supported by the Japanese government comes to a close with successful completion in 2019, it is with greatest pleasure to announce that our institution commits to continuously run the GRM Program with the same dedication, spirit and objectives under the full support, management and operation of the Doshisha University.

The world is continuously facing many challenges with global threats including the recent outbreak of the Covid19 virus, and we aim to learn through the GRM Program to successfully tackle the issues as global leaders.

This journal is composed of a research note which have undergone the peer review process and several reports on topics and activities of GRM over the past year.

I am highly grateful for all the hard work, cooperation and valuable support in preparing this journal, and wish all audience an enjoyable read.

Analyzing Climate Change and Disaster Management Policies in the Development of the Ecotourism Industry in the Philippines

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Abstract

The Philippines is unique in terms of its geographic location. The country lies on the Pacific plate, typhoon belt, and the ring of fire. This implies high vulnerability of the country to natural disasters, thus earning its place as one of the most natural disaster vulnerable countries in the world. Apart from the frequent natural disasters in the country, the geographical location positions the Philippines as one of the most mega diverse countries in the world harboring a vast diversity of flora and fauna in its 7,107 islands. Being ecologically and mega diverse, the country is inevitably driving the development of its tourism industry showcasing its natural beauty, despite the frequent natural disasters. This study focuses on the Philippine policies in disaster risk reduction and management (DRRM), climate change, and tourism. Specifically, the study discusses how a niche of tourism, the ecological tourism, commonly called ecotourism is factored into the disaster management strategies and policies of the country and vice versa during the period from 1990 to 2015.

As early as the 1970s the Philippine government has been conscious of its vulnerability to multiple disasters. Policies have been developed since then, but it was only from the 1990s that more emphasis was placed on policy development in disaster management. This development is influenced by the increasing interest of the global community in global warming and climate change that is causing the increased intensity and frequency of disasters worldwide. Ecotourism on the other hand has been cited in a policy of the Department of Environment and Natural Resources (DENR) as early as 1992 with regards to the management of protected areas. Nevertheless, the Philippine government only published a formal definition of the term ecotourism in 1999 that set the precedent for ecotourism policies in the country.

Despite the increasing popularity of tourism in the Philippines and the increased intensity and frequency of natural disasters, there is limited reference to and involvement of tourism in disaster management and climate change policies and vice versa. One of the main reasons is the parallel development of disaster management and climate change policies and tourism policies. Nonetheless, for future policies relating to tourism, especially ecotourism in highly disaster-vulnerable areas, it is recommended to include a disaster management component. Furthermore, disaster management policies should pay attention to the value of the ecosystem as a tool for DRRM, particularly the role that ecotourism could play in such policies.

Keywords: Climate Change, Disaster Risk Reduction and Management, Policy Review, Ecotourism, Philippines

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I. Introduction

There is an increasing number of global threats that can potentially or deliberately cause significant economic and social paralysis throughout the world. One such threat is climate change, or the increase in the Earth's geographic and oceanic temperature. The impact of this threat has been felt more in recent years as changes in weather patterns, rising sea levels, and extreme weather are beginning to become more visible. One of the risks influenced by climate change is the increasing frequency and effect of natural hazards that cause economic losses and even loss of lives. According to the United Nations Office for Disaster Risk Reduction (UNISDR), the economic and human impacts of natural disasters from 2005 to 2014 have accounted for the deaths of 700,000 people, and $1.4 trillion damages in total. These damages disrupt sustainable development and their impacts are borne by the most vulnerable sectors of society affecting livelihoods and compounding poverty.

With various organizations and governments recognizing the increasing threats from natural hazards, interest in disaster risk reduction and management (DRRM) initiatives has increased. This increased interest among various stakeholders has resulted in the emergence of Disaster Risk Management (DRM) as a solution-oriented academic concept as well as a public policy orientation. DRM is defined by UNISDR as "the systematic process of using administrative directives, organizations, and operational skill and capabilities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster" (UNISDR, 2009). DRM as per the United Nations Development Programme (UNDP) aims to "avoid, lessen or transfer the adverse effects of hazards through activities and measures for prevention, mitigation and preparedness" (UNDP, 2015).

Among the many initiatives for DRM is the emergence of the concept of Ecosystems Disaster Risk Reduction (Eco-DRR) wherein natural ecosystems are used as buffers to natural disasters. By premise, healthy and well-managed ecosystems have been recognized to maximize the delivery of benefits from the ecosystem services. As per the Millennium Ecosystem Assessment in 2006, ecosystem services are services derived from the ecosystems, which includes to DRR (Renaud et al. 2013). The ecosystem service in general is delineated into four categories: provision, support, regulation, and cultural services. Provision is the service that describes material and even energy output from the ecosystem (food, crops, raw materials, water, medicinal, and ornamental resources). Supporting services are services/processes that enable the ecosystem to provide services. The supporting services include nutrient recycling, primary production, and soil formation. Regulating services pertain to services/ processes such as carbon sequestration, climate regulation, waste decomposition, waste detoxification, water purification, air purification, pest control, and disease control. The last service is cultural service that is divided into several services including recreation, mental and physical health, tourism, aesthetic appreciation and inspiration for culture, art and design, and spiritual experience and sense of place.

Ecosystems can buffer climate and reduce the risks and impacts of natural disasters as part of their regulating services. Furthermore, ecosystems through their regulating services can reduce the risks and impacts of storms, droughts, and sea-level rise that are becoming more severe and frequent due to climate change. Ecosystems managed wisely reduce disaster risks, thus preventing, mitigating, and/or regulating

hazards. Ecosystems acting as natural buffers reduce people's exposure to hazards, reducing vulnerability, and further supporting livelihoods and providing basic needs (PEDRR, 2013).

A more formal terminology for the use of ecosystems for DRR is Eco-DRR. In the works of Estrella and Saalismaa it is defined as "the sustainable management, conservation and restoration of ecosystems to reduce disaster risk, with the aim of achieving sustainable and resilient development" (Estrella and Saalismaa, 2013). Eco-DRR incorporates natural hazard risk management and climate change adaptation and shares common features with Ecosystem-based Adaptation (EbA) (UNEP, 2015).

With regard to ecosystem services, cultural services – specifically tourism services – are some of the most common yet most controversial services. According to the United Nations Environment Programme (UNEP), tourism in general has three main impact areas which are the depletion of natural resources, physical impacts of tourism development, and physical impacts from tourist activities. Over the past few decades, tourism has continued to expand and diversify around the world. According to the United Nations World Tourism Organization (UNWTO), tourism can be defined as travel for the purposes of leisure, business, or recreation. Although tourism is highly diversified, it can be characterized into categories and divided into niches such as: adventure and extreme (adventure tourism, extreme tourism, and space tourism), culture and arts (cultural tourism, heritage tourism, and music tourism), medical and dental (dental tourism, medical tourism, and wellness tourism), natural (ecotourism), and rural (agri-tourism, jungle tourism, and rural tourism) tourism.

In the 2013 global economic impact analysis of travel and tourism, the travel and tourism contribution to Gross Domestic Product (GDP) outweighed that of automotive and manufacturing in every region in the world. Overall, travel and tourism contribution equaled 9.5% of the global GDP generating over 266 million jobs, US$754 billion in investments, and US$1.3 trillion in exports. Creating significant contributions to the global economy, tourism is continuously gaining popularity. In recent studies, tourism has been linked to solutions for global problems such as poverty, environmental sustainability, health, and global partnerships.

One niche of tourism is ecological tourism, commonly called Ecotourism. It has been described in the work of Ceballos-Lascurain as the fastest growing tourism segment globally, with an annual growth of 20% to 25% (Ceballos-Lascurain, 2012). Ecotourism defined by the UNWTO is "a form of tourism in which the main motivation of tourists is the observation and appreciation of nature as well as the traditional cultures prevailing in natural areas" (UNWTO, 2002). Furthermore, UNWTO states that ecotourism should have educational features and features that minimize the negative impacts of activities on the natural and socio-cultural environment. UNWTO also notes that ecotourism should be generally organized by specialized tour operators for small groups and that ecotourism activities should support the maintenance and conservation of natural areas used as ecotourism attractions through the generation of economic benefits to host communities, organizations, and authorities with ecological conservation purposes.

In the International Handbook on Ecotourism, it is stated that the benefits of ecotourism fall into three main categories: the environment, local communities, and participating tourists (Ballantyne and Packer, 2013). In the handbook, it states that ecotourism provides environmental protection through the provision of economic incentives for conservation and the generation of funds required to implement conservation plans.

Furthermore, the handbook states that ecotourism facilitates the protection of traditional and indigenous cultures in and around the ecotourism destination and develops the visitors' cultural and environmental awareness, appreciation, and respect. As ecotourism strives to provide employment and income for local communities, thus, in theory, it helps to alleviate poverty and aids in sustaining the well-being of local people. Ecotourism, however, does not only promise benefits. Poorly managed ecosystems can lead to increased exposure to natural hazards leading to landslides or flash floods. However, the sustainable management of the ecosystems will help improve the economic, social, and environmental conditions.

Returning to DRM, ecotourism is one of the initiatives implemented in long-term recovery efforts, long-term development plans, and reconstruction, as it can play a crucial role in human security and poverty reduction. Moreover, ecotourism if sustainably managed can provide other ecosystem services such as "regulation and provision services" enabling ecotourism to be a tool for disaster mitigation similar to Eco-DRR, but with the additional feature of job and profit generation ideal for the local economy and community in and around the ecotourism site.

Given the details on the possibilities and the use of the ecosystems, particularly ecotourism in DRRM, it is worth factoring in the involvement of the different climate change and DRRM policies in crafting the tourism policies, specifically ecotourism. Furthermore, this can be studied within the Philippine context.

The Philippines is one of the most disaster-vulnerable countries in the world as well as one of the most biologically diverse making it a good subject to explore. In being so ecologically diverse, the country is inevitably driving development of the tourism industry showcasing its natural beauty, despite disaster vulnerabilities.

This study aims to identify the different policies created by the government that relate to climate change, disaster, and tourism, specifically ecotourism, and identify whether the vulnerability of the country to disasters has been factored into the crafting of ecotourism policies. This study specifically looks at the different policies of the aforementioned themes mandated between 1990 to 2015. Furthermore, it mainly utilizes information from primary data that are the policies and laws from the national government. Desk review and frequency text analysis are conducted to identify the references to disaster management in various tourism policies and laws.

II. Climate Change and Disaster Risk Reduction and Management Policies in the Philippines

The development of DRRM and climate change policies emerged as early as 1970 when the Philippines was hit by typhoon Joan. In that year, the National Disaster Control (NDC) was established. NDC was mandated to track the aftermath of disasters. However, in 1972 its functions were transferred to the Office of Civil Defense (OCD) and NDC was abolished. In the same year, Presidential Decree No. 1566 was mandated. The decree aimed at strengthening the Philippine Disaster Control and it also mandated the creation of the NDC Council that served as a focal organization for DRRM during that period. NDCC was headed by the Secretary of National Defense. Together with the creation of the NDCC, the regional, provincial, and local coordinating councils were also established. However, after the policy in 1978, the evolution of DRRM and Climate Change policies became stagnant, only regaining attention during the 1990s.

In this section, the different rules, regulations, and policies in disaster management and climate change between 1990 to 2015 will be discussed.

Long after 1978 came the development and mandate of the Republic Act (R.A.) No. 7160 in 1991 or the Local Government Code (LGC) of 1991. The LGC enabled the Local Government Units (LGUs) to access 5% of their estimated revenue from regular sources for the occurrence of disasters and calamities provided that the office of the president/ the president declared the LGU to be in a state of calamity.

In 1992, the earth Summit or the United Nations Conference on Environment and Development (UNCED) was held in Rio de Janeiro where Agenda 21 was created. The Agenda is a non-binding action plan of the United Nations towards sustainable development. Agenda 21 recognizes that sustainable development is primarily the responsibility of governments that requires the creation of national strategies, plans, and policies. In the Philippines, as a response to Agenda 21 the Philippine Agenda 21 (PA21) was created. This consists of the principles of unity, the action agenda, and the implementation strategies towards a sustainable development. The PA21 has a vision of providing the Filipino people with a better quality of life through the development of a just, moral, creative, spiritual, economically vibrant, caring, and diverse yet cohesive society. The action plan focuses on strategies responding to social issues such as poverty reduction, social equity, empowerment and governance, peace and solidarity, and ecological integrity.

In 1996, R.A. No. 7160 or the LGC of 1991 was amended to enable LGUs to better utilize government funds. The LGC of 1991 was enacted into law via R.A. No. 8185 and was amended such that 5% of the estimated revenue from regular sources would be set aside as annual lump sum appropriations for relief, rehabilitation, reconstruction, and other works or services in connection with disaster and calamities that may occur during the budget year. The funds, however, are limited to the use of the LGU within its municipality/city affected by a disaster or calamity as determined and declared by the LGU. The amendment also includes a restriction on the utilization of funds in fire related disasters and calamities for relief operations.

In 1999, R.A. No. 8749 or the Philippine Clean Air Act was mandated. The law includes the creation of the Air Quality Improvement Framework that monitors and set standards for greenhouse gas emissions which increased the global temperature. The policy was created and implemented by the DENR together with the LGUs, NGOs, POs, and academia. The Integrated Air Quality Improvement framework aims to monitor and set standards for greenhouse gas emissions that increase the global temperature.

In early 2000, there were several policies and programs that were developed in the Philippines relating to DRRM and Climate Change. In 2004, Executive Order No. 320, S.2004 was mandated. It is an adaptation of the United Nations Framework Convention on Climate Change (UNFCCC) Clean Development Mechanism whereby projects are implemented to prevent or absorb GHG emissions. Executive Order (E.O.) No. 320 designates the Department of Environment and Natural Resources (DENR) as the national authority for the Clean Development Mechanism.

In 2005, the NDC council created a Four Point Action Plan focusing on the prevention and mitigation of disasters. The first action plan is the upgrading of the forecasting capability of cautionary agencies, particularly the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)

and the Philippine Institute of Volcanology and Seismology (PHIVOLCS). The second action plan is intensifying public information and education campaigns on disaster preparedness. The third action plan is enhancing capacity building of local chief executives and disaster coordinating councils. The fourth and final action plan is strengthening mechanisms for government and private sector partnerships.

The Philippines signed the UNFCCC on June 12, 1992 and was ratified on August 2, 1994. The country also signed the Kyoto Protocol on April 15, 1998 and was ratified on November 22, 2003. Being ratified to both, the country has realized the urgency in addressing issues on climate change, including the mitigation of impact and adaptations to effects leading to the creation of administrative order no. 171 in 2007. The administrative order creates the Presidential Task Force on Climate Change (PTFCC) that is comprised of the secretaries of DENR, Department of Energy (DOE), Department of Science and Technology (DOST), Department of Agriculture (DA), Department of Interior and Local Government (DILG), and two representatives from the private sector/ civil society.

In 2009, R.A. No. 9729 or the Climate Change Act of 2009 was mandated. This policy establishes the creation of the Climate Change Commission, a national government agency attached to the office of the president. The commission is the sole policy-making body of the government that is tasked to coordinate, monitor, and evaluate the programs and action plans of the government relating to climate change. The Philippine president serves as the chairperson of the commission, and three commissioners are appointed by the president, one of which will serve as a vice-chairperson. The Climate Change commission has an advisory board that is composed of 23 different secretaries from various local government agencies.

In 2009, the Strategic Action Plan for Disaster Risk Reduction (SNAP) 2009–2019 was developed. The SNAP pursues the strategic goals of the Hyogo Framework for Action (HFA) that is the first plan to explain and describe the work details required from all the different sectors and actors to reduce disaster losses. The SNAP also emulates the four-point action plan of the NDC Council. The NDC Council is based on two guiding principles. In the first principle, DRRM is directly linked to poverty alleviation and sustainable development. The second principle entails the participation of various stakeholders in order to mainstream DRRM into the relevant sectors in society.

In 2010, R.A. No. 10121 or the Philippine Disaster Risk Reduction and Management Act of 2010 was mandated. The policy aims to strengthen the country's disaster risk reduction and management system, providing for the national DRRM framework and institutionalization of the national DRRM plan. In R.A. No. 10121, NDCC was reformed and changed to the National Disaster Risk Reduction and Management Council (NDRRMC) that is composed of 36 national council members. The R.A. called for the creation of the National Disaster Risk Reduction and Management Plan (NDRRMP) 2011–2028. The NDRRMP covers four thematic areas: disaster prevention and mitigation, disaster preparedness, disaster response, and disaster rehabilitation and recovery.

In 2012 R.A. No. 10174 or the People's Survival Fund was passed into law amending the Climate Change Act of 2009 with the incorporation of the climate finance feature focusing on climate change adaptation. The People's Survival Fund is a special fund from the national treasury that is used for financing adaptation programs and projects based on the National Strategic Framework.

In 2014, E.O. No. 174.s2014 was mandated with the establishment of the Philippine Greenhouse Gas Inventory, Management, and Reporting System (PGHGIMRS) aiming to institutionalize the greenhouse gases inventory management and reporting system in different government agencies. The rationale behind the creation of the PGHGIMRS is for the country to be able to transition towards a climate-resilient pathway for sustainable development. The system is mainly responsible for providing guidance and direction in the accounting and reporting of greenhouse gas emissions.

The Philippine government developed a combination of 13 rules, regulations, and policies regarding climate change and DRRM from 1990 to 2015. The policies have greater focus on the establishment of government agencies to handle and manage climate change and disaster management issues from the national to the local level. Furthermore, the policies also focus on the provision and allocation of calamity funds for municipalities and cities as well as climate financing. In terms of coordinating disaster management in the country, the NDRRMC has been delignated where the Department of National Defense (DND) serves as the secretariat and the executive arm. In the event of a disaster (before, during, and after) there are different governmental agencies that support the NDRRMC. DOST leads the efforts in the mitigation of disasters. DILG leads the efforts in disaster preparedness. The Department of Social Welfare and Development (DSWD) leads in disaster response and the National Economic and Development Authority (NEDA) leads in disaster rehabilitation and recovery. Apart from the national agencies, there are also regional and local DRRMCs.

Policies regarding disaster management and climate change are also mainly inspired and adopted from international treaties such as Agenda 21, the UNFCCC, and the Hyogo Framework for Action but are driven by the national governments' increasing concern about disaster management and climate change issues in the country.

III. Tourism Policies in the Philippines

In the Philippines there are more than 160 rules, regulations, and policies concerning tourism listed in the portal of the Department of Tourism (DOT). However, there are very few specific ecotourism policies, rules, and regulations. This section focuses on the identification and discussion of the different rules, regulations, and policies in tourism, specifically ecotourism.

The first reference to ecotourism in Philippine law was in R.A. No. 7586 or the National Integrated Protected Areas System (NIPAS) Act of 1992. In the NIPAS Act, protected areas are defined as "identified portions of land and water set aside by reason of their unique physical and biological significance, managed to enhance biological diversity and protected against destructive human exploitation" (NIPAS Act, 1991). The NIPAS act provides for the establishment of buffer zones and other multiple use zones including ecotourism sites in protected areas. In the zoning of protected areas, it has been recognized that tourism contributes to the ecosystem protection, development, and management. As stated in the NIPAS Act, tourism activities, particularly ecotourism activities, are permitted in "recreational zones" that are stipulated to provide benefits to residents and enable visitors to appreciate the beauty of nature (NIPAS Act, 1991). The NIPAS Act has also initiated the restructuring of the DENR creating a Protected Areas and Wildlife Bureau

(PAWB) tasked with formulating policies and guidelines for the establishment and management of an Integrated Protected Areas System.

In 1999, E.O. No. 111, the first policy in the Philippines to focus on ecotourism, was mandated. The E.O. establishes the guidelines for ecotourism development in the Philippines and states that the development and promotion of ecotourism in the country are viable and sustainable activities that will promote the protection of the environment while contributing to economic development. The E.O. has a joint memorandum circular designating that DOT and DENR work together in the development of the ecotourism industry in the Philippines. Furthermore, E.O. No. 111 has enabled the creation of the National Ecotourism Development Council (NEDC) with the National Ecotourism Steering Committee (NESC) and the Regional Ecotourism Committees (REC) aiming to effectively implement programs and activities. The NEDC serves as the policy-making body for ecotourism and is composed of the secretaries from various government agencies such as DOT, DENR, DILG, Department of Trade and Industry (DTI), Department of Finance (DOF), NEDA, and representatives from the private sector and non-government organizations while the NEDC is chaired by the DOT and is co-chaired by DENR.

In 1999, the rules and regulations governing the accreditation of ecological guides or eco-guides, eco-tours, eco-lodges, and eco-tour facilities were issued. In order to obtain accreditation, the DOT has certain requirements that include a valid mayor's permit and/or business license from the local government unit, a valid DTI business name certificate (for single proprietorship), Securities and Exchange Commission (SEC) registration certificate, and articles of incorporation and their by-laws (for corporation/partnership), articles of cooperation and their by-laws (for cooperatives), and a notarized list of the names of all officials and employees with office designation and quality. The DOT, however, may also require supplementary documents such as a working permit in the case of foreign employees. There are corresponding fees that must be paid in the accreditation process (see Table 1). In an eco-lodge, eco-tour operator, and eco-tour facility accreditation, an initial payment of 1,000php (≈20usd) is required and upon approval of the accreditation, an additional fee of 2,000php (≈40usd) will be paid. Furthermore, an additional cost of 100php (≈2usd) will be incurred for the sticker as proof of accreditation that can be displayed in the business offices. In the case of eco-guide accreditation, 500php (≈10usd) shall be paid initially and upon approval, a fee of 1,000php (≈20usd) will be paid. For issuance of an eco-guide identification card, an additional fee of 50php (≈1usd) will be incurred.

Table 1. Fees for Ecotourism Accreditation.
Note: The entire amount is in Philippine Pesos (50 peso ≈ 1 US dollar)

Ecotourism					
Type of Tourism Enterprise	**Classification**	**Accreditation Fee**	**Initial Payment** (Upon Filing of Application)	**Final Payment** (Upon approval of Accreditation)	
Ecolodge		3,000.00	1,000.00	2,000.00	100.00 (Sticker Fee)
Ecotour Operator		3,000.00	1,000.00	2,000.00	100.00 (Sticker Fee)
Ecotour Facility		3,000.00	1,000.00	2,000.00	100.00 (Sticker Fee)
Ecoguide		1,500.00	1,000.00	500.00	50.00 (ID Fee)

[Source: Department of Tourism, 1999]

There are several benefits of accreditations according to the DOT including the following: endorsement of embassies and travel trade organization/s for utilization of the establishment's facilities and services; eligibility for participation in travel fairs; priority given to DOT training programs; endorsement of international airports for the issuance of an access pass to qualified personnel (for 2-year accredited tour operators and accommodation establishments only); endorsement of the Commissions on Elections (COMELEC) for exemption from liquor ban during election-related events (for accommodation establishments and restaurants only); free online/print advertising in national dailies; and promotion of events on the DOT Facebook and other social media sites.

In the rules and regulations governing the accreditation of eco-guides, eco-tours, eco-lodges, and eco-tour facilities, the general advantage of accreditation is the protection and management of the environment, culture, indigenous knowledge, and practices. Specific advantages of accredited eco-tour facilities and eco-tour operators in the community and the environment are identified in the rules and regulations of accreditations. An accredited eco-tour facility would provide certain benefits to the community and the environment. Community benefits include employment opportunities for residents, the representative of the local community is formally asked about how the operation affects the community, and locally produced souvenirs and products will be made available. Environmental protection and conservation can also be achieved when an ecotour facility is accredited. The rubbish and garbage from visitors will be removed; physical, financial, or in-kind assistance for the rehabilitation of areas subject to negative visitor impacts will be provided; physical, financial, or in-kind assistance of facilities that reduce visitor impact will be provided; monitoring environmental impacts will be done; and research on visitor impacts will be conducted.

Eco-tour facility and eco-tour operator accreditation provide the same benefits to the environment. An accredited eco-tour operator would also provide benefits to the community and the environment. At least 50% of the staff will be hired locally within five years of operation. Residents will occupy key management positions in the operation. Regular monitoring will be undertaken on the impacts of ecotourism on the host community. Tangible support or partnerships will be extended to the local community. Discount access will be offered to the community such as school or other special interest groups. One or more residents will get access to free training for better employment, work experience for one or more local students, and more opportunities for women and marginalized groups. A staff from the DOT will attend community meetings, workshops, seminar or consultations, participate in local events, join local advocacy groups or civic organizations, and may also express support for community endeavors through letters or endorsements. For the community, a local network of suppliers will be developed that will stimulate the demand for local products expanding and creating local community enterprises.

In 2002, the National Ecotourism Strategy (NES) or E.O. No. 111 called for the formulation of the NES that is founded on a vision to advocate, foster, coordinate, monitor, and mobilize support for ecotourism. The NES also aims to identify key ecotourism destinations to be developed. Identifying the key ecotourism destinations requires a two-level evaluation. In the first level of evaluation a scoring system is used based on relative weights assessing ecotourism products based on natural and/or cultural features (35%), availability of ecotourism product/s (35%), and level of social/ political support (30%). The second level of

evaluation is priority-setting based on market demand and forecasted benefits to the community and visitors. Specifically, accessibility of the site from major international and domestic gateways and tourism flows (10%), current market demand from international and domestic visitors, including the potential appeal to these markets (30%), availability of visitor facilities and services (25%), local benefits accruing to the community through livelihood and employment opportunities (30%), and peace, order, security, and safety (5%). The selected sites are divided into four clusters representing four main groupings of regions that share a common major gateway.

In 2009, R.A. 9593 was mandated; it is the National Tourism Act of 2009. The RA mandates the DOT as the primary planning, programming, coordinating, implementing, and regulatory government agency in the development and promotion of the domestic and international tourism industry in coordination with attached agencies and other government instrumentalities. The R.A. also supports the establishment of Tourism Enterprise Zones (TEZ) that are to be the centers of tourism development in the Philippines. The Tourism Infrastructure and Enterprise Zone Authority (TIEZA) is mandated to designate, regulate, and supervise the TEZs established under the R.A., as well as develop, manage, and supervise tourism infrastructure projects in the country.

In 2011, the National Tourism Development Plan 2011–2016 was created. The tourism plan aimed to develop a highly competitive and environmentally and socially responsible tourism that delivers more widely distributed income and employment opportunities. The vision of the tourism plan is to become a must-do experience and more fun destination in Asia. The plan includes three strategic directions which are: to develop and market competitive tourist products and destinations, improve market access, connectivity, and destination infrastructure, and improve tourism institutional governance and human resources.

In 2013 Administrative Order No. 2013–19 or the guidelines on ecotourism planning and management in protected areas were developed. The order applies to ecotourism planning and management in protected areas under NIPAS. In the Philippines, there are several protected areas developing ecotourism business and activities. In the A.O., the process of conducting ecotourism activities in protected areas is explained. There are four phases in such process: site assessment, ecotourism planning, implementation, and monitoring and evaluation.

In 2013, the Gender Responsive Toolkit on Ecotourism Planning and Management was created. The toolkit is a result of the collaboration of the Philippine Commission on Women and the Protected Areas and Wildlife Bureau (PAWB) of the DENR. There are five guidelines: the first guideline is to determine the participation of women and men in the proposed project. The second guideline is to identify existing gender issues as well as possible related concerns that may arise (gender analysis). The third guideline is to design strategies that can address the identified gender issues relevant to a proposed/existing project. The fourth guideline is the data collection and demographics of women; women employment, incidence of violence against women (collect to help identify socio economic gaps). The fifth guideline is the establishment of enabling mechanisms and support systems to ensure that gender responsiveness is mainstreamed in local development planning.

In 2013 a new National Ecotourism Strategy and Action Plan for 2013–2022 was released. The goal of

the action plan is to have an environmentally and socially responsible ecotourism development that safeguards the integrity and diversity of its natural resources, provides education and enjoyment to visitors, and delivers larger and more widely distributed income and employment opportunities to the local communities and their constituents, especially the women, youth, indigenous people, and other vulnerable groups. The goal of the new NES will be achieved through its eight strategies. The first strategy is to develop and market diversified and competitive ecotourism products. The second strategy is to create a conducive environment for ecotourism investments. The third strategy is to maximize economic benefits for the host communities. The fourth strategy is to promote and develop a culture of ecotourism. The fifth strategy is to strengthen institutional capacity. The sixth strategy is to develop and strengthen partnerships. The seventh strategy is to establish mechanisms for sustainable financing. The eighth strategy is to monitor outcomes and impacts.

In 2015, a new National Tourism Development Plan was developed for 2016–2022. The vision and guiding principle of the tourism development plan is to develop a globally competitive, environmentally sustainable, and socially responsible tourism industry that promotes inclusive growth through employment generation and equitable distribution of income thereby contributing to building a foundation for a high-trust society. In 2015, the Tourism Guidebook for LGUs was also published. The guidebook is the result of the collaboration of DOT and the Japan International Cooperation Agency. It provides concepts, methods, step-by-step processes, and worksheets that will aid the LGUs in formulating their local tourism development plans (TDPs) with examples and supplemental readings on various tourism concepts and tourism planning.

Eleven rules, regulations, and policies have been presented and discussed. There are three pertaining to tourism in general, one pertaining to protected areas alone, one pertaining to ecotourism and protected areas, and the remaining policies that focus on ecotourism. Reviewing the different tourism policies in the country, ecotourism is the only tourism niche to have its own strategic and action plans. Conspicuously, however, ecotourism is rarely mentioned or discussed in the general national tourism strategy and action plans.

Despite the number of ecotourism destinations in the country, the guidelines in developing ecotourism destinations are mainly focused on protected areas and specific sites stated within the NIPAS Act. The principal agency in-charge of tourism is the DOT which is also in-charge of tourism accreditation. The national agencies involved in this development in the protected areas are the DOT and DENR. Again, conspicuously, despite the emphasis on the ecotourism niche among other tourism niches, there is no national ecotourism department nor an arm of the DOT that focuses on ecotourism. Moreover, there is no specific list of accredited ecolodges, eco tour operators, facilities, or eco-guides posted by the DOT. However, the DOT has published a general list of accredited tourism enterprises and tourism frontlines on their website (http://www.tourism.gov.ph/) consisting mainly of hotels that have been accredited.

Recent developments in ecotourism have materialized. Guidebooks have been published to guide LGUs on developing ecotourism businesses. Also, recent studies and guides on gender sensitivity have been produced for ecotourism developers.

IV. Incorporation of Climate Change and DRRM Policies in Tourism Policies in the Philippines

Identification of the different policies, rules, and regulations in disaster management, climate change, and tourism in the previous two sections provided awareness on matters at the policy level in the individual subjects. In this section, how and whether disaster management has been incorporated in ecotourism development are discussed.

In order to easily visualize the different rules, regulations, and policies in DRRM, climate change, and tourism, a visual timeline has been created (see Fig. 1). The left side of the figure shows the DRRM and climate change policies and the right side shows the tourism policies.

When discussing the incorporation of climate change and DRRM in tourism policies it is better to first understand the position of ecotourism in the general tourism policies and the involvement of tourism in the DRRM and climate change policies.

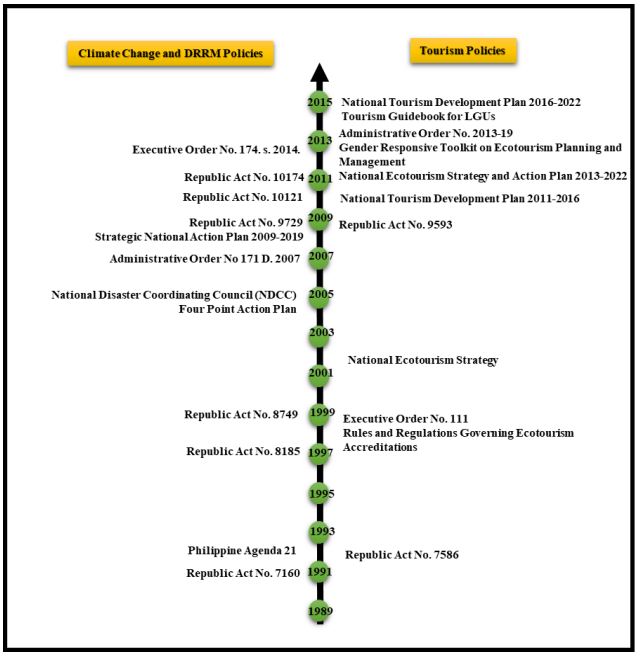

Figure 1. Rules, regulations, and policies in DRRM, climate change, and tourism in the Philippines. [Source: Compiled by the author]

Ecotourism in Tourism Rules, Regulations, and Policies

Ecotourism has its own strategy and action plan; however, it is still a subset of tourism. In locating ecotourism in the general tourism rules, regulations, and policies, it has been cited in the Tourism Act of 2009, NTDP 2011–2016, and NTDP 2016–2022.

In R.A. 9593 or the Tourism Act of 2009, ecotourism has been cited as one of its objectives. The objective states that the nation should develop responsible tourism as a strategy for environmentally sound and community participatory tourism programs, enlisting the participation of local communities, including indigenous people, in conserving bio - physical and cultural diversity, promoting environmental understanding and education, providing assistance in the determination of ecotourism sites, and ensuring full enjoyment of the benefits of tourism by the communities concerned. The R.A. also cites the jurisdiction overlap between the NIPAS and the National Ecotourism Policy stating that the DOT together with the

DENR shall identify areas covered by the NIPAS with ecotourism potential and cultural heritage value, and prepare policies, plans, and programs for their development, preservation, operation, or conversion into tourism enterprise zones. The R.A. also states that 5% of travel tax collections shall be held in reserve for the development of ecotourism sites in areas with strong tourism potential.

The National Tourism Development Plan 2011–2016 cites ecotourism multiple times. Furthermore, it states that the National Ecotourism strategy was reviewed prior to creating the plan in which it has been noted that DENR and DOT are collaborating on the development of ecotourism destinations in protected areas. In the plan, ecotourism is identified as part of nature-based tourism. The plan states the design and implementation of product development programs targeting ecotourism in 50 key natural heritage sites.

Although cited in all the general tourism policies, there is no elaboration of the role of ecotourism and its contribution to general tourism development. Nevertheless, the existence of specific ecotourism policies indicates the value in developing the ecotourism sector.

Disaster Management in Tourism Rules, Regulations, and Policies

In being vulnerable to frequent natural hazards and the continuous pursuit of its tourism industry, the country recognizes disasters as a threat to tourism development. However, the inclusion of disaster management in tourism rules, regulations, and policies has been limited. Among the tourism rules, regulations, and policies, disaster management has been cited in two, NES 2002 and the NTDP.

In the NES 2002, disaster is cited several times. In terms of disaster management, the NES states that the NDCC spearheads rescue operations. Meanwhile, it is stated that the support programs including disaster/ emergency management should be strengthened to enable the ecotourism destinations to be more attractive and competitive in the market. Another citation of disaster management is found in the program component of the NES. A desired outcome for education and advocacy is strengthening different programs including programs in disaster/emergency. In the NTDP 2011–2016, disaster has been cited, albeit only once. It states the recognition of disasters in the tourism sector as a threat to development.

In the National Tourism Development Plan, it should be noted that the nation recognizes disaster as a threat to tourism development. In the National Ecotourism Strategy, disaster has been cited as it being considered in the development of strategy programs and emergency management.

Tourism in Disaster Management and Climate Change Policies

The LGC of 1991 cited tourism twice in its Chapter 2 Section 17, basic services, and facilities. In the general powers and attributes of local government units, it states that municipalities should provide basic services such as “tourism facilities and other tourism attractions including the acquisition of equipment, regulation and supervision of business concessions, and security services for such facilities” while the province should provide “tourism development and promotion programs.” This means that there would be support from the LGUs in terms of tourism development.

In the Strategic National Action Plan (SNAP) tourism is cited three times. The first citation of tourism is in the discussion of the national government expenditure for DRR. An example of such expenditure in DRR is the DOT acquiring services from the Crisis Management Institute to provide training. In the priority

programs and projects under safety and well-being, enhancement tourism is cited, in particular, to conduct DRR capability building programs for key response and coordinating agencies of NDCC as well as for sector agencies including tourism. The SNAP also mentioned the integration of current DRR practices with emphasis on several sectors such as the tourism sector. In R.A. No. 10121, tourism is cited in Section 5 stating that the secretary of DOT is a part/ a member of the NDRRMC.

Despite the number of disaster and climate change policies, it is surprising that further involvement of tourism in disaster management and climate change councils is barely cited. Although DOT is indicated as a member of the NDRRMC its task was not specified. It is, however, recognized in SNAP that in the tourism sector there is a need to exert more effort to integrate DRR practices.

V. Conclusion and Recommendations

The Philippine Development Plan (PDP) of 2017–2022 focuses on the vision of "building a future where every Filipino enjoys a matatag, maginhawa, at panatag na buhay". In English it is building a future where every Filipino enjoys a stable, comfortable, and peaceful life. In the plan, tourism is cited three times. The first citation of tourism is on the promotion of Philippine culture and values, and one of the strategies is to establish historic and cultural complexes nationwide as hubs for cultural education, entertainment, and tourism. The second citation is the expansion of economic opportunities in industry and service through "trabaho at negosyo" (work and business) to increase foreign direct investments. One strategy is to strengthen value and supply linkage through the implementation of the medium-term National Tourism Development Plan. The third citation is under the expansion and development of sustainable resource-based industries including forestry, fishery, marine, and genetic resources. Ecotourism and cultural sites should be promoted and developed.

The government is giving attention to the tourism industry even though there are dedicated ecotourism policies, such as the General tourism policy that is R.A. No. 9593, National Tourism Development Plan 2011-2–16, and 2016–2022 that have no dedicated chapter or elaboration of the role or contribution of ecotourism in tourism development. It has been identified that one of the threats to tourism development in the country is disasters; however, there is very little linkage on disaster and tourism policies. There is no mention of ecotourism in disaster management policies even though the secretary of the DOT is a member of the NDRRMC. Disaster and emergency management is being developed as part of the tourism sector management. Disaster management policies on the other hand do not include and mention ecotourism. The aspects of ecotourism do not include the promotion and utilization of ecotourism as a strategy for disaster risk reduction and management; one reason for this is the late establishment of the NDRRMC.

At the national level, the government has been investing in protected areas and supporting its ecotourism developments. Furthermore, guidelines in ecotourism planning in protected areas have been issued. These developments have been brought about by many government departments and the treasury that considers protected areas to be a drain on the economy. If the protected areas are used for DRR, the cost of maintaining protected areas will appear more justifiable. According to IUCN, in virtually all cases, DRR from protected areas will be additional to other multiple benefits that protected areas bring to communities, such as from tourism, jobs, and other ecosystem services. The government is already investing in the establishment and

management of state protected areas for biodiversity conservation, recreation, and tourism. Additional incorporation within DRR strategies means that such state investment produces a wider range of benefits, which address the needs of more government departments, and is thus a more efficient use of tax revenue.

In a much broader sense, there are several ways to promote disaster risk reduction and resiliency through ecotourism. The members of the National Disaster Risk Reduction and Management Council (NDRRMC) and the National Ecotourism Development Council (NEDC) are similar. Thus, they can issue a joint circular or guidelines, applying disaster risk reduction management to ecotourism and/or making ecotourism as a strategy in promoting disaster risk reduction management in vulnerable but potential areas of ecotourism that would also lead to an increase in the resilience of the surrounding community. An additional area of DRRM and ecotourism integration is planning. A planning guideline could be issued that amalgamates DRRM in ecotourism planning (from site selection to design of amenities, even providing attractions on DRRM in the ecotourism areas). Another scheme is strengthening decentralization in ecotourism and DRRM concerns. This means enabling (or even expanding the powers and responsibilities) local government units to utilize their authority in promoting DRRM in ecotourism (or vice versa – utilizing ecotourism as a strategy in promoting DRRM and resiliency). Local chief executives (mayors and governors) as area managers in their jurisdiction can integrate these two concerns. Ecotourism and DRRM can also be integrated through regulatory measures. In formulating and implementing their comprehensive land use plan/ zoning ordinance and enforcing the building code and other related regulations (that affect ecotourism), disaster risk reduction and resiliency should be incorporated. This means building design, location, standards of construction, and materials, among others, should be considered. The last measure is through market-based instruments – ecotourism ventures that promote disaster risk reduction and resiliency should be able to obtain grants (matching and/or performance grants) through special funding from international or national organizations.

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(Joint Lecture with Taoyaka Program, Hiroshima University)

- On-site Training in Hiroshima, 2019.8.18 – 8.25
(Taoyaka Program, Hiroshima University)

- Group Work Practice V (Fall Semester 2019)

Van Gujjars' Awesome Handicraft: A Business Proposal

Marwa Ahmad

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1. Executive Summary:

Van Gujjaris is a semi nomadic community living in India, Pakistan and Afghanistan. Those constitute a population of some 300,000 people scattered in India, Pakistan and Afghanistan and their main economic activity has been in water buffalo breading for 1500 years.[1]

The Indian government and NGOs have had numerous attempts to rehabilitate them;[2] they provided them with housing and land as a means of livelihood besides selling milk.

However, the Van Gujjars have more to offer; since they've been nomadic for more than 1,500 years, overtime they have developed high-end manufacturing skills and innovative technics to attend to their life needs with minimum resources.

That is where we found an opportunity to capitalize on their existing professional handicraft skills to offer them another source of income. Handicraft manufacturing would serve as a diversification channel to their current source of livelihood.

[1] "Ethnographic Profile of the Van Gujjar," p.51. Retrieved from: http://shodhganga.inflibnet.ac.in/bitstream/10603/105307/11/11_chapter%202.pdf

[2] Seema Sharma, 2017. "Uttarakhand government making intense efforts for relocation of Van Gujjars from Rajaji Tiger Reserve," *The Time of India*. Retrieved from: https://timesofindia.indiatimes.com/city/dehradun/uttarakhand-government-making-intense-efforts-for-relocation-of-van-gujjar-from-rajaji-tiger-reserve/articleshow/60817911.cms

As a local business endeavor, Tiger Paw Inc., would help elevate their social capital in the Indian society through financial empowerment. It would also provide the necessary means for their kids to be registered in private schools for them to grow having additional opportunities that are not presently available to the Van Gujjar community.

2. Introduction:

Our vision in the startup that we aim to establish is to turn the Van Gujjars from a marginalized "backward community class" to an empowered and voice-full integrated social and economic agent. To market their ancient artifact technic as the pride of ancient talent that withstands the tests of time and fast consumerist fashion trends, all the while presenting lively patterns that never tire to please its customers of all ages.

The mission statement of our startup, Tiger Paw Inc., is: Creating opportunities, changing lives. As Tiger Paw Inc., will strive to engage with the Van Gujjars and provide them with the tools and capacity building needed for them to assume their lives the way they want it following a successful business model.

3. Background:

The origin of the idea for the business was developed during the University On-Site training to Dehradun in the state of Uttarakhand, India as part of a generic theme on "Nature conservation and forest dwellers' livelihood." As part of the educational aim of the on-site trip taking effect between March 9th and the 17th, we visited a number of sites, including Rajaji National Park and 3 different sites where the Van Gujjars live—a detailed account of which will be later described in due course.

The purpose of our trip was to explore livelihood means for a semi-nomadic tribe in India called the Van Gujjars, as earlier mentioned. It is since around 23 years now, that the Indian government is trying to rehabilitate them into a fixed property land and farm for them to integrate better in the Indian society and to have an alternative source of livelihood that is more stable and less environmentally demanding as resources become scarce and environmental changes occur glocally.

While there, and from extensive prior readings, we researched of their social, educational and economic struggles and presented at the end of our onsite, a business proposal related to their exploration of their best strength: their own talented handicraft abilities.

a. Van Gujjar community with limited mobility

The first site represented a Van Gujjar community that have been resistant to the governments' attempt at relocating them indefinitely but whose movement at the moment have been confined to a certain geographic area.

Among the reasons stated and read in literatures behind this social trench's unwillingness to move but to accept the limited physical movement they are bound by,[3] pertains to some feelings of distrust towards the government. As some believe that after their moving, they may fall subject to abandonment in case of further demands, if any.[4]

Another reason extracted from the analysis of a number of interviews conducted with family heads of household—either the available mother or father—among the visited families, pertains to their relationship with other Van Gujjar communities who have made the move and whose state didn't improve much from their current situation.

Some even expressed that they communicate with the Van Gujjar families who moved, and that the latter complain of being faced with new challenges, as confirmed by one of the heads of household who moved closer to the Urban city center, as will be described at a later stage. This negative feedback loop doesn't appeal as the best solution for this community of Van Gujjars who haven't taken the government's relocation plan yet.

b. Van Gujjar community living in the forest

The second village pertained to Van Gujjars who haven't abandoned their nomadic migratory traditions, who still rely solely on selling milk and herding water buffalos and other livestock.

The journey to reaching their location of residence in the forest is long and can only be accessed by foot or off-road motorbikes, which means that their dependence on the local market is lower than the previous Van Gujjars community we had previously interviewed.

With only a few resources and a relatively lower purchasing power than their Van Gujjar peers living closer to urban localities, this community is more conscience over the burden of buying a product and carrying it all the way home. Hence, they maintained ancestral knowhow of certain construction work, rope-making, kitchenware utensils and sewing technics. The below bed-base, for instance, is made using used plastic shopping bags and by dismantling gunny sack bags, whereas the food preserving pots are made of clay.

[3] Ibid

[4] Note: As per author's discretion, a detailed anthropological reading and observations of the sites and its dwellers, may follow the present report, in the form of a scientific paper to be published perhaps in the GRM journal.


This community seemed most self-reliant and prosperous when it comes to the number of livestock and geographic area of land residence. Moreover, each married descendent from the senior head of the family had a house and a number of water buffalo herd, but that were managed as one. This served as additional reason for this Van Gujjar community not to take on the government's offer for relocation.

c. Relocated Van Gujjar community

The third Van Gujjars residence we visited is that of relocated Van Gujjar tribes.[5] Those were clearly closer to the city urban centers and had better facilities when it comes to electricity and toilets as an infrastructure.

Their kids as well, had better chances attending schools, even though the latter are famously known to be skipping classes. Nevertheless, it's worth noting that kids did value education and believed it to be the way to "becoming somebody," according to one of the kid respondents who's around 12 years old.

Just like the former two Van Gujjar tribes, this community too excels at making some house appliances and furniture, however the raw product is bought from the market. Moreover, there were more younger kids observed than older teenage generations and young adults when compared to the former two Van Gujjar sites.

It is by visiting all three Van Gujjar localities that we saw the market opportunity in setting up the handicraft business we are pursuing: Tiger Paw Inc. Their attentions to details and the high quality of the end product they produce represents the essential value added of our product.

4. Business Proposal

To begin with, our short-term growth plan will start building on the Van Gujjars' existent technical skills. This will be the added value of our products as we sell accessories, handicrafts and apparel with a 1,500 old pastoral story. At this stage, the established company, will provide them with the raw material necessary for them to implement apparel designs that reflect their artistic communal values.

In terms of logistics, we took into consideration the limitation of female worker participation, therefore, the system we setup would deliver the necessary materials and collect them from Van Gujjar households, of course this applies to male Van Gujjars too since the pay will be per piece, as will be later detailed.

We figured that this model of decentralized production, would allow us to invest the initial capital in establishing points of sales in local markets and where there is tourist attractions instead of setting up a physical facility that would entail financial burdens.

[5] Seema Sharma, 2017. "Shifting of Van Gujjars from Rajaji Reserve begins," *The Times of India*.

That having been said, however, setting up a factory eventually may be considered at later stages, the more the business is able to reach planned goals.

As for the company's ownership and financial system of payments for its laborers, Tiger Paw Inc., is an incorporated company whose shareholders are responsible for its operation. However, Van Gujjar people can also buy stocks in the small enterprise to claim higher authorship and perhaps eventually take full control of its management.
Furthermore, the corporation will follow an equal pay scheme among gender, and monetary rewards will depend on the number of pieces produced per individual, regardless of age. Having said that, special rate will be awarded to skills so as to insure the encouragement of skilled workers and promote their abilities as a model to be followed by other craftsmen and craftswomen.

The first production phase will extend over a 3 months period as we aim to supply handicraft, accessories and apparel industry segments to the local market in Dehradun.
This phase will be complemented with a monthly assessment of the market, and the implementation of slight amendments or substantial pattern changes in the production line. Moreover, to keep our products as closely reflective of the local market demands, we will follow a feedback loop initiated with a local marketing campaign, on billboards and in major places of gathering, such as areas of worship. We also anticipate that our target will involve international tourists and to those we will provide yogic patterns with a spiritual message from the initial phase.

Finally, as every business venture, Tiger Paw Inc's areas of weakness lies in the ability of its leadership to find ways to convince the Van Gujjar community to participate in its business model and what it has to offer them. This is especially true, given that their skills will be the added value with-which we aim to sell our products with a convincing story. We plan to compensate for such by means of treating the Van Gujjar community as our partners since day one, whereby training schemes and capacity building programs will be held semi-annually to ensure that the Gujjar population develops their own skill set and business sense. Perhaps eventually leading some elements of them to venture solely when is presented by some spotted opportunity we failed to supply.

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Van-Gujjars
W Livelihood by Herbs

Deeb Alashgar

I. Executive Summary

1.1. Introduction

The study is an onsite training conducted in 3 villages of Van-Gujjar people under Rajaji National Park (RNP) which is spread over 820 km² and includes the Shivalik hills in the Himalayas, and three areas of Uttarakhand: Dehradun, Haridwar, and Pauri Garhwal. It also has three sanctuaries which are Chilla, Motichur, and Rajaji sanctuaries. In 1983, The Union government merged these three wildlife reserves into one reserve to become Rajaji National Park which is considered a second tiger reserve in the State after the Corbett Tiger Reserve. Now the government looking forward increase RNP to be 1150 km² [1]. The establishment of this natural reserve has several advantages in preserving nature but has a significant negative impact on the lives and livelihoods of Van-Gujjar people. In order to find out Van-Gujjar's problem, we visited the three villages namely, Kunaon-Chod Village, Chandi-Sout Village, and Gandhi-khata Village. Figure 1 shows the 13 districts of the Uttarakhand state.

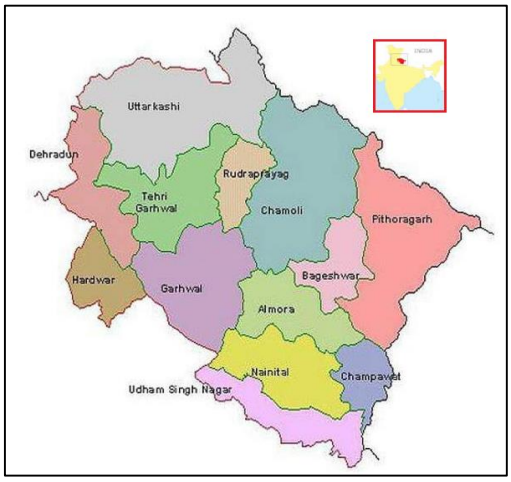

Figure 1 The map of Uttarakhand state [5]

During the onsite visits to the Van-Gujjar's villages, the conditions of the population, the level of education and means of living were studied. Significant differences in the level of education and livelihoods between the first two villages and the third village but in common all of Van-Gujjar's keep the nomadic lifestyle of the tribe. Consequently, they are defenseless against the change in natural which leads to poor conditions, low educational attainment, and diverse livelihood. Despite the establishment of the RNP natural reserve, there are still Van-Gujjars living within specified areas in RNP as shown in Figure 2.

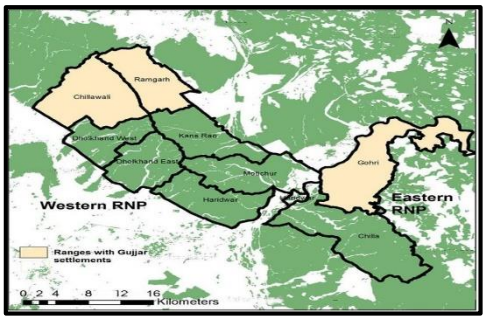

Figure 2 The whereabouts of the Van-Gujjars in RNP [6]

1.2. Summary of key findings

During surveying Van-Gujjar's villages, some of Van-Gujjars were interviewed by conducting householders survey randomly to collect information on the demographic structure of the Van-Gujjars such as the family size, age, gender, and education level of the family members, number of family members in the working age group, occupation, size of landholding for each family. In addition to information about the Van-Gujjar's society, legitimacy of residence, and livelihoods

Findings resulted from the three visited Van-Gujjar's villages are identified and summarized below.

1.2.1. The society

Van Gujjars are a simple rural, semi-nomadic tribe who have practiced transhumance for long periods among different eco-regions of the Himalayas. They were traditionally food gatherers who relied on the forests. Unlike the most other communities, the concept of the village structuring is absent amongst the van-Gujjars, and they build their houses inside the forest by construction style called 'Dera', which considered as the nucleus of the Van-Gujjar's society. Besides, Indian courts have not registered any cases against the Van-Gujjars [2] Figure 1 shows the building styles used in the construction of houses in Van-Gujjar community.

Figure 3 Dera style of building the houses of the Van-Gujjars

1.2.2. Legitimacy of residence

The government of India considers the Van-Gujjars as a group of cross-border nomadic tribes who settled in the country only 300 years ago [3]; Accordingly, they are not the owners of the land, but only beneficiaries of residence. However, the Government of India considers the Van-Gujjars as part of the Indian people. After considering the RNP area as a nature reserve, the residence of Van-Gujjars become illegal, So the government has sought to resettle them in other areas so that they will be distributed to emerging and organized villages in the Indian Civil Registry. On the other hand, Van-Gujjars have positive attitudes of for relocation if they have a safe and regular life such as providing livelihoods for them and education for their children.

1.2.3. Education

The semi-nomadic nature and the frequent mobility of the Van-Gujjars led to the difficulty of availability of places for education. Thus the Van-Gujjar's community is suffering from a severe lack of education which affected negatively on all aspects of their lives: most cannot read and write as well as do not follow the global development in the areas of food security and self-sufficiency which led to the difficulty of developing their livelihoods. So Van-Gujjars have shown that education comes as a priority after food security.

1.2.4. Livelihood

Gathering herbs and nutrients from the forest in addition to buffalo milking and selling mil are the most important sources of livelihood of Van-Gujjars. The average number of buffaloes per family is five buffalo. In addition to that, the semi-nomadic nature of the Van-Gujjars has made farming rare in the Van-Gujjar's region and has made them more dependent on collecting herbs and food instead of cultivation. Figure 4 shows the whereabouts of buffalos in the Van-Gujjar's areas.

Figure 4 The breeding of buffaloes in Van-Gujjar's areas

1.2.5. Health and treatment

The Van-Gujjar community does not have any knowledge of medicinal herbs and herbal remedies, so they are treated by nearby clinics and medical centers. They consider that health insurance is not a priority compared to food security. Figure 5 Shows Van-Gujjar's family is treated using medicinal treatment.

Figure 5 A Van-Gujjar's family is treated using medicine

2. Field Work Analysis

2.1. The current situation

Findings resulted from the three visited Van-Gujjar's villages are identified and summarized. The comparison between the Kunaon-Chod and Chandi-Sout Villages shows slight differences as shown in the following table1.

Table 1 Comparison between Kunaon-Chod and Chandi-sout villages

Comparison	Kunaon-Chod	Chandi-sout
Site Specification	Near the river and transportation	Far from rivers and transportation
Land's ownership	Government of India	Government of India
Home's Construction	No permission	No permission
Education level	None	Poor education level
Cultivation	None	low
Herbs knowledge	None	None
Livelihood	Milking and Collecting plants Food insecurity	Milking, collecting and cultivating plants

After this field visit to Kunaon-Chod and Chandi-sout villages, we visited the **Gandhi-khataVillage** which is within the civil organization of the villages established by the Indian government. The differences in the livelihoods and education levels between the last random villages and this village are distinctly evident. The residents of the regular villages use cement to build some of their homes but at the same time retain the fairly traditional building style, where the Dera style of their construction is clearly shown in their construction style with some modification using cement for building instead of wood as shown in Figure 6. Although the government of India has given people small pieces of land and permitted them of construction and agriculture on this land, people consider it as insufficient to meet their food needs and cannot be used as a source of income to meet other requirements and other things. In other words, those lands do not achieve self-sufficient for people.

Figure 6 The construction style of Gandhi-khata's homes

2.2. The Problems of the current situation

As usual, it is not possible to know the obstacles and problems facing people except the field visit, which is to investigate and analyze accurately and practically from onsite through interviews with residents and seeing the nature of their lives and discuss some officials in the region.

After the onsite visit of the Van-Gujjar villages and the nature reserve, it turns out that several problems are facing the Van-Gujjars as shown below:

- **Land limitation**

  Despite the positive attitude of the Van-Gujjars to be resettled in new places, but the government granted them small plots of land for housing; these lands are not enough for agriculture or any other uses besides the housing. This lack of space has led to the difficulty of the people to exploit the land in agriculture and others to improve their livelihoods.

- **Lack of knowledge of agriculture**

  The study of the effects of dependence on the forest by Van-Gujjar communities shows that Forest-dependent Van-Gujjars are suffering from a lack of knowledge of agriculture more than that who did not rely on forests for their livelihoods. In addition to the previous, the lack of education in the Van-Gujjars also leads to a lack of knowledge of the arts of agriculture.

- **Unsustainable income.**

  Van-Gujjars suffer from the problem of the scarcity of job opportunities which lead to unstable income and volatile socioeconomic situations.

- **Lack of knowledge of how to develop their livelihood**

  The ever-evolving societies can develop their livelihoods by having sufficient awareness of the ingredients needed to develop themselves, and the exploit of the surrounding resources, but in the case of the Van-Gujjars, they suffer from a lack of intellectual and scientific awareness necessary for the development of life because of poor education, lack of knowledge of agricultural and livestock production.

3. Objectives

To secure the economy of the Van Gujjar by Developing the Van-Gujjar's livelihood with a stable socioeconomic situation.

4. Methodology and Business Analysis

Developing the livelihoods of Van-Gujjars can be done through one of the following things:

- Obtain permission from the Indian government to give them government land more significant than the current land .This option is complicated and requires a lot of paperwork and transactions, not to mention that the success rate of approval of the Indian government is meager.
- Buying or leasing a large plot of land, establishing a private agricultural project and employing the Van-Gujjars as farmers. In this project. This idea facilitates the process of assisting Van-Gujjars, and on the other hand, does not require a lot of complicated legal procedures as in the above item.

4.1. Methodology

The project is based on the idea of establishing a company working on herbal cultivation and develop ways of marketing. To make the idea more clearly, Figure 7 illustrates the structure of the building company.

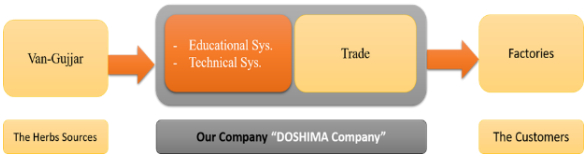

Figure 7 The block diagram of the Company

As shown in figure 7, the project is divided into three sections as follow:

- Sources of raw materials
- Consumers Analysis
- Our company

4.1.1. Resources

As mentioned in the above, the project is based on the idea of buying land and hiring Van-Gujjars as farmers in this land, so the Van-Gujjars will be one of the important elements in the process of providing raw materials for the company. As mentioned previously, the employment of Van-Gujjars in the land owned by the company is better in terms of legal procedures, but in the other hand it has another advantages and disadvantages as shown in table 2:

Table 2 Comparison between buying herbs and farming Herbs

Comparison	Buying Herbs	Buying Herbs
Cost of the business	Low	High
Secure the business's future	No	Yes
Resources control	No	Yes

Figure 8 summarizes the Herbs sources in a simple diagram

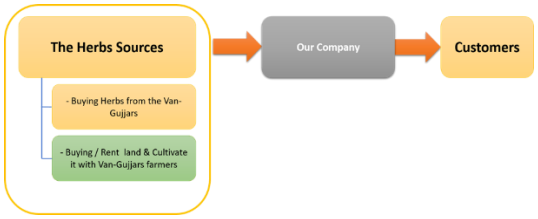

Figure 8 Diagram of the Herbs sources summary

4.1.2. Customers Analysis

Marketing is the most common obstacle that people are facing in their businesses because usually, their marketing strategies are not giving them the desired results sometimes the efforts are not bringing them the customers, clients or sales they desire.

Marketing concentrates on firms that ultimately sell to consumers (e.g., individuals, families). This type of marketing is commonly considered as Business to Consumer (B2C) marketing. However, on the other hand, there is another type of business which is businesses of providing products and services to other businesses. This marketing is commonly recognized as Business to Business (B2B) marketing;

Table 3 The comparison between the B2C and B2B marketing

	B2C	B2B
Buyers	more and smaller buyers	Fewer and larger buyers
Demand Type	Direct Demand	Derived demand
Impact of price changes	Elastic Demand	More elastic Demand
Marketing Dependence	On the Products	On the relationships
Point of Attraction	Brands	Quality

The comparison shown in Table 3 illustrates that do business to business marketing is considered the best in terms of cost and effort. In the case of the business to customer marketing, the company will be obliged to work factories to treatment the herbs before being sold as a final product to the consumer, which means that the company requires more establishment and operating costs, which means burdening the company with more costs that hinder its creation easily.

4.1.3. Company Analysis

Most people know the importance of investing for businesses to gain the most of their money and savings by putting money into guaranteed and solid investments grow steadily. This kind of thinking builds stability for the business. The business plan should critical ensure that future businesses' profits are secure and growing, even without new customers. Real estate is the best and reliable option for investors. The business plan must be convincing and reassuring to investors that they trust the project and inject their money into it smoothly. If the Business plan is done right and had a great idea for a business without capital, the support, and many business contacts can easily offer fund for the company. Figure 9 illustrates the company's block diagram.

Figure 9 The block diagram of DOSHIMA Company

Therefore, the Department of Investment Management is the first department in the company, which is structured into three administrative sectors as follows:

- **Education investments**

  Investment in the education and training of workers and farmers of Van-Gujjars is not profitable in the short term but is of strategic benefit. So obtaining professional and efficient trained workers that increase the speed of production and product efficiency and thus increase the company's future revenues. Despite the great benefit of the training of Van-Gujjars, it is more beneficial for them themselves to become more productive to improve their livelihoods. So the agricultural knowledge should be provided for Van-Gujjars.

- **Techniques investments**

  Investment in equipment and project infrastructure is essential in terms of making production more efficient and more productive. As the use of plow instead of manual tillage is a positive point in increasing the production of the project. Therefore, the provision of technology required for agriculture is very important and one of the most important ways to develop production and increase its quality

- **Farming land investments**

  Investing in land is sometimes unproductive and renting land is sometimes less costly and more beneficial to the project as it is in this project .Despite this, the land must be prepared in terms of fertilization and immunity from insects. In addition to the above should take into account the agricultural land should be close to Van-Gujjars villages as well as easy to commute.

Figure 10 displays a summary of the investments management in the DOSHIMA Company.

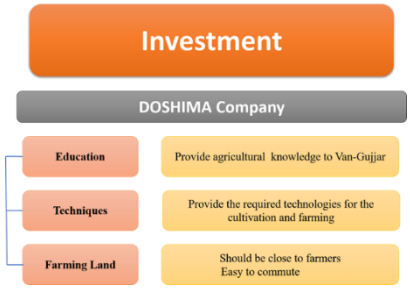

Figure 10 The Summary of the investment's management of the company

To have the investment we have three methods [4]:

- **Debt investments**

  such as loans, bonds, and mortgages

- **Equity investments**

  It is money invested in business through the acquisition of shares of companies. Generally, it refers to company ownership.

- **Hybrid investments**

  These investments help companies protect themselves from economic and financial risks in securities transactions, such as convertible securities, and preferred shares.

Trade is considered the cornerstone of any company which includes the following sections:

- **Supply/Resources Management**

  Resources Management is based on the control of types, quality, and quantity of cultivated herbs. Also, it includes the Department of Human Resources Management and the Department of Agricultural Production Improvement and Transportation Coordinator.

- **Demand Analysis**

  The perception of customer demands is a well-established methodology for the demand analysis of Customer Relationship Management (CRM) systems. Therefore; this section includes studying customer demand and anticipating future demand.

- **Trade Management**

  Management between resource management, demand analysis management to achieve harmony and inter-departmental coordination to obtain maximum organized teamwork.

Figure 11 summarizes the trading department in the company as a block diagram.

Figure 11 The block diagram of the trading department of DOSHIMA company

On the other hand, Marketing is another side of the trade, which is the art of dealing with customers to provide a large base of customers while keeping the satisfaction of former customers beside seeking new customers. This marketing should include marketing consultancy and market research. The essential tools that help the company to lead in marketing are the agreements and trade relations, advertising, and On-line Sale.

Table 4 summarizes what described above in Business Model Canvas.

Table 4 Business Model Canvas of DOSHIMA Company

5. Conclusion

This study is an onsite training conducted in 3 villages of Van-Gujjar people under Rajaji National Park (RNP) namely, Kunaon-Chod Village, Chandi-Sout Village, and Gandhi-khata Villages. After the onsite visit of the Van-Gujjar villages, it turns out that several problems are facing the Van-Gujjars which are lack of farming land, lack of knowledge of agriculture, their unsustainable income and the bad livelihood. The solution to this problem should be a sustainable solution. So the purpose of this study is to secure the economy of the Van Gujjar by Developing the Van-Gujjar's livelihood with a stable socioeconomic situation. It can be done by diversifying production away from food into the production of herbs "cash production such as medicinal herbs, increasing food and Herb production Based on scientific recommendations, making good marketing work for the livelihood-security, moving away from the vulnerable livelihood into strategical livelihoods.
The principle of dual development is the most efficient and successful in the development of society. So, the idea of our project is to have two ways of benefits for the company and the Van-Gujjars to make a sustainable development.

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Amazing Van Gujjar Handicraft Industry
A proposed business model of the amazing handicraft for promoting commercial trading in the market

Mohammed Awad Hajjaj

Abstract

The problem of the conflict between nature preservation and development is considered for nomadic people. Three on-site visits at Uttarakhand were for the nomadic people to promote a business model for surviving and livelihood. Van Gujjar is a nomadic and big Muslims community who are living without roads, and electricity, and no fixed addresses as well. Van Gujjar is transhumance pastoralism in the newly formed state of Uttarakhand. They migrate seasonally between the forests and the pastures on the mountains. Some Van Gujjar people accepted to move to the place that the government prepared with Rajaji National Park establishment.

The current situation of Van Gujjar people that they feed buffalo and sell milk, undereducated, building skills retained from ancestors. However, they can make beautiful handicrafts to meet the needs of their lives. They have the skills to apply their ability to new products, so that they can make a lot of beautiful handicrafts and sell it in the market or for whom interested people in to get money for their livelihood.

Van Gujjar people don't have to ability to run any business in the market due to the education and lack of experience to understand more the market and any business skills in the market so that the purpose of the on-site visiting is to run a small startup company to promote the beautiful handicrafts in the market. The small startup company can help and hire the Van Gujjar people to make more handicrafts and sell it in local or on the internet. The main sociality goal of the project is to help Van Gujjar to take part and take part in society, and to get more survive for their needs in the daily life by using their skills in making the handicraft.
Van Gujjar is a part of the society, and they have the owned culture and style and the needs as well. They have a lack of education, material but they have talented handmade products, so they can participate in society with their talented products, and speak loudly about their needs for all other societies.

Index Term—Van Gujjar, India Uttarakhand, Rajaji National Park, Handicrafts, Business Model.

1. Introduction

The Indian government and the non-government organizations have different plans to protect the national areas and for releasing the eco-development programs. Eco-development is an approach for community participation. There are different phases of eco-development program in India. Most of the programs have different problems because the programs have some fragmented activities with no long-term planning, or it is small and micro planning due to the lack of resources. However, some programs have the parts more organized with a focus on livelihood, participation and institution building and looking at the next minority generation of people for sustainability (Gooch, 2004).

The people who are moving from the place to another place, are looking for the convenient place that they can make life activities for settling, cultivating, and trading as well. Therefore, the eco-development program set some rules to protect the area or realize the balance between the development and the conservation activity and people using resources within the area, especially with pastoral nomadic tribes. Nomadic people do not own any land and build the permanent structures, so their lands retain relatively unaltered nature condition.

The eco-development program has taken part in the development to improve the livelihood for those who are living around the place. In India, there are many ethnic groups who are living in different levels in ethnic groups and tribes. They are collecting daily life by their way for surviving and moving from place to another place in looking for a safe life and surviving. Var Gujjars have been a vibrant ethnic minority of India. The Van Gujjars are living in ethnic groups of nomadic water buffalo herders as well. They live in the wilderness and in the jungles and mountains grazing their livestock on the vegetation. They occupy marginal lands because the better-favored environments are almost occupied by settled permanent agriculturists. Therefore, there are some limitation for the Van Gujjars to do any job due the lack of the experience, and no education and limited resources (Harihar, Verissimo, & MacMillan, 2015).

However, the culture market is not stable in India as there are many culture lifestyles for religious, ethnic groups, people, herbs, handicrafts, and Indian lifestyle. The beautiful Van Gujjars handicrafts are one of the products that are not stable in the market because it is handmade, and there are no two products look exactly the same, so the ideas come from the nomadic lifestyle (Onstie Training, 2019).

In this report, a business model has been proposed to run a startup company for promoting the Van Gujjars amazing handicraft industry. The amazing handicraft industry is a small part of the culture exhibition for the Van Gujjars lifestyle.

1.1 Objectives

The main sociality goal of the project is to help Van Gujjars to take part and participate in society, and to get more survive for their needs in the daily life by using their skills in making the handicraft. The sub objectives of the project are to run a small startup company to promote the beautiful handicrafts in the market; and to hire the Van Gujjars in the production process for making the amazing handicrafts industry. Firstly, the target group of the proposed business model is the Van Gujjar people at Uttarakhand, India. Then the people who has the skills to make professional handicrafts products will be the specific target of the proposed business model.

1.2. Methodology

About the methodology to get data from Van Gujjars, questionnaire survey and interviews were carried out among the Van Gujjars inside Rajaji National Park. Then, three onsite visits were to different areas at Haridwar district of the Rajaji National Park in Uttarakhand as a case in point. The purpose of the onsite visits to hold some interviews with the Van Gujjars and the nomadic people to know more about their situations and to get closer more in their life.

2. Background

The origin of Van Gujjars is traced to the north of India and the Tibet area as well from the from the Gujjars community. From history in late 1980, Van is added to Gujjars to distinguish themselves from the other Gujjars in India. Van means the forest, so that Van Gujjars are the forest Gujjars based in the Indian culture (The Van Gujjar Migration, 2019).

Van Gujjars are living in most of northern India and they are a very large and ethnically diversified population, the pastoral Van Gujjar people in this particular area are all Muslims and constitute a rather homogenous, specialized community based on the production of buffalo milk from pastoralism in the state forest (The Van Gujjar Migration, 2019).

Each Van Gujjar settles into base camps, often in the same spot for many seasons in a row. They might be a few hundred meters or perhaps a kilometer away from their nearest nomadic neighbors. They have their huts of sticks and mud, and they roam over gnarled sedimentary topography, through a tangle of deciduous trees and shrubs, feeding their buffaloes on the abundant foliage (Gooch, 2004).

Van Gujjars heavily rely on an economic system based primarily on animal husbandry. The primary resource of the Van Gujjars is livestock and as their territorial rights are confined to marginal environments, it is imperative for the community to move seasonally in order to ensure adequate grazing and water for the livestock (The Ban Gujjars - Children of the Forest, 2019).

In a part of the eco-development programs with Rajaji National Park establishment, some of Van Gujjars accept to relocate to place that the government prepared near the forest. They seasonally migrate between forest at the foothill and pasture land up in the mountain. Their traditional livelihood is feeding buffaloes in the way of nomadic pastoralism. The Van Gujjars adapt to using the major part of milk production to sell for dealers on way back to the foothills (Anmol Jain).

Van Gujjars use the medicinal herbs or plants as tradition continued by ethical and local communities for healthcare and household remedies. They have a fairly good knowledge of the various diseases that their buffaloes (Nusrat, Pattanaik, & Farooquee, 2011). The Van Gujjars people don't have any level of education which affect them in their life. They sent their children to the private school to learn the basic language and activity of life in a short time. They get the experience from each other by teaching them the knowledge they got from their ancestors (Onstie Training, 2019).

In previous resettlements, Van Gujjars have returned to the forest due to the lack of the support to assist their adaptation to a sedentary agricultural way of life and many Van Gujjars simply ended up leasing their land to enterprising farmers from adjoining areas and sending their livestock to graze in forest areas (Harihar, Verissimo, & MacMillan, 2015). Currently, Van Gujjars have no money to use it for business, and they don't have enough experience to successfully adapt for the agriculture, so they get the food by selling the products from the milk which they get from their buffalo animals (Gooch, 2004) (Harihar, Verissimo, & MacMillan, 2015).

Van Gujjars relate to their buffaloes as much more than mere resources as family members, naming each one and caring for them with genuine devotion. The buffaloes are the main sources for the Van Gujjars to get the food every day, so when they are losing one of them, they are feeling with the loss is more personal than financial.

2.1. Geographic

India, country that occupies the greater part of South Asia. It is a constitutional republic consisting of 29 states, each with a substantial degree of control over its own affairs; 6 less fully empowered union territories; and the Delhi national capital territory, which includes New Delhi, India's capital, as shown the (Maps of India, 2019).

Figure 1: India map, and Uttarakhand map.

Now, there are many Van Gujjars are living in Uttarakhand, in the Dehradun district and the Haridwar district in close the Rajaji National Park, the west and north part of Uttarakhand, as shown in Figure 2. Some of them are moving from the north of India to Haridwar and living in tribes around Rajaji National Park.

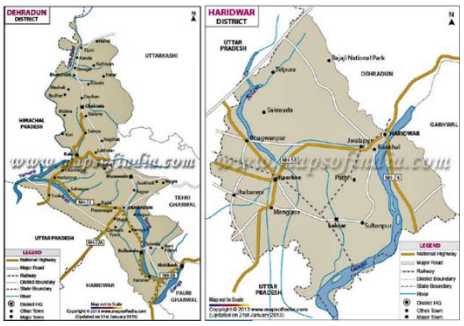

Figure 2: The Dehradun district and the Haridwar district map.

2.2. Census Data

Van Gujjars numbers around more than 2 million people according to the last census in 1931 in the different location of India in special Uttarakhand, and along the Himalayas. Van Gujjars and Hindu Gujjars are the same, but there is relatively unknown in relation between the tribes.

2.3. The Current Situation of Van Gujjars

Van Gujjars are a small community and they are living in tribes with livestock. They get and earn a living by selling milk and other dairy products. They are totally pastoral and unmoved by the desire to either hold or cultivate the land. The life of the Van Gujjars is becoming from the nomadic lifestyle with unstable locations. They are living far away from the center of the city, so they are moving with the livestock in searching for their livelihood. Van Gujjars live in a scattered temporarily erected huts, made from forest materials for both winter and summer pastures in the interior of the forests, as shown in Figure 3.

Figure 3: Van Gujjar houses.

The majority of Van Gujjars are semi-nomadic, forest-dwelling and cattle-herding Muslim. Van Gujjars and their socio-political, economic and educational advancement, and how they themselves are struggling to fight for their rights in some pockets. Their origins, relations with traditional Islam and religious worldview remain largely shrouded in mystery (Anmol Jain).

Van Gujjars people was a non-literate, not very well known as they have a private special school for their kids. The pastoral people are living with their herds at the periphery of local Indian society. Socially and politically marginalized and heavily exploited by both forest officials and middlemen, they appeared to have all odds against them. Historically, the Van Gujjars have been suppliers of dairy products in the region, but in spite of new market possibilities for such products in the fast-growing urban. They use the revenue getting from selling the milk to buy some daily foods from the market. Most of their food depends on the vegetables as it is not expensive to get vegetables for the livelihood (Nusrat, Pattanaik, & Farooquee, 2011).

The Van Gujjars as they are ethnic groups and living in tribes, they are living in the lowest level of life in society. Most of their houses are built without good infrastructure for electricity and water, and no roads. They used some batteries and solar panel to get the electricity for the light and use the water pump to get the water from the ground for drinking or washing or feeding the animals. They have nothing for a clean life as they are living with the buffalo, and using the normal way for cooking and the natural medicine for surviving or covering the bodies. They are too low of the under educated as they cannot read and write well. They are vegans, and they get the vegetables from the market near their houses or from the farms by exchanging the milk sometimes or selling it for the people. They do some activities in their free time, and practice religion or visiting and reaching each other in groups. They have owned their beautiful nomadic life, and they don't get the experience to do any business activity in the market (Harihar, Verissimo, & MacMillan, 2015).

Van Gujjars make sometimes in the free times amazing handicrafts. The handicrafts become from the nomadic lifestyle. They have the ability and the capacity to make exactly what they need in a professional ready-to-market standards for example the beds, small chairs, circular tables made of tires. They get and built their skill retained from ancestors (Onstie Training, 2019).

Figure 4: Amazing Van Gujjars handicrafts.

3. The Proposed Business Model

In this section, a new solution proposed to help the Van Gujjar community for surviving and participating in society. As shown in Figure 5, a third-party needed is to make the relationship between the Van Gujjar community and Indian society.

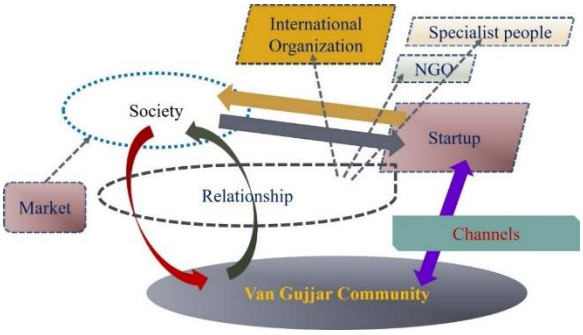

Figure 5: The proposed solution of helping the Van Gujjar community.

Whatever the international organizations and the non-government organizations or NGO are a solution to make a relationship between Van Gujjar community and the Indian society, but the international organizations or NGO have different goals to work in the society. The organizations work for research and development, and not for business. The goals are depending on the public policies for the government or the party that they belong to, so it might not be a good proposed solution in a short time.

In another side, the specialist people are one of the proposed solutions as well to make a relationship between Van Gujjar community and Indian society, but not for many people or big community to take part in the business or the markets. The specialist people might be a business person in a short time which will lead to making a body for the law or running business. Another problem for the specialist people that they will have in Indian society to make tax or insurance system, and the behavior of customers as it will take time to

build the trust between the producers or sellers and clients or customers.

So far, the best solution to activate the Van Gujjar community might be the running a new startup company. The startup company will be the third-party and the channel to the society for the Van Gujjar people. However, the startup company including the specialist people as well have the skills, and they can understand the needs of the society, and how to run the business the right way, so the startup company can go deep inside the markets, and open new channels or markets in the society.

On the other side, the startup company might be the channels for the Van Gujjar community, and they can hire the human resources from the Van Gujjar as they have the skills to make amazing handicrafts for people. Then Van Gujjar community can sell their products for the startup company, or the company can manage the products for the Van Gujjar people and sell it in the market. Van Gujjar people can find the startup company as a gateway to communicate with the Indian society.

3.1. Launch A Startup Company

One of the best solutions to promote a commercial trading in the society is a small startup company. The small startup company can be the bridge to make the relationship between Van Gujjar community and Indian society. However, the startup company can promote and do the commercial trading of the handicraft products, not only in the domestic market, but also in the international market using different gates and ways.

Whatever, the startup company can have an initial plan to build a success story with Van Gujjar people. A good plan including strategic marketing plan and financial issues are the main factor to build a success story in the society for the first business trading to work with Van Gujjar people.

1. Initial Management Plan

Whatever, the startup company can have an initial plan to build a success story with Van Gujjar people. The proposed plan for the startup company is shown in the next Figure 6 below which is the basic platform to run the business of the startup company.

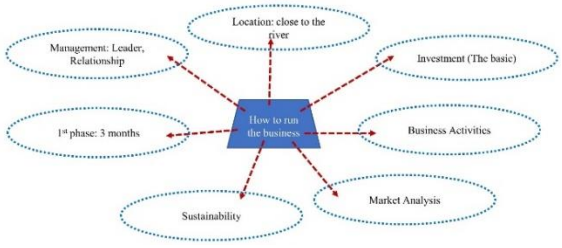

Figure 6: The initial management plan of the startup company.

In this plan, the management plan will be in three months for the first phase of running the business. The goal of this short first plan is to prepare the business and start to make a good success story for the Van Gujjar. Then, the proposed startup company can make a link between the Van Gujjar community and society.

The startup company consists of a small store or shop in close the center of the city which the company can communicate with Van Gujjar easy. The site of the shop will be in the center of Haridwar district in close to Rajaji National Park or the river of the city. This site is easy for the Van Gujjar people that they can come to get the daily food and communicate with people. On another side, this location seems like attraction tourist area for people who travel around India and Uttarakhand, so many people come to this area for the sightseeing and get a little about the traditional area and culture of Indian society. The shop in this area likes an exhibition for the handicraft industry and nomadic culture that come from Van Gujjar people. However, the shop will register in the district hall which is easy to reach for all.

Whatever, the proposed company will start in the first plan with three people to work in the staff for the management, relationships, and marketing. The company will get all products from Van Gujjar people in two ways: the first way, they will collect all handicrafts that the Van Gujjar people have already made and sell it in the market or the second way the company targets a few groups of Van Gujjar people who have the skills to make the handicrafts and sell it the market. The main purpose of the first plan is to make a success story of the Van Gujjar people in the market so that all marketing plans and financial issues will be considered in the first plan.

2. Marketing Plan

In the marketing plan, the startup company have some strategies to work with Van Gujjar people. The marketing plan for the fist phase of lunching the business is knocking the door of market, and promoting the handicrafts products and getting the feedback from the customers.

At first, the startup company will make a brief feasibility study of the products. The feasibility study will consider the material of the products and the quality as well. The company will collect the handicrafts from Van Gujjar people and check the quality in matching the market needs. Then, the company will ask the Van Gujjar people to improve the products based in the criteria, so in this case, the company will offer the good material for the Van Gujjar people as needed.

However, the Van Gujjars have the skills, and they have some good and nomadic products, then the company can collect the handicrafts and put in the shop or the exhibition. Meanwhile, the company will make a promotion plan for the handicrafts in the market, including website to promote the products in the internet. All transportation and promotion plan have been considered in the feasibility study.

<table>
<tr>
<td rowspan="2">Partners
1. NGOs
2. Government
3. Designer
4. Retailers
5. Investors
6. Artisans</td>
<td>Activities
1. Market research
2. Product Design
3. Promotion
4. Quality
5. Helping</td>
<td rowspan="2">Value Propositions
1. Talented hands
2. Good products
3. Unique handmade
4. Old Indian nomadic tradition</td>
<td>Relationship
1. Handmade so no two products look exactly the same
2. Participations through the SNS</td>
<td rowspan="2">Customers
1. Those who travel
2. Who buy hand made goods
3. Whose top lifestyle activities include: hobbies, collectibles, home design, fashion
4. Female
5. Primary segment: Westerners
6. Secondary segment: Asians</td>
</tr>
<tr>
<td>Resources
1. Designers
2. Researchers</td>
<td>Channels
1. Online
2. Gift show
3. Small market
4. Retail stores</td>
</tr>
<tr>
<td colspan="3">Cost Structure
1. Assets and equipment
2. Research and development
3. Running cost: raw materials, labor, design, and marketing expenses</td>
<td colspan="2">Revenue
1. Selling a wonderful handicraft
2. Sale of products by: Telling a compelling story of origins of various handicraft and Van Gujjars
3. Meeting the needs of more people seeking out original lifestyle goods</td>
</tr>
</table>

Figure 7: The proposed business model of new startup company.

Another point has to be addressed in the marketing plan is the cost and the prices of the handicraft products. The proposed company will sell the products in the market with suitable prices. The prices will cover the consumption cost of the processing and the return of value to Van Gujjar people as the main purpose for the livelihood and surviving, then the Van Gujjars can take part more in the production process.

3. Financial Issues

The financial issues for the startup company are considered based on the investment and the return of value for sustainability, and running the business. However, the consumption cost for the business activities of the startup company including the feasibility study is the running of the business, the promotions, and the marketing analysis.

The basic investment of business for the first phase has to cover the consumption cost, and the business activities including the wages of the staff and the shop rent for the first phase of the business, and the marketing including the feasibility study and advertisement locally and globally via the internet, and providing the material for the production as well.

Meanwhile, the basic investment has to consider the marketing analysis including the plans and the compensation for the Van Gujjar people to motivate them to work and produce more handicraft. In another side, the basic investment has to cover as well the cost of building a trading brand for the Van Gujjar people and enhance the trust and the relationship with customers and trading partners for business cooperation.

3.2. Run the Commercial Business Trading

In this business model, a new startup company has been proposed to hire the Van Gujjar community. The Van Gujjar has the ability to make the amazing handicraft, and the startup can promote the commercial trading of the handicraft products in the market, as shown in Figure 7 below.

1. Value Propositions

The value propositions or the added value of the business model is the talented hands as Van Gujjar people have the skills to make the professional and good products of handicrafts, so that, they can make unique handmade products.

However, Van Gujjar people have their owned nomadic life, so they have the ability to make the old Indian nomadic and traditional handicrafts, which could be a new and an added value for their products in the markets.

2. Customers Segments

The customers who will have the products depend on the market. The market for the handicraft products will be in almost for the domestic and local market especially for the people or those who have traveled and come to see the Uttarakhand and Rajaji National Park. However, the startup company will have and go globally to sell the products in different places of Uttarakhand, and India, and for many countries via the website.

In addition, the company will target the people who are looking to have traditional handicrafts from the nomadic style. Some travelers have the hobbies to collect and buy handmade goods, and they want to have a home style from the nomadic lifestyle including the females. The females collect some accessories for their life, and they are looking to collect some of nomadic handmade for their houses and to get for the traditional fashion.

The primary segments are the western people. The western people even the secondary segment from the east of Asia don't know more about the nomadic lifestyle, and Indian style, so that the India Van Gujjar handicrafts will be the best souvenirs for their friends, families and their relatives.

3. Channels & the Customers Relationship

The company will have a small shop to use it for the exhibition and gift show. As well, the company will work with small retail stores to promote the Van Gujjar handicraft products. Whatever, the company will a website to show the products online for people and sell them in the online marketing places.

The most important part is to build the relationship between the Van Gujjar and the Indian society. The company has to make trust in society with customers by using different types of handicraft product, so no two products look exactly the same model because it is handmade. The customers will get a special handmade gift from the company. As well, the customers can send feedback to the company by the internet, or the customers can ask the company to offer special handmade by showing the online market.

4. Business Partners

The startup company can have business partners like NGO, or the government to do some research about the Van Gujjar people as the company can reach for different types of Van Gujjar. Therefore, some Van Gujjar can reach each other to promote their handicraft products to the company; then the company will be the main gate for them to communicate with society.

In another side, the company will promote the handicraft in the market, then some other staff needed for the production process like designers, or some artisans to offer some models for the Van Gujjar people, and some retailers to expand the local market to other places. As well, the partners will be some investors for help and funds.

5. Activities & the Resources

The activities of the startup company, in general, will be for helping the Van Gujjar people by training and coaching to make a good quality of the handicraft products. In addition, the company will do some researches for the market, and offer the product design for the Van Gujjar. The main activity for the startup company is to promote the handicraft products for society.

About the resources, the startup company needs the main resources which they can use it for the activities. The basic resources for the first phase of launching the company are the material for the production including the designing and marketing research. In addition, rennet motorcycle is needed for the commuting and reaching the Van Gujjar people.

6. Cost and revenue

The cost for the first phase of the project is the assets and the equipment, in addition to the consumption cost for the research and development like realizing the quality. As well, the running cost for the company will be for providing the materials, wages, and marketing expenses.

The startup company will be looking to get revenues which they can cover all consumption cost, and return to the Van Gujjar people for the livelihood. The main production will come from the Van Gujjar people, and the company will sell the handicrafts in the market and return a part of the revenue to the Van Gujjar people.

However, another revenue will come from the sale of products by telling a compelling story of the origins of various handicraft and Van Gujjars. In addition, meeting the needs of more people seeking out original lifestyle goods is another revenue for the project.

7. The Sustainability

The project will have a plan for the sustainable and expand the market to other places in India, and outside of India, so the company will cut a part of the revenue to use it for the research and development, and expand the target of the Van Gujjars as well.

4. Summary

In general Van Gujjars are is a semi-nomadic tribe living in Uttarakhand. They are a big community and a part of the society. Van Gujjars are a pastoralist community, based on dairy buffalo herds. They have their owned culture and style and the needs as well.

Van Gujjars are suffering in their life due to the lack of resources and adapting with the revolution life of the people. They are having a problem in communicating with society and doing their business due to the lack of education, and material. However, Van Gujjars find their material to make and have talented handmade products. They get the resources from the area around them.

There are different preferences for coexistence options designed to remove or reduce severe impediments to traditional livelihoods and development inside the forests. With enlightenment, the Van Gujjars are now organizing themselves to ask for the right to live in and to manage the forests or lands that have been their home for ages. Van Gujjars can participate in the society with their talented products. Van Gujjars can speak loudly about their needs for all other societies.

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GRM Field Work report in Uttarakhand, India (March 9-16, 2019)
Towards investing in an ecotourism business as a livelihood alternative to the Van Gujjar tribe in Uttarakhand region

Hernandez James Edward II Aquino

I. Introduction

One of the popular reasons for travel, as well as wildlife conservation research is the appreciation of various ecological habitats of diverse range of species of flora and fauna within a certain region. In the case of India this year, 104 national parks, 550 wildlife sanctuaries and 127 community reserves are situated. [1] Thus the practice of travelling to beautiful natural places for pleasure in a way that does not damage the environment, or popularly known as *ecotourism*, has its demand steadily increase for tourists and conservationists alike. Ecotourism in India is not new but is a big business; with hundreds of thousands of endangered species within various terrain, the practice makes the country attractive for visit. Earnings in tourism in the domestic spending alone reach 87.2 percent which contribute to the country's 9.4 percent of GDP. [2]

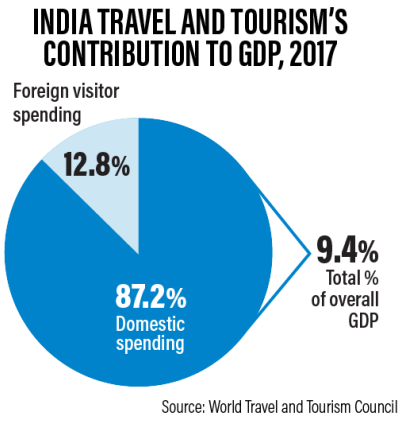


Figure 1. India Travel and contribution to GDP. Adopted from [2]

A particular case which will be focused in this report is the state of Uttarakhand which is situated in the northern part of India, near Pakistan. The region consists of 10.4 million and predominantly Hindu inhabitants mostly belonging to the upper caste. In terms of ecotourism, the state covers 165000 square kilometers of the total area for the purpose of forest conservation. The publicly-funded Wildlife Institute of India (WII) situated in Dehra Dun, Uttarakhand, is one of the research institutes whose goals include such purpose. The institute, labelled Category 2 Centre for World natural heritage management and Training by UNESCO, also investigates local inhabitants and human activities which might affect the wildlife situation.

Ecotourism businesses also exist within the Uttarakhand region. An example of tourist attractions is the Rajaji National Park, which is situated near the foothills of Himalayas. The park covers 820 square kilometers with a variety of wild species inhabiting the area. [3] The park is designed such that safari tours via *gypsys* (jeeps) are possible with few patrol stations to provide quality experience for the tourists while keeping them safe. Outside the park, souvenirs are being sold and other services relating to safari are offered to provide additional income for the workers in the area.

Apart from the locals which belong to the upper classes, tribes also cohabit within Uttarakhand. Within the 84.89 lakhs which make up the state, a selected tribe called Van Gujjar (Forest Gujjar) includes the population. [4] Van Gujjars are semi-nomadic tribes, whose main source of livelihood is selling milk from cattle rearing. Cattles were let to graze within the forest land until resources are used up, and then Van Gujjars relocate to other parts of the forest. This practice serves as a threat to the forest ecosystem, which could accelerate species extinction, which clearly alarmed the Forest department. So in 2006, the Forest Dwellers Act serves as a rule to essentially clear out all inhabitants of forests labelled as protected areas. [5] This caused tensions among Van Gujjars and the Forest department, as the conflict between continuing traditional methods of resource acquisition and habitat conservation arises. Although a proposed suggestion could be that the government is to simply provide the Van Gujjars a permanent resettlement area wherein they could perform cultivation, however the Van Gujjar populace possesses no legal land where they perform these activities. In the perspective of the forest department, either the Van Gujjars would receive the land, sell it, and return to their previous nomadic lifestyle, or that other non-Van Gujjar citizens would illegally demand land, as the Van Gujjars themselves do not even have legal documentation of their identity. This longstanding issue then becomes a subject of international attention, and various researches considering Van Gujjar livelihood evolution are being performed amidst the implementation of the act.

Recently, however, the Van Gujjar lifestyle does not entirely fall under the nomadic, cattle rearing tradition. Discussions with a Van Gujjar representative within the WII as well as onsite interviews in three Van Gujjar communities show the differences between Van Gujjar situations across the areas of Uttarakhand. During the onsite interviews, Van Gujjars are classified as semi-nomadic, where they either purchase or

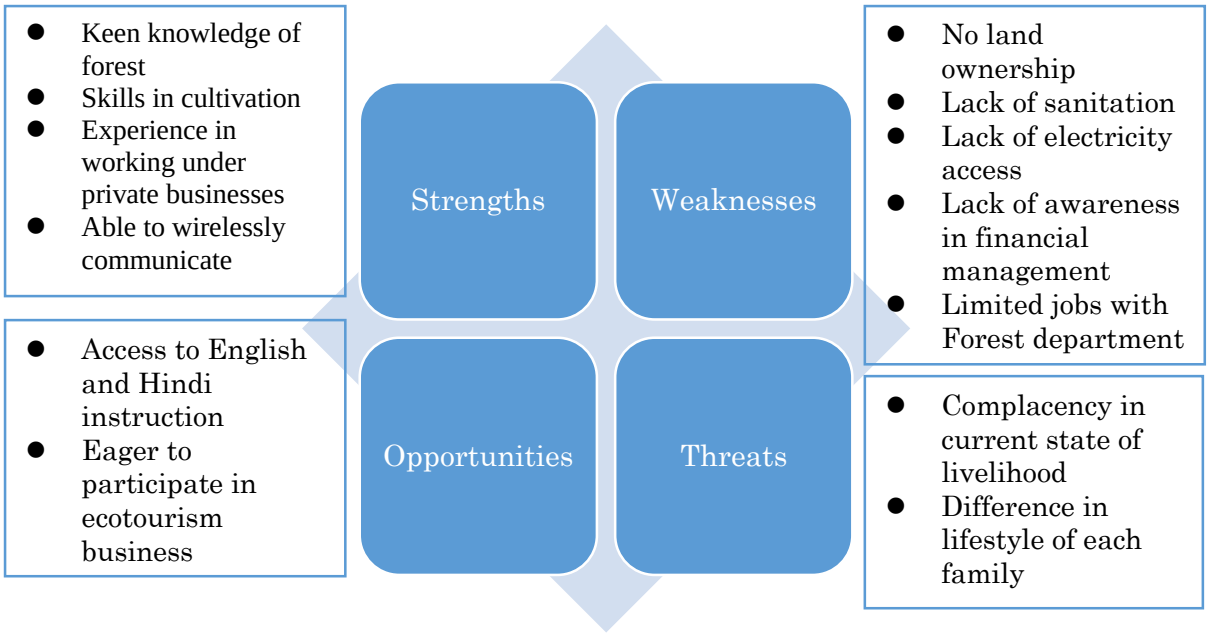


Figure 2. SWOT diagram of the Van Gujjars during the conducted onsite interview

cultivate crops for their cattle, from which they sell the milk for around 40 rupees per liter with 30 to 50 liters sold per day. Some utilize forest resources during summer seasons, where the expenses exceed their income. Some Van Gujjars claim to be illiterate, while some others, particularly the younger generations, can understand and are being taught Hindi and even English language in public or private elementary schools. Village housing was heavily dependent on the materials used, thus the variation in cost: 50000 rupees for house, with maintenance costs of around 6000 to 8000 rupees for thatching. Most families claim that they did not save any money with their current livelihood. Some families with multiple houses claim that they did not require permission from the government in order to construct an additional one. Tribe sanitation was below average, and access to medical facilities are limited. Some villages do not have access to electricity, but others do have access to solar power for lighting. Other families which depend on transmission lines for electricity pay around 400 rupees for two months. In terms of communication, some Van Gujjars have access to mobile communication with the use of keypad phones. Other farm animals are domesticated such as dogs and goats, however they are used mainly for personal hobbies.

In aspects of livelihood, Van Gujjars share a commonality of raising cattle, where two out of three families have utilized these for dairy sales. In one family, cattle are not main sources of livelihood since the head of the family has secured a job within the construction company run both by the government and the private sector wherein he is paid per day. Some of the relatives of one family belong to ecotourism business as drivers. From the difference in livelihood, as well as from the observed difference in the availability of resources such as electricity within the tribal families, it could be seen that the people within the tribe are undergoing a transition from the traditional nomadic livelihood to a more sustainable form. With this transition, it could be hypothesized that the Van Gujjar has capability and interest of performing tasks fit for a modern lifestyle.

Although livelihood in a settled community is being performed by the Van Gujjars, the persisting problem where they do not possess the land exists. This issue cannot be directly resolved due to the lack of proper documentation that the Van Gujjars have. In the perspective of the Forest department, either that they might sell the land should they be given, or that some other external party would intervene and falsely claim as Van Gujjar, as both of these scenarios can occur due to the aforementioned lack of documentation. Consequently, the issue entails that the Forest department, or even the entire public sector will not be a primary livelihood option for the Van Gujjars. Thus, a need for an intervention from the private sector in starting a suitable livelihood option arises.

In this report, an alternative livelihood, particularly involving the ecotourism business is proposed to the Van Gujjar community. A feasibility study is first conducted, considering the current skills and capabilities of the family. A business plan and market analysis then are established, which consist of the details of the proposed ecotourism business and its potential stakeholders, as well as the process for which ecotourism be availed from these neighboring parties. Marketing methods which involve business selling points are discussed. By establishing a private business, the livelihood of Van Gujjars can be sustained, which would ease their transition further into much modern lifestyle.

II. Feasibility of employing Van Gujjars in the ecotourism business

In the proposed ecotourism business, the current skill set of

Van Gujjars are first investigated. Below is a summary of a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis from the current state of the tribal community.

a. Strengths

In an ecotourism business, the knowledge of the forest, as well as former activities done within their former area could serve as a vital asset for tourists in identifying the common species inhabiting the land similar to that in which they used to live. Possible implications involve better management of the areas where the ecotourism will be held. Particularly for the semi-nomadic people, their history could be imparted in the activities that will be performed in the business, which serve as advantage for them, as well as the tourists. Furthermore, Van Gujjars' resources in terms of cultivation can also be used to obtain information about the state of livelihood during their settlement. This concurrent history can be taken into advantage and materialized into selling points in the future in terms of handicrafts and other means. Since some Van Gujjars have experience working in the daily wage business, the knowledge and experience of their own context can be applied to working in ecotourism. Kinship is observed to be particularly strong in the communities, as each village are reported to be communicating closely. They can also be able to teach other families of the system (organization, rules, benefits, etc.) which they are under, as opposed to the previous rearing-selling methods. In terms of communication, wireless communication can be utilized to inform other Van Gujjar communities of the status of their families, as well as easier relay of information with the intervening parties, particularly those who will be participating in the business. These information can be in forms of updates, status checks, emergencies, and many others which would be also beneficial to fellow Van Gujjars and visitors.

b. Weaknesses

Still, the problem of land ownership persists within the community. In relation to other forms of ecotourism business such as rural stay wherein the tourist temporarily lives near the protected areas, the absence of land ownership makes this form currently impossible. Furthermore, the overall current situation of lack of sanitation, access of electricity, and, in some cases, lack of communication media greatly affects the feasibility of utilizing their community as places for tourist visit. From the description of the income flow within the Van Gujjars, there appears no savings obtained from the revenue, or if there were, the money will either proceed to the thatching material, payment of seasonal debt, or cattle purchase. From this, the current financial situation of the Van Gujjars seem to have no current intention of savings. This could affect their progress in terms of asset acquisition, particularly when they prefer to purchase land. Lack of savings also serves also as a hindrance in the improvement of their present situation in terms of the aforementioned factors such as sanitation, electricity, and communication. In addition, a weakness in terms of lack of knowledge in other forms of livelihood is identified. For instance, knowledge of making handicrafts is currently lacking, which results to a narrower market.

c. Opportunities

Although currently incapable of initiating a business themselves apart from their current livelihood, the Van Gujjars are observed to be eager to participate if given the opportunity. This could greatly ease the transition of introducing them into the ecotourism business. Moreover, this eagerness is observed when asked about their relatives currently participating in the ecotourism business. They claim that they "get inspired" when these relatives talk about their experiences in their occupation in the safari business. In a positive note, this can be a factor in encouraging more Van Gujjars to voluntarily abandon the nomadic lifestyle, which could possibly ease their tensions with the Forest Department.

d. Threats

Future threats involve their complacency in their current lifestyle. In one family wherein Van Gujjars currently purchase fodder to feed their cattle, but apart from this they find little motivation to improve their income source by cultivating additional crops or trading their buffalos because they are preoccupied with their current daily tasks. In a way, this complacency could represent a resistance to changes in their livelihood. However, in another family whose head leads an occupation in the construction business, they too expressed their stance of being comfortable in their lifestyle. Thus this complacency could hinder the rate at which they become introduced and trained into the ecotourism business. It could be observed that there is a conflict between the responses relating to the motivation of changing livelihood for the Van Gujjars. On one hand, the eagerness and motivation is present when encountering fellow Van Gujjars working in ecotourism, while on the other, there is quite a reluctance when they themselves would be undergoing a livelihood transition. Without them being aware of their present skills, the result could be that there will either be a stagnation in their current income situation should there will be no external factors which would empower the community. Thus, an intervention, primarily in the private sector, is needed to make them informed about their advantages and opportunities. In particular, the following advantages of the current Van Gujjars can be summarized in the following:

- Having a history of nomadic livelihood
- Having skills in cultivation for fodder purposes
- Having previous knowledge of the forest
- Women having equal livelihood opportunities
- Having close communication with nearby people in settlements
- Having progress in education, particularly English
- Having experience in driving some vehicles

Based on these findings, it can be stated that there is feasibility in conducting an ecotourism business in the future with the Van Gujjar community. However, a gradual approach in the transition is suggested, especially when a

private entity intervenes with their lifestyle. With a gradual approach, the current livelihood remains unaltered, while providing additional options for their improvement.

III. Business Plan

In this chapter, the process of conducting the ecotourism business is shown. Preliminary methods will be explained, whose steps is shown in the following:

a. Establishment of a cooperative format within the Van Gujjar community

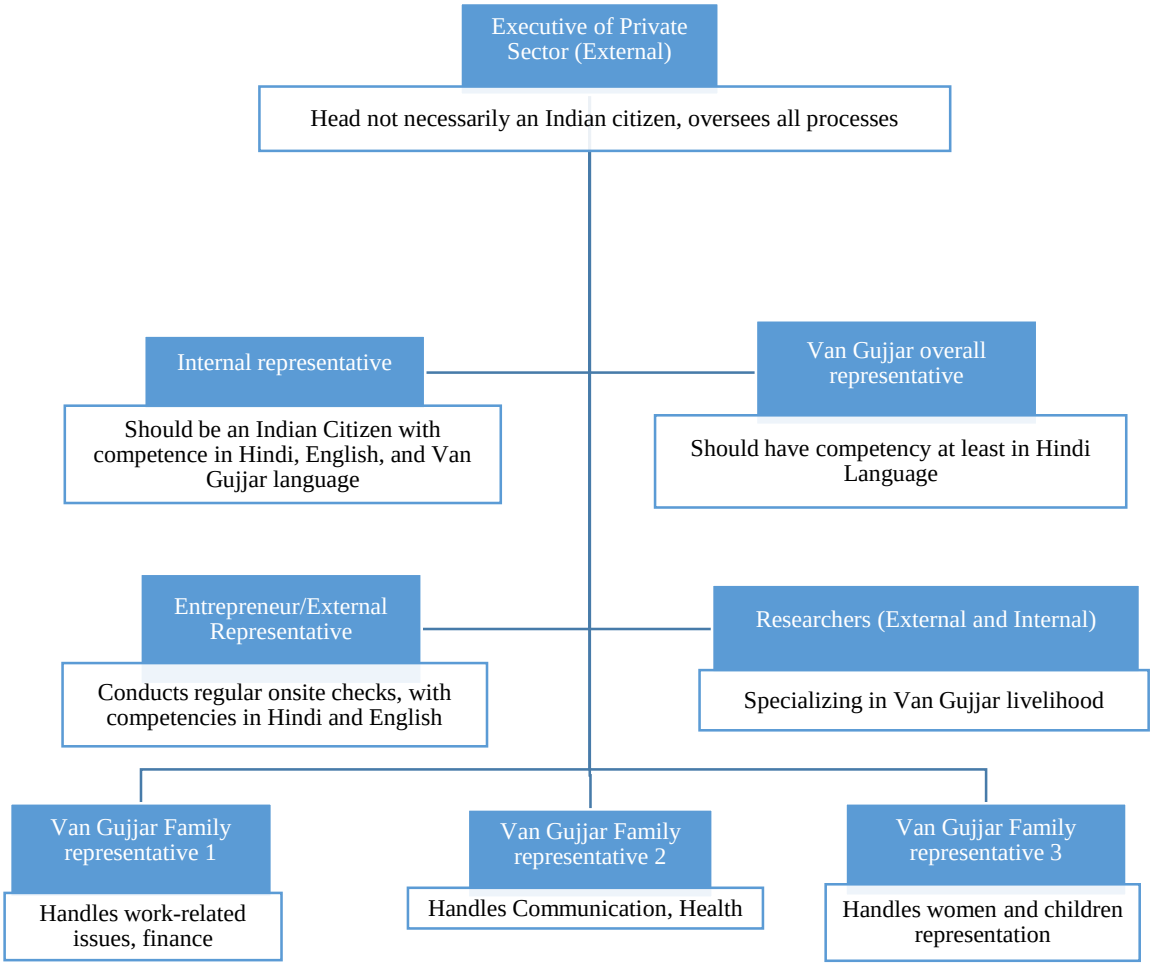
Figure 4. Flow of starting the ecotourism business

Since the Van Gujjar community consists of different villages, formation of an organizing committee is critical, especially in forming the ecotourism business. According to the University of Wisconsin Center for Cooperatives, there are various cooperative types, mainly producer, consumer, employee, and business cooperatives. [6] In this report, the latter two cooperatives are taken into focus. The ecotourism business primarily operates under an employee basis, wherein the private entity hires Van Gujjar employees in various suitable positions. Thus, setting a business cooperative is prioritized. A brief process of establishing a business or even an employee cooperative is as follows:

i. Formation of a steering committee

Currently, the Van Gujjars do not have yet a proper organization, so the business is owned by the private sector. However, the members of the committee should consist of Van Gujjars of different backgrounds, with ample representation of women. A schematic of the steering committee is shown below.

In the above diagram, the term ‘external’ head means an entity outside of India, which primarily has competence in communicating with travel agencies and international marketing in which the details will be discussed later. Internal representatives, on the other hand, are Indian citizens with close contact with the Van Gujjar community who also have



competence in communication with international representatives. The role of academic researchers, particularly belonging to WII, Uttarakhand who work with the entrepreneurs is important because they can examine the evolution of the behavior, role distribution, and management styles of the Van Gujjar within a structured committee.

ii. Financing the Cooperative

In financing the cooperative, there are two time periods considered: before and after completion of education and training of Van Gujjars for the ecotourism occupation. Before the training, the entire expenditure is supplied by the company capital. The financing will be led by executive head, as well as a Van Gujjar Family representative assigned to finance. The details of financing the cooperative is explained below:

iii. Member recruitment, Legal Procedures and Establishment of by-Laws

In recruiting cooperative members, the age is limited to the legal age (18), however, the rule for the minimum working age (14) for driving personnel still applies. Once the age of the employee reaches the legal age, he or she will become a member of the cooperative, and is required to pay monthly dues.

The private cooperative would lead the preparation of legal documents mainly, but not only for the (a) permission for installation of equipment and construction in non-protected areas (b) permission to conduct safari business within the protected areas (c) registration of the required equipment for safari business (gypsys, souvenir shops) and for possible rural stay equipment (sanitary permit, electrical operation, network subscription). Further, especially in the case of homestay, the business name should be registered to the Tourism Board, in order to ensure the safety and quality of the homestay. [7] The executive head will manage the overall registration of the documents involving these, with the aid of local and international representatives.

By-laws will be made by the representatives themselves, under the supervision of the executive. Should there be conflicts amongst external and internal representatives, the decision will be left for the benefit of the Van Gujjar members of the cooperative. Representative selection for the foreigner side will be decided by the head executive, while the Van Gujjar side should be decided by the community members.

iv. Job description of Van Gujjars which do not require English

The details in the job description and hiring process of Van Gujjar in the ecotourism business which do not require English skills are discussed in this section. The jobs should follow the legal age (14) entering the occupation.

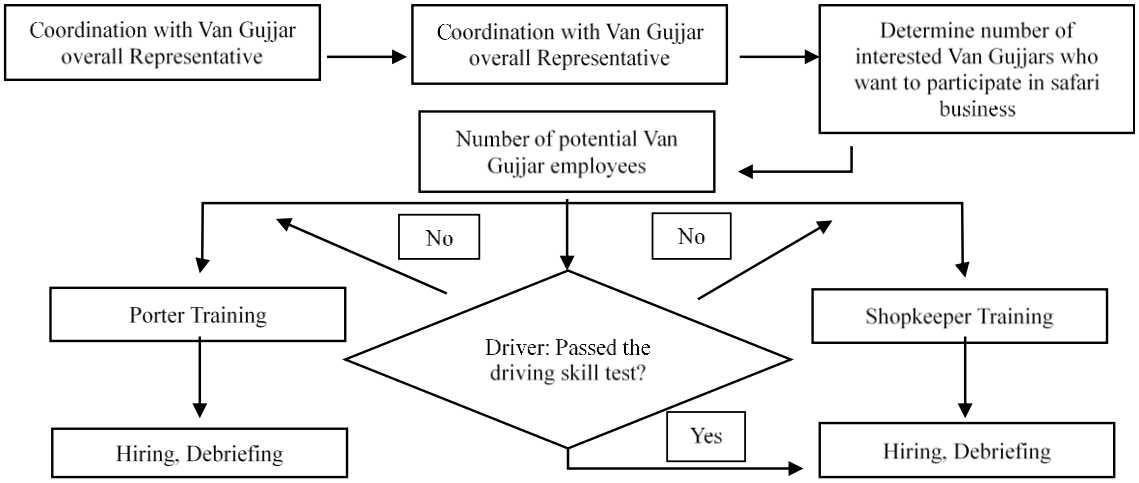
v. Hiring Process

From the established cooperative structure, the executive first coordinates with the overall Van Gujjar representative, who should possess the records regarding the statistics of working Van Gujjars, as well as stay-at-home, children, etc. Since there is a probability of Van Gujjars who would not prefer the safari business and would prefer their current livelihood, the number of potential safari employees will be filtered. Then, the preferred occupation will be left for them to choose, where one month time allowance for selection is provided. Those who fall under the safari driver category will be trained accordingly and, upon completion, will be hired as the safari driver. In a similar note, the hired porters and shopkeepers, with the driver will be debriefed after hiring.

Table 1. Financing the Cooperative and Training Costs
*based on income from present livelihood (onsite interviews) and online prices (indiamart.com)

Time period	Description	Amount (rupees)*	Stakeholders concerned
Before Training Completion	Driver Training (1 year, 2 months per course, weekly sessions) ➢ Gypsy training vehicle costs ➢ Maintenance costs ➢ Allowance costs	**Covered by: Private company** ➢ Free training (1 year) ➢ 1,500,000/5 vehicles ➢ 5000/year ➢ 1000/week	Head Executive Entrep. Head Van Gujjar head of finance and work, Researchers Head of Communication
	Patrol training ➢ Uniform costs ➢ Allowance costs	➢ Free training ➢ 1000/person ➢ 2000/week	Same as above
	➢ Materials of Internal representatives ➢ Cooperative fund (for meetings, etc.)	➢ Smartphone cost 25000/unit ➢ 2000/month	Same as above
After Training completion and during employment	➢ Cooperative fund (for meetings, etc.) ➢ Maintenance costs ➢ Sanitary allowance cost	**Covered by: Employees** **Covered by: Private company** ➢ 200/month/person ➢ 5000/year ➢ 2000/month	Same as above, employed Van Gujjars

Table 2. Job title and description of potential Van Gujjar employees in the ecotourism business		
Job Title	Job description	Required Skills
Gypsy Driver	Assigned to: ➢ Drive designated route of safari using gypsys ➢ Maintain integrity of designated gypsy (fuel, oil, body, etc.) ➢ Report serious damage of the gypsy	Hindi language Driving skills (should pass the training course)
Safari Patroller	➢ Patrol the safari (outside, watch tower, and patrol houses) during opening hours ➢ Patrol safari during closing hours ➢ Provide first aid for emergency	Hindi language Able to respond quickly to emergencies
Safari Porter	➢ Clean and check the patrol houses before and during the opening hours ➢ Report inventory of cleaning materials	Hindi language
Shopkeeper	➢ Track inventory of souvenir materials ➢ Communicate to tourists about souvenirs	Basic Arithmetic Hindi, Basic English



b. Improvement of the current sanitary and education levels

As mentioned above, the sanitary level of Van Gujjar village and community as well as the education levels have to be improved before proceeding to further increase in ecotourism business options such as rural stay. This should be done while undergoing training for the ecotourism occupation. The details of the costing, as well as the timetable are shown in the following.

It is noted, however, the above projects are performed for the main purpose of creating a rural stay business. The employment of Van Gujjars to tasks not directly affected by the above projects are not affected, i.e. the Van Gujjar can commence their jobs as driver, patroller, etc. immediately after finishing their training, during the duration of the sanitary projects.

Effects of the improvement of sanitary and education situations not only prevent unwanted diseases that could affect the income of Van Gujjar workers and children, but these programs also provide the long-term benefit of

Table 3. Timeline and Financing the current sanitary and education levels *according to WATSAN project by TATA Trusts [8]			
Time	Description	Cost	Stakeholders
1st to 3rd year Milestones: 1st to 2nd year: access to drinking water 2nd to 3rd year: Animal waste management, Garbage disposal management	[Small Scale] ➢ Clean water access ➢ Plumbing equipment ➢ Waste management and education	**Covered by: Private company** ➢ 200000 per 50 households (WATSAN project*) ➢ 20000/month	Head Executive Van Gujjar (coop and non-coop members) Van Gujjar head of women and children Researchers

maintaining clean environment that would be usable for rural stay visitation. With the current state of basic education (elementary level), in the future, Van Gujjars who would work in the homestay business would be able to conduct basic communication with the local and foreign tourists.

c. Rural stay plan

Upon completion of sanitary and education projects, the establishment of rural stay option is proposed. Rural stay is defined here as the settlement in a separate area near the Van Gujjar community, while providing package tourist visits to these settlements. The goal for the rural stay is to provide additional income to the Van Gujjars apart from the safari business, as well as travel options to the tourists. For the rural stay plan, the construction, maintenance, and the visit package description are discussed. Moreover, the possibility of partnering with other private businesses and NGOs are discussed.

Table 4. Rural stay package description and costing

Time	Description	Estimated cost *based on interview **compared with salaries in other cities	Stakeholders Involved
(After sanitation and education programs are completed) 1st and 2nd year	Construction of Van Gujjar model houses ➢ Location: 50 km away from protected areas ➢ Facilities: Meal service, hot and cold shower, toilet, air conditioning ➢ Partnering with NGOs	➢ House construction: 150000 (foundation, thatching, etc*) ➢ Facilities: 200000	Cooperative Van Gujjar employees NGOs
3rd year and 4th year 3rd year 4th year	Maintenance of facilities ➢ Water supply ➢ Electricity ➢ Network access maintenance Employment of Van Gujjars ➢ Porter, Guard, Driver Partnership with non-Van Gujjar populace ➢ Reception desk manager ➢ Cook ➢ Accountant Partnering with NGOs for rural stay activities (for handicraft making, cultivation etc.) Determination of package: ➢ Rural stay ➢ Van Gujjar community visit ➢ Safari tour	➢ 10000/month ➢ 20000/month ➢ 10000/month ➢ 10000/month ➢ 15000/month** ➢ 20000/month ➢ 15000/month	Same as above

The above description implies the expansion of the present cooperative structure due to collaboration with NGOs, as well as opening additional job opportunities for both Van Gujjars and non-Van Gujjars. Jobs that require higher level skills were directed towards non-Van Gujjar locals which have prior related experience, which reduce training costs. However, it is envisioned that the Van Gujjar will transition to these jobs in the future, e.g. once advanced trainings have been conducted amongst the community. The partnerships planned for NGOs mainly involve specific tasks such as handicraft making and cultivation, which aim to further increase options for livelihood for Van Gujjars. These specific activities will be organized also with the cooperative, where Van Gujjar overall representative will take lead. Prior to execution of these activities, corresponding trainings will be performed which would last within the one year time frame. During this period, the information regarding the available rural stay packages will be decided upon by the cooperative. Upon completion of arranging the package information, the packages will be sent to market, and this project will be led by the head external and internal representative and entrepreneur.

IV. Market Analysis

The ecotourism business clearly has markets both locally and internationally. For the business involving Van Gujjars, however, rural stays which involve Van Gujjars could offer quite a unique experience as tourists would learn about the evolution of the situation of the (then) nomadic community. In this section, the market analysis for packages are

performed for the safari tour (a) with and (b) without rural stay packages.

a. Target Market, Costing

International tourists comprise approximately 10 million, which is just 10 percent of travelers in India. [9] This implies the strong market for tourism for both domestic and foreign citizens. Consequently, hundreds of private companies take advantage of the diverse Indian terrain. In terms of homestay costs, there is a wide variety of choices available for travellers. For instance, the travel site Travelguru offers homestay prices as low as 800 rupees per night in Dehradun. Homestay hotels are also arranged according to categories such as theme, landmark, localities, and property. On the other hand, the rates for the safari tour for Corbett national park are investigated. The safari tour has different prices for domestic and international tourists, as well as discounted price for children. There are also options for canter safari tours, which cost lower than the gypsy tours. The following is a sample rates for safari and homestay tour.

Table 5. Safari tour and Homestay offers from Corbett and Tapasya Homestay

Safari tour costs (Corbett)	Homestay (Tapasya Homestay, Dehradun)
Gypsy tour ➢ Indian – 4800 ➢ Foreigner – 8000 Canter tour ➢ Indian – 1500 ➢ Foreigner – 3000 + Legal permission to conduct safari in protected areas + Possible hotel stay option	Price per night – 800 Amenities: ➢ Internet access ➢ Airport transportation fee ➢ Power supply ➢ Room service

Other examples of private safari package in the same national park mentioned above involves a full tour, with meals and lodging, which the tourists can choose the itinerary (jeep) whichever fits their schedule. The main advantage of this system is increased convenience, while enjoying the full safari package. In this business, the similar method will be adopted, with the addition of the Van Gujjar themed stays.

b. Marketing procedure

As mentioned in the section III. A. iii, the legal procedure of registering the rural stay business, where business is first applied. Then the homestay is mainly promoted via multiple ways: a. Home website b. Travel websites, and c. Advertisements. The first two methods can be performed immediately by the cooperative after completion of the package. The third method can also be freely made via creating social media accounts. In advertising using social media, the overall Van Gujjar head will be collaborating with the family representatives, workers, and people outside the cooperative in creating digital advertisements (posters, video presentation, etc.). In this way, marketing and advertising costs in the first phase of the release of safari do not have significant contribution in the total capital.

c. Selling Points

Although ecotourism does not have major issues with regards to the market population, the uniqueness of each rural stay package in a particular topographic location is important in terms of marketing. Selling points in the ecotourism business are discussed here.

- Appreciation of Van Gujjars' history – a primary selling point of the business is the presentation of the transitioning lifestyle of the Van Gujjars. Since, as explained by the previous sections, various Van Gujjar lifestyles coexist within the same timeframe, the information in which van Gujjars live differently can be creatively presented within the locations of homestay, apart from the present Van Gujjar style design plan of the house itself.
- Goal for providing livelihood for Van Gujjars – since the objective of the current business plan is to provide alternative livelihood to the tribe, this selling point can be utilized in the promotional aspect, e.g. advertisements in social media. It is noted also that from the present organization of the cooperative that the major stakeholders involved are Van Gujjars themselves (apart being supervised by international entities), which could be taken advantage of, as the other business goal of maintaining the business centered on Van Gujjars can be promoted.

d. Cash Flow and Funding

The business first aims to serve as an intermediate between currently established institutions. However, as with other businesses, additional aid is needed to hasten the initiation and increase the sustainability of the business. The following shows an outline of the revenue flow within the business, which involve the different stockholders within and outside the cooperative.

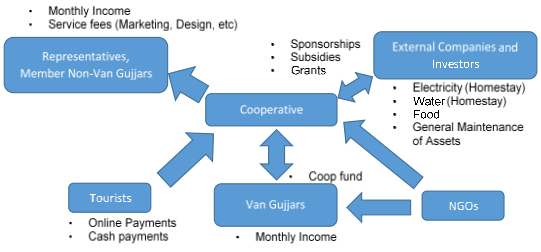


Figure 4. Flow of starting the ecotourism business

With revenue managed by the cooperative, the employees can be assured of equalization of income. This process is preferred also since there are multiple payment methods, and there is still difficulty for Van Gujjars in accessing these forms of payment. Another important consideration is the

cooperative requests for external capital subsidies and sponsorships from external companies, which could greatly aid in investment costs, particularly the purchase of sanitation systems and gypsy purchases. NGOs as helpful stakeholders, with the participation of the cooperative will help identification of additional needs, which entail more efficient programs. In the case of Uttarakhand, subsidies can be applied from various sources to receive seed capital for businesses, particularly small startups. [11] Applications would be led by the head executive and aided by the cooperative entrepreneur for pitching. Both safari and homestay businesses will be set for application. With additional funding from external agencies, ease of business and transition is possible.

V. Expected outcomes

a. Reduction of season-dependent income disadvantage

Since the current livelihood of some Van Gujjars rely heavily on the monsoon season for greater income, with the establishment of an alternative, and a sustainable business in ecotourism, shortages which could lead to borrowings, can be mitigated.

b. Increased skillset of Van Gujjars

With the increase in livelihood options, the skillset of the tribe population could be significantly improved. For instance, with a skilled driver in a family, that member would be able to do other diverse tasks outside the business such as goods delivery. It is also envisioned that, upon the gradual level of basic education with the younger generations, more jobs would be available to Van Gujjars who would possess wider skillsets.

c. Increased motivation, and more efficient communication

The availability of jobs also increase overall attitude of the Van Gujjars and would enable them to discover additional means of livelihood or culture-related activities. With Van Gujjars dominating the cooperative in collaboration with the academic and international community, they can identify their capabilities as managers of their own tribe. With the improvement of the sanitary lifestyle and education, the people will be comfortable to invite outside parties in their improved properties. The communication methods between families in various locations would be improved as income generating sources increase. The increased interaction of different Van Gujjars in the working sites would increase awareness between different locations. Meetings with the cooperative representatives would increase effectivity of identifying other needs of Van Gujjars in the smaller scale.

d. Ability to purchase own land

The longstanding issue of land ownership could be resolved with the increased purchasing power of the Van Gujjars. With sufficient revenue, the Van Gujjars will be able to purchase and settle legal land outside of the protected zones.

VI. Challenges

a. Further marketing Van Gujjar Culture

Although the benefits of establishing and maintaining this ecotourism business are aimed primarily towards Van Gujjar livelihood improvement, challenges in increasing the marketing impact of the Van Gujjar can be observed. Currently, apart from their semi-nomadic livelihood, there are no clear material trademarks which distinguish the Van Gujjars amongst the other tribes. A method in resolving this matter is during the trainings for jobs which do not require skills, there will include the inquiring the Van Gujjars of their interest in creating handicrafts that resemble their family, if not their whole culture. This way, tribal information is disseminated within the constructed properties, but also through handicrafts.

b. Changing perspectives of Van Gujjar Forest department

With the issue of land ownership, the challenge of improving relations of Van Gujjar with the state Forest department remains. Through establishing the ecotourism business, the Van Gujjars are aimed to be relocated outside the protection zones, whose approval is also a challenge in itself. Given the assumption of relocation (with the necessary provisions from this private business), the transition of perspectives with the Forest department, especially should collaborations exist within both parties, is expected to undergo slow progress. The private sector has the agreements with the Van Gujjar working population, and that the legal documents and permissions are made through the business themselves (with transparency within the cooperative).

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An Exploration of New Business Concepts in Mitarai District
A proposed business models to activate the tourism in Mitarai District

Mohammed Awad Hajjaj

Abstract

The on-site training program in Mitarai district was to find the potential success business model to activate the tourism services and serve the residents in the area.

The plan was to analyzing and mapping the existing businesses across Mitarai. Besides, the plan is to collect information about the challenges that the existing business owners face, and what the residents do like to have in Mitarai as a potential new business. There are many tourists visited Mitarai for sightseeing which affect to attract the tourists in Mitarai.

The methodology depends on the survey by conducting some interviews with the business owners, residents, and tourists in the area. We found that there are some difficulties and lacks in the resources for the business owners and the people move out of the area to the city, as well as the bridge has made life difficult. However, the area has a special value that it would increase the tourism services like the historical area, attractive points in the sea, and the production of the orange at the area.

Index Term—Community Development, Tourism, Mitarai.

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1. Introduction

The on-site training program in Mitarai district was to find the potential success business model to activate the tourism services and serve the residents in the area.

This program is a part of the culture development to increase the population, and activate the business in Mitarai, which would attract tourists more in the island. Mitarai district is a historical town since long a while, and it has one of the major ports in the Seto Inland Sea, which has four small islands. However, the population declined after connecting the islands with the bridge. The population of the district is around 200 people, and more than 70% of them is in elder ages more than 65 years.

The plan of the on-site training was in analyzing and mapping the existing businesses across Mitarai. Besides, the plan is to collect information about the challenges that the existing business owners face, and what the residents do like to have in Mitarai as a potential new business. As well, to attract the tourists in Mitarai, as there are many tourists visited Mitarai for sightseeing. The methodology depends on the survey by conducting some interviews with the business owners, residents, and tourists in the area.

We found that there are some difficulties and lacks in the resources for the business owners and the people move out of the area to the city, as well as the bridge has made life difficult. Besides that, there are a lot of café shops which it has been to manage more.

However, the area has a special value that it would increase the tourism services like the historical area, attractive points in the sea, and the production of the orange at the area. We found as well that young people are needed to live here permanently with more job opportunities, and the people want to keep Mitarai heritage. Some services are not commensurate with Mitarai residents' needs for some restaurants; transportation systems; and grocery stores. Tourists need restaurants, while Mitarai needs businesses, such as, local fisheries and other producers are needed to supply Mitarai restaurants which have recently increased in number, and local products of Mitarai can be sold outside of Mitarai.

Mitarai district is one of the traditional areas in Japan for over 200 years. The problem in the area has a declining in the population, as many people move out to the central cities in Japan. However, many people visit the district to see the

traditional houses and enjoy the fruits in the district, so Mitarai needs more business to attract tourism services and activate the district. In this report, we are going to analyze the existing business in Mitarai district then propose a new business model which match the needs of the people in the district.

1.1. Objectives

In this report, we are going to answer the question about the potential business model in Mitarai by analyzing the existing business in Mitarai district, besides to propose a new business model that can be an attractive to increase the tourism in the area.

1.2. Methodology

As there is a lack in the resources about Mitarai district, the methodology of the onsite training at first is to collect some information from the maps, pamphlets, and some lectures and presentations. Whatever, the main method to find the information is getting the observation from the people in the field and hold some interviews. The direct interviews with the residents are the best way to get more opinion about the positional business that can be in Mitarai. In addition to collect some information from the residents, tourists, and business owners to know more about their needs in the district.

The rest of this report organize as follows. Next section is about the background of Mitarai district, and analyze the current situation of the existing business in the district. The third section is about the proposed business model in Mitarai following with the conclusion and the summary of the report.

2. Background

Mitarai district detached from the frantic pace of modern Japan. The district is not like as in the central cities of Japan as Tokyo, Osaka, and Hiroshima as well. Mitarai district is still having traditional houses and roads of classic Japan. The charming streets and alleyways of Mitarai meaner through beautifully preserved Japanese traditional houses which go back over 200 years.

Mitarai district developed with domestic sea trade routes during the Edo Period. This was a time when Japan was in Sakoku or isolated from the rest of the world for over 200 years until 1853. The district is established in 1666 when Hiroshima prefecture allowed to develop Mitarai district for the people and fishermen who get there in the way to their destination. Many ships stopped at Mitarai district for rest, then continues the trip. In Mitarai district there are many fishers work in fishing services in the sea, as Mitarai is one of the oldest ports in the area.

Then Mitarai district developed as a regional hub for trade, entertainment, and pleasure for people and travelers by ships. Japanese shipping hugged the coastline, riding the tides and the winds up and down the length and breadth of Japan. Mitarai port became an ideal place to drop anchor with the naturally protected harbor located on the important sea route to and from Osaka.

2.1. Geographic

Mitarai district is a part of Kure city located on Hiroshima prefecture. Kure city located 20 kilometers on the south east of Hiroshima prefecture as shown in the Figure 1. The city faces the Seto Inland Sea in the south. Kure city is a main port of Hiroshima prefecture, and it hosts the second oldest naval dockyard in Japan and remains an important base for the Japan Maritime Self Defence Force.

The Tobishima Kaido is a set of five picturesque islands in the Seto islands sea connected by bridges to the mainland and Kure city as in the Figure 1. The Seto inland sea has many small islands and natural bounty such as fruit and fish. It is like the islands around the Mediterranean Sea.

Figure 1: The Geographical Map of Kure City, Hiroshima Prefecture.

The Osaki islands consists of five islands: Shimo Kamagarijima Island, Kami Kamagarijima Island, Teshima Island, Osaki Shimojima, Osaki Kamijima now known for their slow pace of life and cultivation of fruits: blueberries, lemons, mikan oranges. Mitarai district located in the center of Seto islands in the fourth island. In the Seto islands sea. Osaki Kamijima is not a part from Kure city. As shown in Figure 2, Mitarai district is left tongue of Osaki Shimojima island. Mitarai district is a small village built around a harbor on the east coast of Osaki Shimojima island in the Seto inland sea between Honshu and Shikoku.

Figure 2: The Location of Mitarai District at Seto Islands, Kure City, Hiroshima Prefecture.

Arrive at the Mitarai port using various transportation either by car, bus, or even the ship to access to Mitarai district. It takes 50 minutes from Hiroshima city to Kure city by bus or car, then another 50 minutes from Kure city to Shimo Kamagari. Then 40 minutes from Shimo Kamagari to Osaki

Shimojima. Mitarai district in the east part of Osaki Shimojima in 5 minutes by bus or car. Besides, it takes around 45 minutes to direct from Takehara city by ferry or small ship Osaki Shimojima to Mitarai port. Also, it takes around 80 minutes from Imabari city in Ehime prefecture to Okamura island, then 20 minutes from Okamura island to Osaki Shimojima island and Mitarai district.

In case of using the ferry, it is necessary to consider that there are two tides in a day, and the tidal current reverses approximately every 6 hours, which has to be considered. However, it is necessary to wait on the tide or get on the tide in a case to avoid reverse tide.

About the climate of the Mitarai district, the area is the same almost Kure city, where has a humid subtropical climate with hot summers and cool winters. Precipitation is significant throughout the year and is heaviest in summer.

2.2. Census Data

According to the reports of the local government of Kure city, the population of the city declined recently due to multi reasons like moving to central business cities, and for finding jobs. As shown in the Figure 3 below, the population of Kure city is going down in general.

Whatever the specific data about each district of Kure city is not available at the time of this report. Based on the data of the information center at Kure city, the situation of the population in the Mitarai district was in two cases: before connecting the bridge, and after connecting the bridge of the Seto islands sea with the main city. The population before connecting the bridge was around 2000 people, but unfortunately, the population declined after connecting the bridge and reach to 200 people at the Mitarai district with a few younger people in the community.

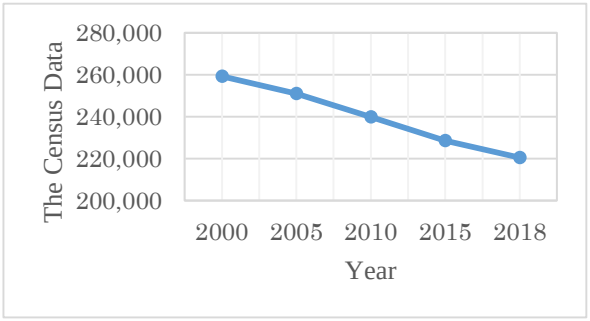

Figure 3: The Population of Kure City

2.3. The History of Mitarai District

Mitarai district was found during the Edo period from 1600 to 1868 as a part of Osaki Shimojima island. For the first time, the Mitarai district thrived as an anchorage port for commercial boats in Japanese medieval ages. Mitarai was a marine break for many boats that they were waiting for the wind to come and continue the trips to the target destination. That time, many boats navigated with the help of the wind, and if there is no wind, the boats find the Mitarai area as the break for them.

Mitarai district has a port which provided a good harbor in which to anchor for a few days while waiting for favorable winds. As with port towns all over the world, to meet the needs of passengers and the crew members with time on their hands, hotels, and some restaurants. At first, the main business of the Mitarai district after developing the district was to provide food, water, and the stick of firewood to the ships that are waiting for the good tide and wind.

Therefore, the characteristic of the Mitarai district as a port town is an intermediary business area that doing business for navigating for ships, sailors, and passengers as well. The port mediates to get the items and cargos between tugs. It is like other ports for storing the cargos in some cases in big warehouses and selling that for the ships at different prices to make a revenue for the district. The transition of the district developed by the time during the century 17 to now as shown in Figure 3.

Figure 4: The Transition of Cityscape of Mitarai District during the century of 17th ~ 18th. (left) during the century of 18th (middle) during the century of 19th (right).

Many boats gathered from various places and filled with various types of goods, the district prospers as a port town, and the production and shipping services increased by the time to serve a lot of boats and passengers in the district which affected the movement of people to come and live in the area as well. The goods include the rice, water, drinks, dried bonito, noodles and cigarettes.

The agency for cultural affairs recognized Japan Heritage as a story of culturalism and tradition through the historical charm and features of the district. Mitarai district and Kure city have got the certificate in 2016 about the revitalization and utilize the attractive tangible and intangible cultural property at the district.

Unfortunately for Mitarai district, the business began to decline due to the introduction of the advent of steamships and diesel engines, which the steamships go without waiting for winds to change. By the time, the district continued to fade from the memory for many years until 1990, and many people forget the district where they had passed before.

After the strong typhoon which hit Hiroshima and Mitarai district, the traditional buildings of the district are not damaged. The government of Hiroshima sent a special team to Mitarai district to estimate the damage undergone by the island, and the team found that the historical buildings of Mitarai district were so well preserved, which led to being designated as a cultural property in 1994.

Mitarai's narrow roads and lanes are still lined with buildings that date back to an earlier age. Shotoen is a collection of historic buildings set in landscaped gardens on the seashore in Sannose, Shimokamagari. Shotoen has a variety of displays connected to the elite maritime travelers of the Seto Inland Sea during the Edo Period.

Besides the historical building, there are a lot of Wakaebisuya which are the historical sites in the district, and Chisagohato and Takadorou which are the historical breakwater, and historical lantern as well. Mitarai had four large high class of tea houses, Wakaebisuya is the only one still standing now and it is open to the public. Moreover, there are many people of Mitarai worked as boat industry, and built crafted model boats and sold it in the market.

Based on the tourist information office of Kure city, the legend has it that the mythical Empress Jingu washed her hands in the stream that runs through the shrine, hence the name Mitarai, which means washing of hands. Just over a hundred years ago the shrine became a Tenmangu Shrine, enshrining Sugawara Michizane, who is also reputed to have washed his hands here on his journey to Kyushu in the ninth century.

Mitarai district thrived, and restart to re-stocked ships in the harbor with water and provisions, while the district provided the wealthy captains and seafarers with everything from theaters, and shops. Most of these buildings still survive today.

3. The Current Situation of the Business in the District

Mitarai district has a role to play in the sustainable economies of Kure city in the Seto Islands sea. There are some ways to be sought to empower the community to play a part in addressing vital policy areas such as job creation for people who are living in the area in special elderly people, farmers and also the services of navigation of the Seto Islands sea.

The local government of Hiroshima prefecture and Kure city in special are afraid of reducing the services due to the declining population in the district, which affects the small business in the area. The revitalization of Mitarai district has been considered recently to activate the tourism in apart of prevent the population decline in the island, and return the historical life to the district. Due to its location being literally in the middle of the sea, Mitarai escaped most of the development that came with the twentieth century, especially that obliterated so much of traditional Japan recently.

However, the most notable of the services offered in Mitarai to the passengers and crews were women. Mitarai district had an entertainment site with literally girls offering companionship where the district was home to the biggest entertainment and night clubs in the whole Inland sea until the laws of 1956 to organize the community and the industry of the entertainment and the night clubs in Japan.

Now, the business declined in Mitarai district due to the advanced technology of steamships, which is no longer to wait to have a break in Mitarai. Many shops and stores closed, but there are many restaurants for the seafood which have recently increased in number. Therefore, a lot of farmers have a small lands or work in the farming in special Mandarina fruits or Mikan fruits. This kind of fruit is one of the special fruits in Japan, and many people just come to visit this area and get a little of the fruit.

Whatever to understand the current situation of the business in Mitarai, Figure 5 analyzes the situation of the business in Mitarai which is a general view of the impact factors affected at the current business in Mitarai district.

Figure 5: SWOT Analysis of the Current Business in Mitarai.

The agriculture activities become one of the main activities in Mitarai, and there are some farmers export the products of citrus fruits to many residents and people in the prefecture by Japan agricultural cooperatives or using different ways to promote their activities outside of the district.

Therefore, Mitarai offers now some products which many tourists from outside of district come to get a little. It is kind of oranges fruits. Mitarai has special fruit of orange called Mikan. Mikan in this area is one of the best fruits in Japan with high quality. Therefore, a lot of farmers have lands and use it to produce Mikan. There are many people was working in the agriculture and plant different types of citrus fruits as shown in Figure 6.

However, there is only one supplier in Mitarai, which is the Japan Agriculture cooperative. Japan Agriculture cooperative is a regional business founded to support the production, transportation, and sales of agricultural products outside of the Mitarai district. Whatever not all the farmers have a contract to work with the Japan Agriculture cooperative. The Japan Agriculture cooperative has contracts with some farmers to promote their crops outside of Mitarai, and other farmers work alone or with other cooperatives of Agriculture from outside of Mitarai.

Figure 6: The Different Types of Citrus Fruits from Mitarai District.

In another side, Mitarai still has the port, and the port was the gate of the boats to get a break before continuing to the target destination. It was the main port of Kure city, so many fishermen are doing the activities of fishing and selling fish to restaurants and local people of Mitarai. Mitarai district played an important role as a fertile environment for fish gathering and thus allowed the availability of the fishing profession and the presence of large numbers of fishermen practicing and practicing fishing among the local people.

Fishing was an activity that activates the fishing profession for the local people of the Mitarai district. Techniques for catching fish include hand gathering, netting, and trapping. Fishing activities include catching aquatic animals other than fish, such as mollusks, crustaceans, and echinoderms.

Mitarai district played an important role as the islands have a suitable climate for fish gathering and thus allowed the fishing profession for local people. There were many fishermen practicing fishing among the local people. Because of that, a lot of restaurants opened the business and served the fish and seafood in the Mitarai district.

Unfortunately, the fishing profession declined due to the new technology of the boats and the equipment. In addition to the new technology of steamships. Besides to immigration of the local people to work in the central cities and decline the population in the area. However, this profession is still a part of Mitarai district.

As well, in Mitarai district, there is local tourism information center which is an association related to the district officials. The association is working to activate the tourism in Mitarai district. The information center plays a main role to promote the culture, activities, and the services of sightseeing. Unfortunately, all the information in the center in one local language, and the information about the district is not provided in different languages.

However, Mitarai district has some internal factors which affect the local people in the area. The first one is the transportation system for older people, as more than 70% of the residents are more than 65 years. Most of them don't have the cars, and there is no service in the district except the public transportation for the bus that comes from Kure city and it is limited.

On another side, the business has a problem in the district. There are a lot of café shops, and restaurants that are no needed, but Mitarai needs more business for the supply chain, as a few of the supply chain is in Mitarai. Therefore, most of the residents miss the supply chain like the connivance stores and other shops. Also, there are no grocery stores or bakeries in Mitarai district, and the local people get the daily items from the closed grocery store located outside of the Mitarai district. Moreover, there is a lack of manufacturers in Mitarai, and there are no production firms in the district to activate the economy of the district.

About the external factors which affect to Mitarai district, the district has some opportunities which support and may use to find the potential or activate the business in the district, and on another side, the district has some threats should be avoided by the local government of the city. For instance, there are three opportunities, and two threats affect to the business in Mitarai.

Firstly, many tourists people come to visit Mitarai district, and based on the information from the local government and tourist information center, around 5000 people from outside of Mitarai visit Mitarai as tourists every year. They come to Mitarai and spend a few days, and some of them are passing through the day to see the historical area of Mitarai. The general purpose of the visits to spends the vacation in the historical area, enjoy the sightseeing of the sunshine as Mitarai has a beautiful view of the sunrise or sunset, besides, some tourists come to get a little Mikan fruit.

Therefore, in Japan, there are a lot of travel agencies, that include Mitarai to visit in their plan, so they have some campaigns to promote the district for people in Japan. Whatever, the connecting bridge, which has been built by the government to connect all Seto Islands sea with Kure city allows for the people to come individually by cars, and make it easy to access there.

In addition, Kure city has public transportation for Mitarai by buses. However, public transportations are a little expensive for people in comparing another area in Japan, which is one of the threats that affect Mitarai besides the population decline in the area.

4. The Potential Business Solutions

As Mitarai preserves a unique historical port town, the area has the potential to grow as a tourism destination. The community struggles to maximize its opportunity to further develop tourism. Thus, seeking the areas of improvement in tourism development at Mitarai while ensuring the quality of life of the residents is an important issue.

Mitarai district has different possible solutions to develop the business in the area. There are a lot of the opportunities that Mitarai should use it to activate the tourism services in the area. Mitarai district needs empowering with greater powers from the local government of Kure city, and access to the different resources to lead, and support residents, which help the district to be more active in life.

Young people are needed to live here in Mitarai permanently, so the local government of Kure city should offer to provide more job opportunities in Mitarai. One possible job is to work as a tourist guide or to work in the tourism offices of Mitarai. The services of the tours include the social or local media; provide more details in different languages; and story writers from Mitarai. On another side, young people may work in the farms and help the farmers in agriculture.

Therefore, there are a lot of young people who want to work in a simple traditional area like Mitarai, so Mitarai could be

a good environment for the traditional workplace. In Kamiyama-cho at Tokushima Prefecture, a lot of people want to work in different styles of the workplace using the internet and working remotely, so the local government prepared the environment and established many workplaces called satellite offices. Kamiyama-cho is one of the rural areas and quiet with a traditional place where meet the desire of some people. Many offices use these satellite offices and send many workers to work remotely as desired. As this is the success story from Tokushima Prefecture,

Heritage is another opportunity as there are many building and landmarks reflects the color or the spirit of the area. The local people want to preserve Mitarai heritage and introduce the history for the people or tourists from outside of Mitarai. Unfortunately, there is no business in Mitarai that works in this filed. Introducing heritage is one of promoting the culture of the area to other people. Thus, the residents spread the flowers in their houses to express and welcoming the guests from outside. It may be a good opportunity to create a business and manage the activities, events, and technical issues of this field.

Therefore, there are a lot of young people who want to work in a simple traditional area like Mitarai, so Mitarai could be a good environment for the traditional workplace. In Kamiyama-cho at Tokushima Prefecture, a lot of people want to work in different styles of the workplace using the internet and working remotely, so the local government prepared the environment and established many workplaces called satellite offices. Kamiyama-cho is one of the rural areas and quiet with a traditional place where meet the desire of some people. Many offices use these satellite offices and send many workers to work remotely as desired. This is the success story from Tokushima Prefecture, and Mitarai can be another story. Mitarai has the human resources that can be used for doing the business at the district. For instance, the local government can invite some companies to open branches there and activate the port. Mitarai can have the same offices to work in the field of navigations services. Mitarai may be as a second subsidiary for the port of Kure city. Then, in this case, many young people can work in this area and support Kure city.

Whatever, the services in Mitarai are not commensurate with residents' needs. There are a lot of cafes and restaurants that no needed. Even so, the prices are very high at these services. The local people need more for the local market that they can get the food daily. They need for grocery stores as there is no store in Mitarai. These services can help the local people in

The people of the district commit to having a sense of community that encourages integrate from within inside. The elderly people in the district is more than half of the population, and the population is going down due to other factors in the district.

As well as the historical design the village also has some

Mitarai, and many residents can work at these services. Most of the residents in Mitarai have cars, and Mitarai residents need transportation systems for older people without cars. Not all of them have a car license, and it might have some accidents to drive in the narrow roads as Mitarai has a lot of narrow roads. Also, Mitarai needs the supply chain for restaurants.

However, Mitarai needs more businesses, while tourists need restaurants. Small restaurants can serve residents and tourists. Moreover, local fisheries and other producers are needed to supply Mitarai restaurants which have recently increased in number. A lot of people can work in fishing services, supply chain management, and shipping as well.

A lot of people can work in fishing services, supply chain management, and shipping transportation. In addition, many people can work to export and import services. The fishermen can export their goods to outside of Mitarai. Mitarai needs more for business to work in fishing or seafood production like the cans, which can be exported to outside of the area. The local products of Mitarai can be sold outside of Mitarai.

The transportation system for goods and materials is in demand, so some businesses from outside of Mitarai can offer or provide the services to work in Mitarai. The entities in the supply chain include producers, vendors, warehouses, transportation companies, distribution centers, and retailers. The functions in a supply chain include product development, marketing, operations, distribution, finance, and customer service.

Finally, the accommodation services, hotels, and lodging complement restaurants and other businesses, which allows tourists to stay longer in Mitarai. Homestay services may be offered for tourists by the residents of Mitarai.

5. Summary

Mitarai district gradually became more of a quiet backwater than a bustling port town. Mitarai district is a pleasant place to wander or drive there, but what important is to have a deep understanding of the fascinating and colorful history, by connecting the residents there. Have a see at the local people and enjoy chatting with them. Appreciate the flowers in which local people decorate the walls of the houses for visitors from outside the island. Mitarai is a place where you can still experience the sense of community and small-town friendliness that characterized life in Japan decades ago.

great scenes of the surrounding islands. Mitarai is a small district and easy to get there. Mitarai is a wonderful place with a fascinating and colorful history, in which local people decorate the walls of their houses to welcome visitors from outside the island. Mitarai is a place with the experience of the spirit of community and small-town friendliness that characterized life in Japan decades ago.

Helping small businesses get organized and achieve potential solutions for others. Business solutions are to ensure that the potential business for Mitarai to have another option that can be viable to develop the community. One purpose of community development is to work with each other to achieve sustainable development and increase the economic opportunities of the area.

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Building a Water Treatment Plant in Rural Cambodia

Marwa Ahmad

Contents

Outline

Project objectives

As part of our Joint Seminar II project, we were asked to pick a geographic location of our choosing in which there is need to address one of the United Nations' SDG goals pertaining to Water supply and Water problems, pledging "universal access to water and sanitation for all by 2030." In the present report, we present a detailed Project Proposal addressing this issue by proposing to build a Water Treatment facility in rural Cambodia.

- The key benefits of successfully meeting these needs are:
    - To reduce the risk of water contamination in Rural Cambodia
    - To help save lives, prevent easily avoidable diseases and health risks in Cambodia.

Background

In light of the national need in Cambodia for clean water distribution according to the available literature review, we chose to study the potential of setting up a water treatment facility. The reason for our informed decision mainly pertains to results of some official reports and studies highlighting the high child morbidity rate due to poor water quality as "the rate [of mortality rate for infants and under 5 years children] in Cambodia was the second highest"[1] among neighbouring counties, as per WHO report (2009). Moreover, it is reported by the Cambodian Ministry of Health (2008) that "six out of the ten highest ranked diseases were water-borne diseases"[2] in the country. Those include: diarrhea, dysentery, skin disease and typhoid fever, among others.

This grim situation necessitated that we work on water treatment of existing water sources, like ponds and rivers, in Cambodia where access to safe water is a serious problem. Water contamination is rampant as "most people get their water from unsafe sources, few people treat the water before consumption, and most people are not transporting and storing their water safely."[3]

Geographic and Demographic description

- Geographic location of Cambodia

Cambodia's water crisis

Since our project is on water problem, we found Cambodia to be facing great challenges pertaining to its poor water quality and water scarcity, which according to the WHO, causes the following:

- High child morbidity rate (WHO, 2009)
- 6/10 highest ranked diseases are waterborne (Incl. Diarrhea, skin disease, typhoid fever, among others)

Furthermore, approximately 3 million people out of the total population of 16 million lack access to safe water and with approximately 77% of Cambodians living in rural areas, our project proposal specifically targets rural Cambodia where the poor access to safe water and sanitation disproportionately affects its rural communities.

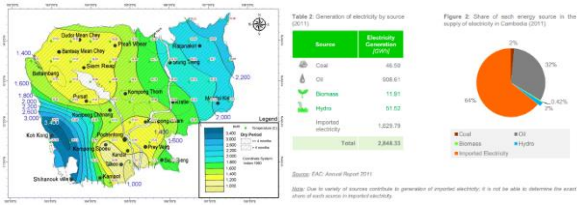
Our chosen location

Description of the field

The majority of the people in Cambodia rely on multiple sources in the community to meet their water needs, and regardless of the seasons (dry or rainy) they get their drinking water from unprotected, most likely contaminated, sources: Those constitute constructed ponds, wells and rainwater jars[4]

[1] JICA, NJS consultants and Kokusai kogyo, "Survey on water supply sector in the kingdom of Cambodia", Final report, June 2010, p. 3-12. http://open_jicareport.jica.go.jp/pdf/12005690_01.pdf
[2] Ibid., p.3-13.
[3] (2016). Baseline Survey Findings. *LifeWater*. Retrieved from: https://lifewater.org/wp-content/uploads/2018/10/Lifewater-SvayLeu-Cambodia-Baseline-Report.pdf [November 17, 2019]

during the dry season and Natural streams/ creeks during the rainy season. In terms of population size, the country has 16 million people with a surface area of 181,035 sq km.



		Dry Season		Rainy Season	
		Primary	Secondary	Primary	Secondary
Drinking Water Sources	Constructed Pond	**41%**	**33%**	10%	18%
	Drilled Well	16%	20%	7%	10%
	Unprotected Spring	13%	19%	7%	13%
	Surface Water	13%	11%	3%	7%
	Cart/Truck with Tank Drum	7%	8%	1%	1%
	Unprotected Well	4%	3%	1%	3%
	Protected Spring	3%	1%	1%	1%
	Rainwater Jars	1%	5%	**64%**	**41%**
	Bottled Water	1%	2%	1%	1%
	Rainwater Tank	0%	0%	4%	5%
Why This Source	Convenient	**28%**	3%	**52%**	**54%**
	Clear/Good Color	23%	**31%**	**43%**	**30%**
	No Smell	22%	**30%**	**32%**	**34%**
	Abundance of Water	**25%**	**32%**	10%	13%
	No Other Options	**26%**	9%	6%	9%
	Good Taste	17%	**26%**	**42%**	**37%**
	Health/Avoid Illness	1%	3%	4%	7%
	Doesn't Take Long Time	6%	9%	**28%**	**29%**
	Tradition	12%	9%	3%	9%
Average Time to Source (Minutes)		31	38	9	11
Average Distance to Source (Meters)		1270	1028	175	302
Have a Secondary Source			52%		73%
How Often Use Secondary Source	Always/Daily		44%		26%
	Often/Few Times Per Week		17%		21%
	Sometimes/Every Week		35%		49%
	Rarely		4%		5%
Treat Water Before Drinking		28%	20%	20%	21%
Pay for Use		12%	10%	3%	3%
Average Paid (Riel)	Upon Fetching	10,093	10,100		
	Per Month	14,625	20,833		

Natural and Social conditions

Despite the high risk of contamination, water scarcity is of a much greater concern to locals than water quality, with 87% of households saying they had a shortage of water during the past year, and only 4% recognizing water quality to be one of their greatest problems, according to the Lifewater survey of 2016.[5] This is why water treatment are not common, encouraging the necessity of our project.

From a reading through the literature, "there seems to be a low level of awareness about germs and disease transmission"[6] caused by water storage and transport. While people could themselves treat their drinking water by boiling it, they are unaware of the potential harms of unsafe water and lack concern for water quality. Therefore, only a low number of households attend to safe water storage and transportation. The remainder typically store water in unclean jars and transport it "in wide-mouthed jars that are dirty and not covered."

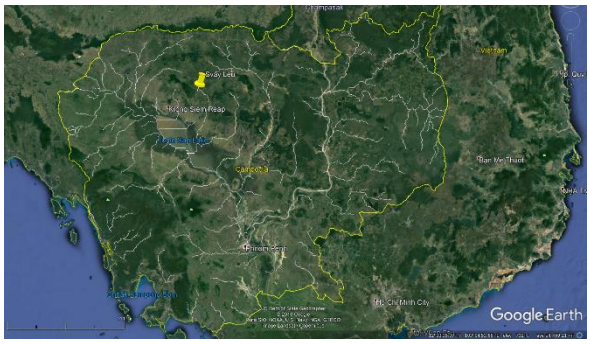
During the survey's focus group discussions, the meaning of "dirty water," was only perceived as water with chemicals or garbage/leaves, with only a few mentioning the safety of the water for drinking due to its contamination with germs. Yet the interesting part is that the most common response for "clean water," meant for the respondents: one that has been treated. With very few mentioning the source of water as a concern. Together, these data suggest that there is a lack of understanding about what makes water safe and the impact of water quality on health.[7]

Specific information on Svay Leu

In light of the above literature, after deliberate scrutiny of data on temperature, rain precipitation, sub-basin water retention, and overall topography of Cambodia using Google Earth, among others as above-described. We chose our Water Treatment Plant to be situated in Svay Leu district, as part of the Siem Reap province. Siem Reap province has very famous archeological sites, such as: Beng Mealea, Kantuot, Khnang Phnum, Ta Siem, and Svay Leu, the latter consists of 5 communes and 41 villages, of a population size of around 5,400.

We set our decision specifically to a village appropriate to our endeavour: One in high elevation and one on flat land, where the lake is of the same elevation as the town. Our aim is to present the possibility of both projects and choose the best among them following a number of criteria that includes beneficiaries' population size, social and natural conditions, maintenance fees (where a pump is needed), the feasibility of the project, and a life cycle assessment as will be later described.

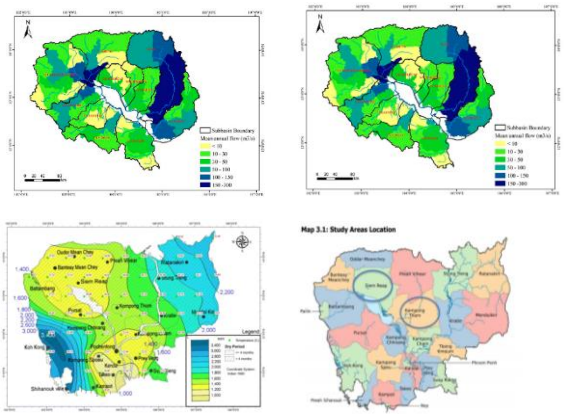
According to the literature on Svay Leu (below): "Existing cultivation area (basically paddy fields) is about 500 ha: of which 40% is located upstream of the dike and the remaining in downstream. […] land productivity in the area was getting worse, particularly after the irrigation structures were damaged by flood in year 2000."[8]

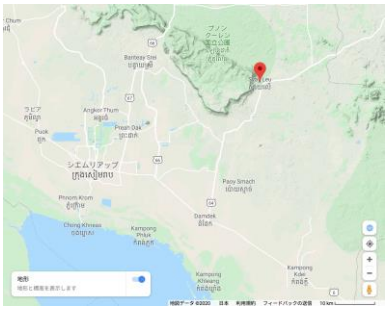


Relevant to our specific focus on Svay Leu, however, the area relies on ponds that collect water during the rainy season and ground water during the dry season, specifically from Stung Sreng Sub-basin (below).[9] A larger storage area can help the town especially since there is a lot of bare earth areas that are not used by anyone. The current ponds are small and

[4] Rainwater jars are traditional open containers that household members typically dip into, using a small bowl or cup. It's a means for water harvesting during rainy season.
[5] Op. Cit., (2016). Baseline Survey Findings., p.5.
[6] Ibid., p.15.
[7] Ibid.
[8] (2007) Cambodia: Preparing the Water ResourcesManagement (Sector) Project. *Asian Development Bank*. p.32. Retrieved from: https://www.adb.org/sites/default/files/project-document/66188/38558-01-cam-tacr-06.pdf [November 17, 2019]

owned by individuals who charge for the water. Rivers are not a reliable source of water in this area. The main power source for the area is coal. The area is located near Siem Reap and receives about 1400mm of rainfall a year (below), the amount of water generated in the nearest river called Chi Kreng is insignificant (annual average of 10-30 m3/s; Figure 2) and cannot be used for hydropower.





Svay Leu inhabitants and livelihood strategies

It's important to add that 45% of the people in Svay Leu are not educated. Then when it comes to their livelihood, they either work in: Wet-rice farming (i.e., during rainy season) (97%), fruit and cash crop farming (35%), home gardening (31%), livestock raising, or as wage-labour (ex. renting land for agriculture, traveling to Thailand or moving internally to other districts for work) (22%). Interesting points to note as showing in the pictures bellow, the land topography will play in favour of the setup of our intended project, even though this area does not have any river around Svay Leu. Interesting points to note in favour of the setup of our intended project, is the fact that, although this area does not have any river around Svay Leu, however there is a lot of bare earth area that can serve as a large water storage area.

Water sources

For the focus area of Siem Reap, people collect water from the following most common sources of water: rainwater harvesting (28-49%), family based or community based dug wells (75%), natural stream and creek system (16%), ponds (purchasing water either from individual pond-owners (16-22%) or private supplier (3%)). These figures make 19 to 25% of Siem Reap inhabitants buy water, but what's most important to note is that 74% of Svay Leu inhabitants have access to public waters for free (ponds, water jets and dug wells) and 0% pay the government for such a service.

To understand best the three different water treatment plants that we propose in the following sections, it's worth mentioning that currently, ponds are owned by individuals who currently charge for the water and the "average expense per time is around 3.8$" (418 yen). We have no information about the Liters they purchase "per time" but since our proposed project will cost 0.62$/L and 0.61$/L, we estimated that this is lower than a payment of almost 4$ "per time." Moreover, our project is certainly safer than the water they purchase from Pond owners, which could hold the possibility of being contaminated, as we shall later elaborate.

Population estimation

Population size

According to the official documents of Cambodia, the population of Svay Leu district was 12,869 in 1998, 25,726 in 2008, and 40,579 in 2015. The figure below shows the actual and calculated population curves of Svay Leu district, displayed in three circles. Although the population of Svay Leu was calculated based upon the growth rate of entire Cambodia (around 1.81% by 2030), the calculated curves shown in black and triangle were not fitted to actual population size due to lack of data. Hence, the red line was calculated on the assumption that the growth rate of Svay Leu is 7.1%. The three black circles indicate actual population obtained from these references. Two black circle and triangle lines are estimated population utilizing real annual population growth rate. However, these lines could not fit to the actual population at 2015.

[9] For more on the Stung Sreng Sub-basin, check: Op. Cit., (2007) "Cambodia: Preparing the Water Resources Management (Sector) Project," p.3.

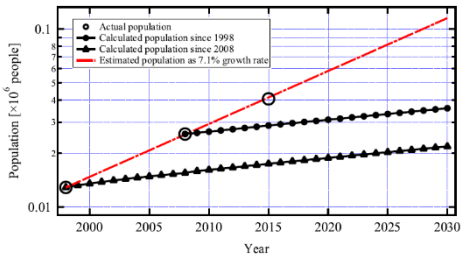


Fig. 4. Actual and calculated population curves of Svay Leu district.

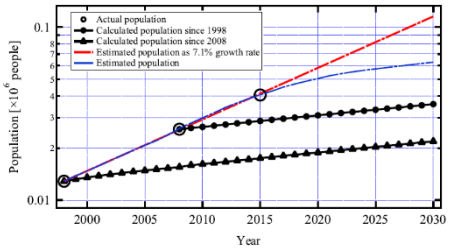


Fig. 1. Actual and calculated population curves of Svay Leu district.

Description of our project

In the following, we will present 3 types of water purification systems to be considered in the flat commune, based on a life cycle assessment of each project. (Including taking into account beneficiaries' population size, social and natural conditions, feasibility, labour and maintenance cost.) Case 1: Water harvesting (jars installation); Case 2: water purification facility on flat lands (requires water pumps); Case 3: water purification facility (using gravity).

Cost of the project

Case 1: Water harvesting & water jars

Cambodia has dry season from November to May and rainy season from May to November. The precipitation amount in the rainy season accounts for 85.9% of annual precipitation. Water acquisition in dry season is difficult in this area due to lower precipitation, rain water has to be stored efficiently in rainy season. Therefore, each village must have water savings of 13.3 × 106 L at the last day of the rainy season in order to supply enough amount of water during the dry season.

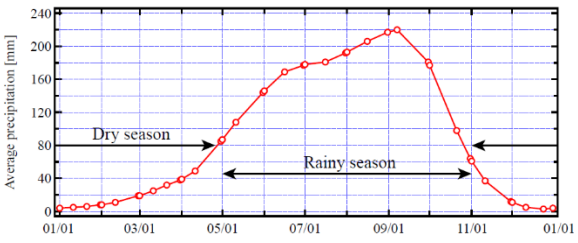


Fig. 3. Avarage precipitation data at the Siem Reap province.

In terms of water sources such as groundwater and wells, if we assume the main water source as being groundwater, it is often the most appropriate source for drinking water. However, it should not have high mineral content, as it makes unpleasant flavor, or even harmful to drink, which makes treatment necessary. Deep groundwater is generally bacteriologically safe, but shallow groundwater may contain bacterial and viral pollution from nearby pit latrines, septic tanks or cattle ponds.

Wells are classified into three groups: shallow well (less than 8m), deep well (deeper than 30 m), and intermediate well. The pumped water from the shallow well must be filtered, since the ground water taken from a shallow layer showed high iron concentration and low pH value that exceed drinking water quality standards. Thus, we have to evaluate costs for following two cases.

1. Shallow well (< 8 m) + purification system(TBD)
2. Deep well

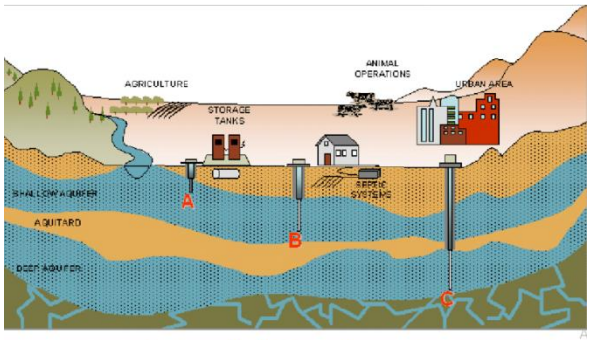


Fig. 2. (A) Shallow well, (B) Intermediate well, (C) Deep well.

Water consumption rate in the rural area of Cambodia is 40 L/capita/day, each village should produce 61,280 L/village/day in 2030. In order to estimate the necessary cost, the amount of water to store per day per village is assumed as 73,500 L which is corresponding to 120% of required value.

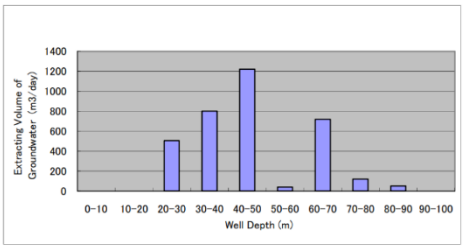


Fig. 3. Well depth and extracted volume of groundwater by several depth of private wells [4].

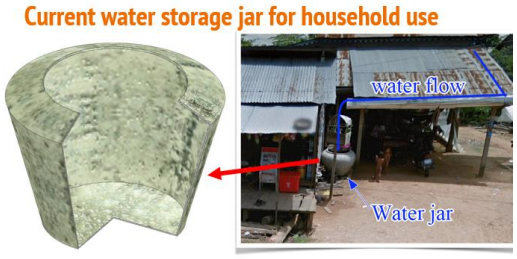
The fastest hand pump with 60 L/min elevation speed takes 22 hours to elevate 80,000 L per one hand pump, while the slowest hand pump requires 95 hours for that. Thus, installation of multiple units of hand pump or electric driven pump have to be considered. A ground water well can also be dug near the treatment plant to provide water during dry seasons.

Figure 3 shows the investigated result of extracted volume of groundwater [m3/day] by several private wells. The investigation was done at the city near the Tonle Sap lake in the same province of Svay Leu. According to the result, in the Siem Reap region, groundwater have to be extracted from the intermediate layer in the depth of 20 to 50 m. Table 1 shows the lists of price and pumping capacity of several types of hand pumps designed for shallow pump. Lifetime of the piston that is installed at the pump tip is 5 years and the price is about 30,000 yen. Although these pumps have an applicability to shallow well of less than 7m, additional install of extension pipe enables us to adopt those pumps to 50m depth. On the assumption of the 30m depth well, the additional cost is about 140,000 yen (80,000 yen for the extension of piston and 60,000 yen for the extension of pipes).

Table 1: Price and capacity lists of several kinds of hand pump.

Pump	Price [yen]	Capacity [L/min]	Material
A	37000	28	Iron
B	40000	35	Iron
C	60000	35	Iron body + stainless steel pipe
D	312000	60	Stainless steel
E	59800	14	Stainless steel
F	121000	60	Iron body + stainless steel pipe
G	23800	28	Iron

Total installation cost: **3,338,300 USD** + labor cost



The estimated volume of the jar is less than 600 L.

Table 1: Price lists of each component where $r_{od} = 0.65$ m, $r_{id} = 0.5$ m, $h_{depth} = h_{thick} = 0.15$ m, and price of concrete is \$ 150 [m^{-3}].

Items	Scale	Volume [m^3]	Price [\$]
Wall (concrete)	$\pi(r_{od}^2 - r_{id}^2) \cdot h_{depth}$	0.542	81.29
Floor + cover	$2\pi r_{od}^2 \cdot h_{thick}$	0.398	59.73
Compact slow sand filter [9]			80
Pipes			C_{pipe}
PVC rain gutter [10]	20 m		30
Construction cost			C_{const}

According to the price list shown in Table 1, the installation cost for one unit of water jar, C_{inst} [\$/unit], is obtained as

$$C_{inst} = (\pi(r_{od}^2 - r_{id}^2) \cdot h_{depth} + 2\pi r_{od}^2 \cdot h_{thick}) \cdot 150 + 110 + C_{pipe} + C_{const} \quad [\$/\text{unit}]. \qquad (1)$$

Case 2: Building a water purification facility on flat land

We will show in the cost comparison that building a large water purification facility is cheaper than installing a lot of jars.

Figure 4 shows the components of the water supply system that we are working on. From the main water source where the rainwater is stored, the water passes through the slow sand filter through the gate valves and is stored in the clear water storage. In order to store the 13,300m3 of rain water, a big water pool that has a scale of 70m×38m×5m should be constructed. The total cost of the wall and floor, are 81,750 USD and 207,675 USD, respectively, in addition to a slow sand filter: 2.3 m in depth. Therefore, the total construction cost except for labor cost is 289,425 USD. In terms of clear water storage, the calculation of slow sand filter, the cost of the clear-water storage is calculated. Since the minimum amount of water used per day is fixed, the capacity and cost of the tank are determined as 73.5 m3/day, 11,295 USD, respectively.

Fig. 4. Components of the water supply system.

In terms of slow sand filter, if we follow previous method and research on the slow sand filter installation in India, we calculated the system installation and running costs. According to the reference, the construction cost of slow sand filters is mainly determined by the cost of materials such as cement, building sand, gravel, reinforcement steel, filter sand, pipes and valves. The cost of labor and land is usually of lesser importance. In rural areas of India for example, the cost of land rarely exceeds 1% of the total construction cost. In order to calculate the total construction costs of a filter, the following equation is given.

$$Ct = Ca \times S + Cw \times Lw \qquad (1)$$

where, Ct is total construction cost, excluding pipes and valves, Ca is combined costs per square meter of filter bed area of floor, underdrains, gravel, filter sand and excavation, Cw is cost of the walls per running meter of wall length, S is total surface area [m2], and Lw is total wall length [m].

Table 1: Estimate of average cost per m^2 of filter bed area of floor, underdrains, gravel, filter excavation.

Items	Depth [m]	Unit rate [\$/m^3]	Cost [\$/m^2]
Earthwork excavation	2.50	10	25
Foundation (concrete)	0.15	150	22.5
Floor (reinforced concrete)	0.15	400	60
Filter sand (1 m) and gravel (0.3 m)	1.30	20	26
Brick underdrain		28	3
Total cost of filter bed C_a [\$/m^2]			136.5

The slow sand filter is composed of raw water storage, filter part, and clean water storage. According to the prior researches, the typical slow sand filter can purify 4 meter of water per day. Because the purification system should purify 73.5 L of water in a day, the cross section of the filter should be at least 18.375 m2. Therefore, total cost of the slow sand filter is 284,833 USD.

Thus, the total cost of the large purification system combining the main water source, slow sand filter, and clear water storage is **329,203 USD**.

Solar powered pump

Figure 5 shows the topographic map near the Svay Leu. According to the figure, the land at Svay Leu is very flat. Water should be pumped from the main water source and purified water source into the storage tank, because this system cannot utilize gravity. Moreover, no power is supplied to this village according to the google street view. Therefore, we have to install the solar pumping system to this facility.

Main water source (70 m × 38 m × 5 m)

Solar pumping system

The total cost including solar powered pumping system is **333,805 USD** (including pumps & solar panels).

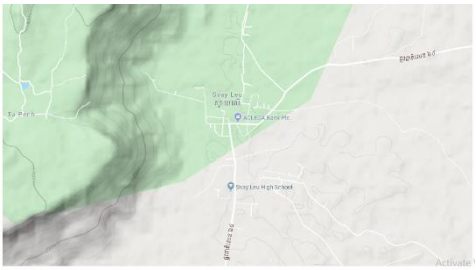


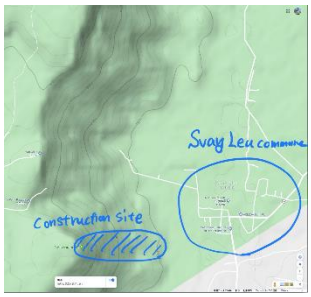
Fig. 5. Topographic map near the Svay Leu.

Table 2: Item list of solar powered pumping system

Items	Cost [\$]
Solar panel 253 W × 2	3696
AC Pump × 2 (250 W)	886
Water meter	20
Total cost of the system	4602

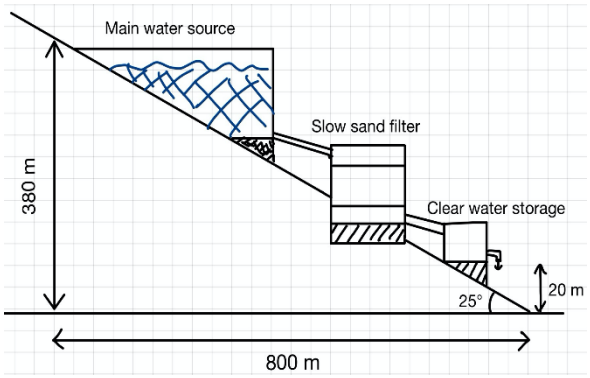
Case 3: Water purification facility on the top of a hill, leveraging gravity

Because solar powered pumping system depends upon the weather and its require maintenance. Case 3 does not require external pumps and solar panels because this system utilize gravity.



$$\mathrm{LCC} = \sum_{i=0}^{10} \frac{C_i}{(1+r)^i}$$

$$\tan^{-1}\left(\frac{380}{800}\right) \approx 25.4^\circ$$



Negotiation strategy

Project ownership

Ponds are owned by individuals who currently charge for the water and the "average expense per time is around 3.8$" (418 yen). We have no information about the Litres they purchase "per time" but since our proposed project will cost 0.62$/L and 0.61$/L, then we estimate that this is lower than a payment of almost 4$ "per time." Not only that, but our project is certainly safer than the water they purchase from pond-owners, which could hold the possibility of being contaminated, such would entail them higher treatment cost, a higher national health bill and possible infant deaths, as per WHO statistics.

Additional measures

This also brings us to the necessity of additional measures that would help us realize the greater good that local governments would like to accomplish, that is: to reduce the risk of water contamination in Rural Cambodia. Those measure could range from: Raising awareness of the proper water storage methods by locals, educating villagers, school teachers and children, on hygiene training and proper water use. Other solutions may encourage community-dug wells for common use, and we will invite even locals pond owners to learn better treatment and use, even capitalize on it, of their ponds, so as not to clash with them.

Conclusion

The proposed project proposes building a water treatment facility that we aim to promote for as part of a greater national and international campaign for a cleaner and even cheaper water source. which we will advertise for via broadcasting awareness campaigns on local TV, and local news.

We calculated the price of water utilizing Life cycle cost (LCC) including labor costs (1,536 USD/person/year), Maintenance fees (replacing the filter every 2 years), Labor cost (Pump replacement every 10 years).

As a results, the price of water of case 2 is 0.62 USD/L and case 3 is 0.61 USD/L.

$$\mathrm{LCC} = \sum_{i=0}^{10} \frac{C_i}{(1+r)^i}$$

$$\mathrm{COW} = \frac{\mathrm{LCC}}{\text{Total amount of water}} \quad [\$/\mathrm{L}]$$

These values are twice of the Cambodian typical water server fee.

COE: Cost of water, *Ci* is cost incurred in *i* year, *r* is discount rate, and *n* is product life time.

Case 2: 0.617 USD/L[10] & Case 3: 0.611 USD/L
Typical water server in Cambodia: 0.3 USD/L

	Case 1 (jars)	**Case 2** (purification facility in the flat-living area)	**Case 3** (purification facility on the mountain)
Total cost [USD]	3,338,300	333,805	329,203
	・Low hygiene ・High cost	・Middle cost due to pumping system	・Cost effective ・a bit far

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[10] Author's note: Subsidies from local governments and International donor countries currently exists to address water problems and related public health risks.

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Engineering Part of Building a Water Treatment Plant in Rural Cambodia

Yuji Shimabukuro

1 Introduction

In light of the national need in Cambodia for clean water distribution according to the available literature review, we chose to study the potential of setting up a water treatment facility. The reason for our informed decision mainly pertains to results of some official reports and studies highlighting the high child morbidity rate due to poor water quality as "the rate of mortality rate for infants and under 5 years children in Cambodia was the second highest" among neighboring countries, as WHO's report [1]. Moreover, it is reported by the Cambodian Ministry of Health that "Six out of the ten highest ranked diseases were water-borne diseases" in the country [2]. This grim situation necessitated that we work on water treatment of existing water sources, such as ponds and rivers, and the location of which will be deliberated in due course.

2 Background

2.1 Description of the field

Access to safe water is a serious problem in Cambodia. Water contamination is rampant as "most people get their water from unsafe sources, few people treat the water before consumption, and most people are not transporting and storing their water safely" [3]. The majority of people rely on multiple sources in the community to meet their water needs, and regardless of the seasons (dry or rainy) they get their drinking water from unprotected, most likely contaminated sources: Those constitute constructed ponds during the dry season and rainwater jars during the rainy season.

Despite the high risk of contamination, water scarcity is of a much greater concern to locals than water quality, with 87% of households saying they had a shortage of water during the past year, and only 4% recognizing water quality to be one of their greatest problems, according to the Lifewater survey of 2016 [3]. This is why water treatment are not common, encouraging the necessity of our project.

From a reading through the literature, "there seems to be a low level of awareness about germs and disease transmission" caused by water storage and transport. While people could themselves treat their drinking water by boiling it, they are unaware of the potential harms of unsafe water and lack concern for water quality. Therefore, only a low number of households attend to safe water storage and transportation. The remainder typically store water in unclean jars and transport it "in wide-mouthed jars that are dirty and not covered." During the survey's focus group discussions, the meaning of "dirty water", was only perceived as water chemicals or garbage/leaves, with only a few mentioning the safety of the water for drinking due to its contamination with germs. Yet the interesting part is that the most common response for "clean water" meant for the respondents: one that has been treated. With very few mentioning the source of water as a concern. Together, these data suggest that there is a lack of understanding about what makes water safe and the impact of water quality on health.

2.2 Our chosen location

In light of the above literature, after deliberate scrutiny of data on temperature, rain precipitation, sub-basin water retention, and overall topography of Cambodia, among others as described in the introduction. We set our decision to Svay Leu commune which is located on flat land. This commune is located in Svay Leu district in Cambodia, part of the Siem Reap province. Figure 1 indicates the location of Svay Leu district. This district consists of 5 communes (Beng Mealea, Kantuot, Khnang Phnum, Ta Siem, and Svay Leu) and 41 villages. In this report, we focused on the Svay Leu commune. Although there is a high hill on the west side of the commune, their living area is very flat. Figure 2 shows a photograph of typical landscape of that commune. According to the google street view, there are no hills and the commune does not have electric power line.

Fig. 1. Location of the Svay Leu district.

Fig. 2. A typical cityscape of Svay Leu commune.

Moreover, 45% of population in Svay Leu are not educated. Their main occupation is rice cultivation (97%) which is a seasonal cultivation. Therefore, they are working on fruit and cash crop farming (35%), home gardening (31%), wage labour (22%) such as renting land for agriculture, traveling to Thailand or moving internally to other districts for work and so on in addition to the rice farming.

2.2.1 Water sources

Prior research on water sources of Siem Reap province [4], showed 28 to 49% of residents utlizing rainwater harvesting in rainy season. In dry season, they utilize family based of community based dug wells (75%) and natural stream and creek system (16%). Figures 3 (a) (b), and (c) show typical households and their water jars in Svay Leu commune. According to these photographs, residents in this area use same water jars and the scale can be assumed from the boy height. Figure 4 is the modeled water jar by three dimensional CAD software. In this model, the height is 1000 mm, smallest

diameter is 600 mm, and largest diameter is 800 mm. The estimated volume of the jar is about 600 L.

Fig. 3. Photographs of typical households and their water jars.

Fig. 4. A modeled water storage jar.

In the target region, 74% of inhabitants have access to public waters for free from pond, water jar, and dug well, which could hold the possibility of being contaminated. Thus, the project proposes the clean water access for all inhabitants at low cost in following sections.

3 Population estimation

According to the official documents of Cambodia [8, 9, 10], populations of Svay Leu district were 12,869 in 1998, 25,726 in 2008, and 40579 may be in 2015. Figure 5 shows the actual and calculated population curves of Svay Leu district. The actual populations are shown in big three circles in the figure. Although population of Svay Leu was calculated based upon the population growth rate of entire Cambodia (≈ 1.5%) as shown in Fig. 6, calculated curves shown in black circle and triangle were not fitted to actual population.

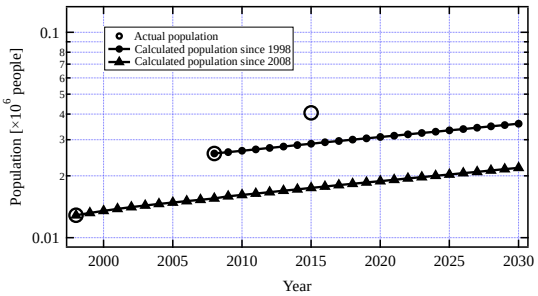

Fig. 5. Actual and calculated population curves of Svay Leu district.

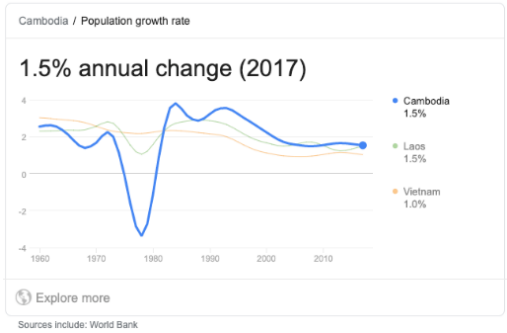

Fig. 6. Population growth rate of Cambodia with respect to year.

A red line in the Fig. 7 is an estimated curve utilizing linear approximation to meet three actual populations. The estimated line showed a good agreement with actual population. In this case, the red curve was calculated on the assumption that the population growth rate of Svay Leu follows to 7.1%. However, such a high population growth rate is unfeasible.

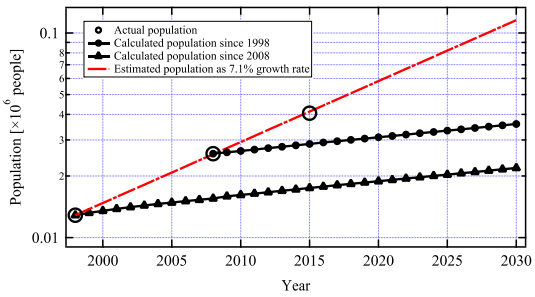

Fig. 7. The estimated population curve with 7.1% of population growth rate.

Thus, we assumed that the population growth rate will be converged to 1.81% at 2030. The estimated population curve is shown in Fig. 8 as a blue line. Current Svay Leu is composed of 5 communes(Beng Mealea, Kantuot, Khnang Phnum, Ta Siem, and Svay Leu) and 41 villages. Figure 9 shows the estimated population of one commune until 2030.

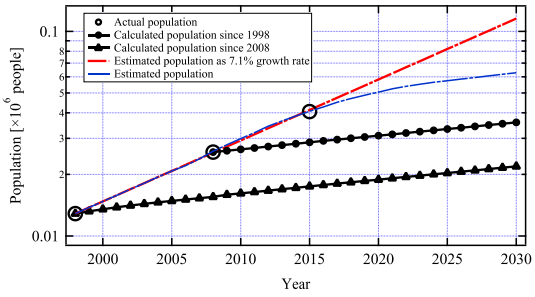

Fig. 8. The re-estimated population curve (in blue line).

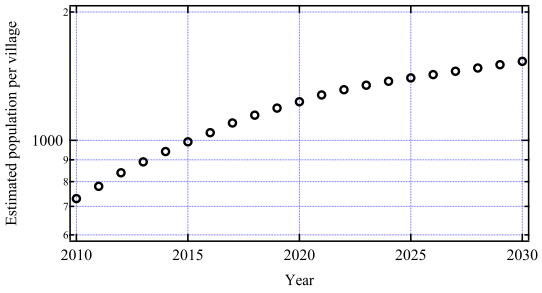

Fig. 9. Estimated population curves of a Svay Leu commune.

4 Proposed projects

In this class, we would like to supply clean water in order to improve hygiene awareness. We assume the main water source is a groundwater at first. Groundwater is often the most appropriate source for drinking water, provided it does not have a high mineral content, which males it unpleasant or even harmful to drink and, which makes treatment necessary. Deep groundwater is generally bacteriologically safe, but shallow ground water may contain bacterial and viral pollution from nearby pit latrines, septic tanks or cattle ponds. Wells are classified into three group: shallow well less than 8 m, deep well deeper than 30 m, and intermediate well as shown in Fig. 10. The pumped water from the shallow well must be filtered, since the ground water taken from a shallow layer showed high iron concentration and low pH value that exceed drinking water quality standards [1]. Thus, the project should be assumed to construct deep wells. However, confirmation for the presence of groundwater is not easy and its cost should be high. Therefore, we adopted not the deep well construction but a rainwater harvesting system.

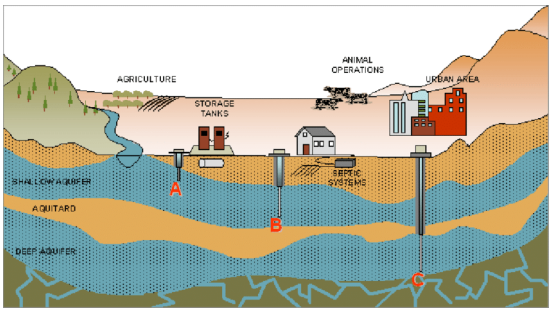

Fig. 10. (A) Shallow well, (B) Intermediate well, (C) Deep well.

4.1 Water harvesting system

4.1.1 Features of the area

Before the description of the project, we surveyed the precipitation of the area. According to the Fig. 11, annual precipitation of Svay Leu is about 1,400 mm.

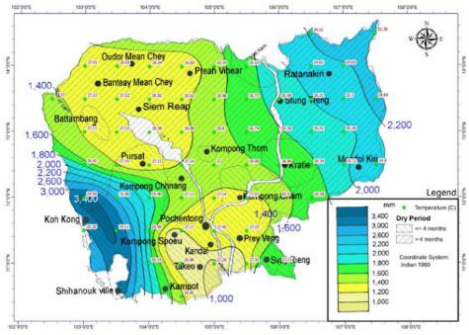

Fig. 11. Annual precipitations of Cambodia.

According to the average precipitation data as shown in Fig. 12, Cambodia has dry season from November to May and rainy season from May to November. The precipitation amount in the rainy season accounts for 85.9% of annual precipitation. Water acquisition in dry season is difficult in this area due to lower precipitation, rain water has to be stored efficiently in rainy season.

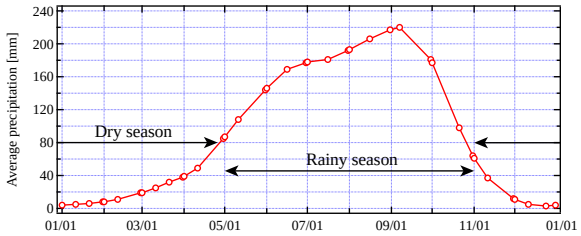

Fig. 12. Average precipitation data at the Siem Reap province.

4.1.2 Minimum quantity of water

According to the WHO's report as shown in Fig. 13, about 20 L/day/capita is the minimum quantity of safe water required to realize minimum essential levels for health and hygiene [15]. Minimum quantity of safe water is 20 L/day/capita, however Cambodian consume less than 5 L of water /day/capita. The WHO's table considers the use of drinking and cooking. In our project, in addition to 20 L of minimum quantity, we consider the amount of water needed to take a shower. Thus, we aim for a target 40 L/day/capita, which is twice as large of WHO's. As discussed in the last section, the estimated population of Svay Leu commune is 1,530 at 2030. Therefore, minimum quantity of required water per day per commune is about 61,280 L. In this report, we assumed the 120% of that value considering population growth: **73,500 L/day/commune**.

Type of need	Quantity	Comments
Survival (drinking and food)	2.5 to 3 lpd	Depends on climate and individual physiology
Basic hygiene practices	2 to 6 lpd	Depends on social and cultural norms
Basic cooking needs	3 to 6 lpd	Depends on food type, social and cultural norms
Total	**7.5 to 15 lpd**	lpd: Litres per day

Source: Adapted from Sphere. Also see WHO, 2011. *Guidelines for drinking-water quality, 4th edition.* World Health Organization, Geneva. http://www.who.int/water_sanitation_health/publications/2011/dwq_chapters/en/index.html

Fig. 13. Simplified table of water requirements for survival per person [15].

4.1.3 Case1: water jar + water purifier

Murase and coworkers installed unique water jar to store the rain water in the Bangladesh as shown in Fig. 14. Annual precipitation in their target area is about 2,000 mm, while that of our target area is about 1,400 mm. Following his method and prior research on the slow sand filter installation in the Colombia, we calculated the system installation and running costs.

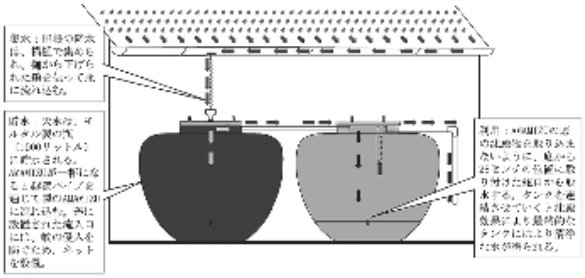

Fig. 14. A schematic diagram of the AMAMIZU system.

Table 1: Price lists of each component where r_{od} = 0.65 m, r_{id} = 0.5 m, $h_{depth} = h_{thick}$ = 0.15 m, and price of concrete is \$ 150 [m^{-3}].

Items	Scale	Volume [m^3]	Price [\$]
Wall (concrete)	$\pi(r_{od}^2 - r_{id}^2) \cdot h_{depth}$	0.542	81.29
Floor + cover	$2\pi r_{od}^2 \cdot h_{thick}$	0.398	59.73
Compact slow sand filter [12]			80
Pipes			C_{pipe}
PVC rain gutter [13]	20 m		30
Construction cost			C_{const}

According to the price list shown in Table 1, the installation cost for one unit of water jar, C_{inst} [\$/unit], is obtained as

$$C_{inst} = (\pi(r_{od}^2 - r_{id}^2) \cdot h_{depth} + 2\pi r_{od}^2 \cdot h_{thick}) \cdot 150 + 110 + C_{pipe} + C_{const} \quad [\$/\text{unit}]. \qquad (1)$$

When the capacity of the jar has 1,000 L, the installation cost C_{inst} is (251.02 + C_{pipe} + C_{const}) \$. In this case, each village must have water savings of 13.3×10^6 L at the last day of the rainy season in order to supply enough amount of water during the dry season. Thus, each village should install 13,300 jars; total installation cost is (**3,338,300 \$** + labor cost).

4.1.4 Case2: Large purification center on the flat land

Figure 15 shows the components of the water supply system that we are working on. From the main water source where the rainwater is stored, the water passes through the slow sand filter through the gate valves and is stored in the clear water storage.

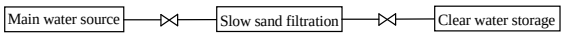

Fig. 15. Components of the water supply system.

Main water source
In order to store the 13,300 m^3 of rain water, a big water pool that has a scale of 70m × 38m × 5m should be constructed. The total cost of the wall and floor, are 81,750 USD and 207,675 USD, respectively. Therefore, the total construction cost except for labor cost is 289,425 USD.

Clear water storage
Beforehand the calculation of slow sand filter, the cost of the clear-water storage is calculated. Since the minimum amount of water used per day is fixed, the capacity and cost of the tank are determined as 73.5 m^3, 11295 USD, respectively.

Slow sand filter
Following Ref. [14]'s method and prior research on the slow sand filter installation in India, we calculated the system installation and running costs. According to the reference, the construction cost of slow sand filters is mainly determined by the cost of materials such as cement, building sand, gravel, reinforcement steel, filter sand, pipes and valves. The cost of labor and land is usually of lesser importance. In rural areas

$$C_t = C_a \times S + C_w \times L_w \qquad (2)$$

of India for example, the cost of land rarely exceeds 1% of the total construction cost. In order to calculate the total construction costs of a filter, the following equation is given.

where, C_t is total construction cost, excluding pipes and valves, C_a is combined costs per square meter of filter bed area of floor, underdrains, gravel, filter sand and excavation,

Table 2: Estimate of average cost per m^2 of filter bed area of floor, underdrains, gravel, filter sand and excavation.

Items	Depth [m]	Unit rate [\$/m^3]	Cost [\$/m^2]
Earthwork excavation	2.50	10	25
Foundation (concrete)	0.15	150	22.5
Floor (reinforced concrete)	0.15	400	60
Filter sand (1 m) and gravel (0.3 m)	1.30	20	26
Brick underdrain		28	3
Total cost of filter bed C_a [\$/m^2]			136.5

C_W is cost of the walls per running meter of wall length, S is total surface area [m^2], and L_W is total wall length [m].

The slow sand filter is composed of raw water storage, filter part, and clean water storage. According to the prior researches, the typical slow sand filter can purify 4 meter of water per day. Because the purification system should purify 73.5 L of water in a day, the cross section of the filter should be at least 18.375 m^2 . Therefore, total cost of the slow sand filter is 28483.3125 USD. This estimated cost does not include cost for pipe replacement, because the cost for that is negligible.

Figure 16 shows the topographic map near the Svay Leu. According to the figure, the land at Svay Leu is very flat. Water should be pumped from the main water source and purified water source into the storage tank, because this system cannot utilize gravity. Moreover, no power is supplied to this village according to the google street view. Therefore, we have to install the solar pumping system to this facility. The total cost including solar powered pumping system is **333805.3125 USD**.

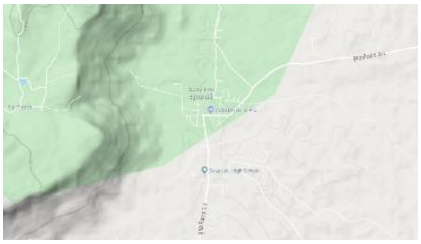

Fig. 16. Topographic map near the Svay Leu commune.

4.1.5 Case3: Large purification center on the hill

A basic concept of the case 3 is identical with the case 2 of that. The difference from the case 2 is utilization of gravity. Because solar powered pumping system depends upon the

weather and the system requires regular maintenance. We decide the construction site as shown in Fig. 17 since the nearest foot of the hill from the village has a shrine. Figure 18 shows the conceptual diagram of the large purification system on the hill. The system does not require external pumping system and solar panels because the system utilize gravity. Total cost for case 3 can be calculated as **329,203 USD**.

Fig. 17. Construction site.

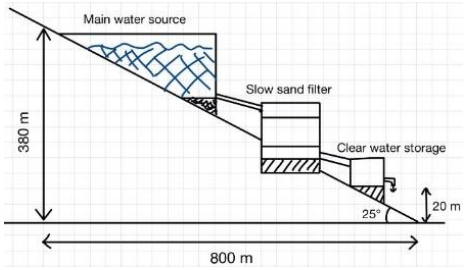

Fig. 18. A schematic diagram of the project in case 3.

Table 3: Summary of calculated total costs.

	Case 1	Case 2	Case 3
Total cost [USD]	3.34×10^6	3.33×10^5	3.29×10^5

Table 3 shows the summary of calculated total costs for each project. In order to estimate the price of water, a life cycle cost is calculated. Here, we assumed maintenance fee for replacing the sand filter in every 2 years, labor cost as 1,536 USD/person/year for 5 people, and pump and pipe replacement cost in every 10 years. In this estimation, we used following indices,

$$\mathrm{LCC} = \sum_{i=0}^{10} \frac{C_i}{(1+r)^i} \tag{3}$$

$$\mathrm{COW} = \frac{\mathrm{LCC}}{\text{Total amount of water}} \tag{4}$$

where LCC is life cycle cost, COW is cost of water, C_i is most incurred in i year, r is discount rate, and n is product life time. As a calculation result, case 2 and 3 requires 0.617 and 0.611 USD/L as the price of water, respectively. In Cambodia, these values are twice of the Cambodian typical water server fee. Therefore, we should raise awareness of the proper water storage methods and reduce the price of water utilizing other budgets. Here, we would like to propose cloud funding as a budget source. For example, in order to realize same price with the water server, minimum required budget is about 160,000 USD. Thus, collecting donation of 100 USD per person from 1,600 people realizes reduced price by half. Moreover, the value and people are plausible in the field of cloud funding system. Therefore, we think our proposed project is fully feasible to supply very clear water to poor rural Cambodian inhabitants at the price as the market and helps residents raising awareness to hygiene.

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