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## COMMUNITY BASED ENTREPRENEURSHIP EDUCATION: A STUDY OF THE CATET PROGRAM IN NEPAL

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**ABSTRACT:** *Community based enterprise can improve the livelihoods of marginalized and low income people in rural Nepal. Most of the labor force in rural communities consist of women contributing low productivity, long working hours and poor working conditions. Appropriate Technology along with entrepreneurship education can be the best means in bringing efficiency and high productivity in their daily business. Appropriate Technology based Entrepreneurship Training for Community development (CATET) developed by NITEC has been very essential tool for the development of such women based communities enterprises in rural Nepal. CATET is an approach in which University jointly works with the communities to solve their entrepreneurial problems. CATET has helped to provide the better understanding of entrepreneurship knowledge for the communities and have involved the academic sector which has contributed on developing appropriate technologies and providing essential business knowledge. CATET not only helped to develop new enterprises but also assisted the existing enterprises. Initial results are very encouraging so the joint collaboration of government, academia and community working together can make this model far more functional.*

**KEYWORDS:** appropriate technology, CATET, education, enterprises

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### INTRODUCTION

Entrepreneurship is a driven force that brings economic growth, and social development which ultimately brings innovation and sustainability in regions. (Laukkanen, 2000; Matlay & Mitra, 2002, Song & Winkler, 2014). Sanchez (2013) suggests that the greater the level of entrepreneurship in the country, there is a greater chance of growth in economy, innovation, and development. Baron and Shane (2007) also added that there is an important relationship between entrepreneurship and economic development of a country. Globally numerous initiatives have been taken and executed aiming to promote entrepreneurship development which could eventually improve the socio-economic condition of poor and marginalized communities. The poor and marginalized need to organize together in order to solve individual or collective problems (Yunus, 2008) and hence the cumulative effort for the running an enterprise is needed which can be termed as Community- based entrepreneurship.

A general model of a community-based entrepreneurship is the same across the region. It is led by an individual or a group, economically homogenous in nature. It has been recognized as an effective tool for capacity building of the marginalized section (Rao, 2003). The basic directive principles of community-based entrepreneurship are group approach, mutual trust, and motivation towards economic activities encouraged by institutional support (Parwez, 2017). Several other factors associated with community-based entrepreneurship are functions like operations, internal problems, effective leadership, and support towards establishing a business venture (Suresh, et al., 2003). The efforts of committed individuals to promote self-employment has led to the community-based entrepreneurship development. The community-based entrepreneurial venture is facing problems in every step from societal barriers to the market. This form of entrepreneurship takes place among the marginalized group because of socio-economic constraints. Studies have shown that they can lift themselves from the morass of poverty and stagnation through entrepreneurial activities based on collective action (Suresh & Saravan, 2013).

### **Appropriate Technology for Community Enterprise**

Community based enterprise idea was conceptualized by Peredo & Chrisman (2006) where author describes that community acts as entrepreneur and enterprise longing for the common benefit. In the model of Peredo & Chrisman (2006), community-based enterprise is ignited by social and economic problem that includes whole community to minimize economic problem and initiates to enhance cultural capital. “Appropriate technology” (AT) is often defined as a combine effort of innovation and product design that embraces socio-cultural aspects, meeting community’s need (Giorgio & Roveda, 1979). The term of appropriate technology itself interprets the need of technology that is ‘appropriate’ in nature with specific conditions to fulfill the need and want of people at community level (Sianipar & Adhiutama, 2012). AT is necessary approach for compatible, self-driven development in effective conditions (Dunn, 1978). Pellegrini (1980) defined that technology is called to be “appropriate” when its development in the specific area creates self-reinforcement, as a result it supports in the growth and development of a local region, and where community independently decides their future through development. It does not aim in replacing the existing technology but instead it seeks to be an innovation to the existing technology where previous technology has failed and became ineffective in solving problems of locals (Pattnaik & Dhal, 2015). It is an empowering technology, which should continue to develop so that it can be utilized properly in future (Sainipar, et al., 2014). Schumacher (1973) termed appropriate technology originally as “intermediate technology” where he also added that technology “appropriate” is reasonable for specific time and location if it were to meet the given conditions:

- a) If it were to create jobs in the place where people live
- b) If it is affordable for common purpose
- c) If it utilizes simple tools and methods
- d) If it utilizes local available resources
- e) If it makes thing for local use

### **Context of Nepal**

According to FAO, 66 percent of the population in Nepal is engaged in farming, which confirms that most people are involved in agri-based employment. Approximately 25% of the Nepalese population lives below the national poverty line as per the study conducted by Asian Development Bank in 2010 (ADB, 2010). This shows that rural communities in Nepal are directly involved in farming and much of the population is under poverty line. Upliftment of these communities is highly important for the economic growth of country. Nepalese society lacks the entrepreneur culture, creating enterprises especially to these low income and marginalized people and running business profitably is a very difficult task (Lamsal, et al., 2017).

In recent years, community-based enterprise has been developed in different parts of Nepal, and such enterprise utilizes market and different non marketing strategies to uplift the social and economic situation of local people by aiding in social value for the community members (Antinori & Bray 2005; Anderson, et al., 2006; Pedro & Chrisman, 2006). Such community enterprise is composed and operated by mostly local women from the community. Anderson, et al. (2006) in their findings adds that community enterprise often gets started out of social value and mission which aims in minimizing socio-economic problems by generating profits that contributes to achieving cultural and social goals of a community. However Timilsina, et al. (2019) in their research study states that Nepal's rural communities consist of approximately 80 percent women labors and therefore there is a need of ease of doing business and in this case, AT can come the best means of technology in order bringing efficiency and high productivity in their daily business. Under the condition, of affordability and utilization of local resources, AT comes to play significant role in utilization of local resources at community level taking maximum benefit, which ultimately contributes to overall country's' economic growth. Appropriate technology by its aim and purpose, is an important option for people in rural communities of Nepal.

Along with AT the need of entrepreneurship education is also very essential in context of rural Nepal. According to Kourilsky (1995), entrepreneurship education improves individual's skills in the area of making choices, and selecting opportunities and organization of resources to deal with various types of risks and or growth of business. Jones & English (2004) argue entrepreneurship education as a process that provides a confidence on individuals to recognize business opportunities and ones' self-esteem, knowledge, and ability to act. Foyolle, et al. (2006), argue that entrepreneurship education as a process that develops entrepreneurial attitudes and skills.

Gibb (2002) and Sogunro (2004) added that lecture based teaching methods are less effective in entrepreneurship education therefore adds that learning by doing is effective means of teaching just many researchers consider it to be the best method (Gorman, et al., 1997; Fiet, 2000a,b). There has been an increasing interest in government and universities to provide entrepreneurial education and training programs and therefore it is increasing entrepreneurial intent (Galvao, et al., 2017). On recent studies it is found that people who have attended entrepreneurship training courses have stronger intent to star their business and therefore a stronger believe on themselves to venture new business (Abou-warda, 2016). According to the study conducted by Foyolle & Klandt (2006), it is found that people with education and trainings on entrepreneurship gains knowledge to start

business as well as process that help them develop skills and attitude required for business. With growing number of community enterprises in Nepal in the recent years and continuous need of technology, Micro-Enterprise Development Programme (MEDEP) has developed various kinds of strategies and has provided support to such entrepreneurs in rural areas of the country (MEDEP, 2014). MEDEP became keenly aware of the potential of appropriate technologies for community development and sought to introduce a number of village-level appropriate technology components into its programme. Providing appropriate technology and related training to entrepreneurs will help entrepreneurs use local resources to promote their business and ultimately increase revenue generation (MEDEP, 2014). However, there was some short comings, it was found that, entrepreneurs need further training to improve their knowledge and skills to handle such technology and be sustainable in the long term.

It is found that community-based entrepreneurship development programs have the potential to provide local entrepreneurs with the skills and networks necessary to develop their businesses but the goal of such program should be to facilitate the potential entrepreneurs to scale beyond the micro level, rather than just a mere try to motivate people to become entrepreneurs through training programs or by subsidizing risk (Dixit, 2014). So, such programs must have a long-term vision to grow microenterprises beyond micro level.

### **CATET**

The micro enterprises in rural Nepal were contributing substantially to support livelihood, however need of scale up of these micro enterprises were identified. Appropriate Technology based Entrepreneurship Training for Community Development (CATET) is a program initiated by Nepal Innovation Technology & Entrepreneurship Center (NITEC) which focused scaling up of these micro enterprises and developing community through entrepreneurship. NITEC is a program initiated by South Korea's Ministry of Science and ICT (MSIT) to provide science and technology assistance for developing countries. NITEC aims to promote the science and technology capacity through the development of appropriate technology. It is pursuing projects to improve the quality of life of the local community through appropriate technology-based businesses.

CATET program is organized to offer tools and techniques to develop integrative thinking skills that enable community people to meet the challenges of advancing and sustaining their business enterprise. Through this program, participants can taste the entrepreneurial spirit, learn the basic skill-set necessary to develop their own going as an Entrepreneur. CATET program is based on the train-the-leader approach where the representatives from the rural communities are provided with the entrepreneurial and technological skills. Identifying the problems and addressing the problems by intervention of technology and transferring that technology to the needed is main model of this CATET program.

### **Objective of CATET**

CATET program is organized to provide the community people with business and technical skill set to develop as entrepreneur along with some technological assistance in most cases.

- Train community members to take initiative in their own change and develop a sustainable solution to the issues that they face within the community
- Develop an entrepreneurial mindset and problem solving approach.
- To support community initiative with technical assistance

### Aims and Methodology

NITEC has been running CATET program for five years (2016 to 2020 AD) and the aim of this study is to examine the effectiveness of CATET program and identify whether the participants have acquire necessary knowledge, skills and tool to run their enterprise. The specific objectives of the study include:

- Explore the knowledge of participants about entrepreneurship
- Analyze the types of business idea generation
- Analyze Types of business established.

### Framework of CATET

First stage of CATET is Problem Identification where genuine community problems are identified and collected; the problems are then intervened with appropriate technology-based solutions and trainings and the developed technology is then transferred to the needed communities that shares similar problem. Workshop: Workshop consist of well-designed course and incorporate topic like business model, research design, market research, and business plan. The course are designed especially for the rural community people who has limited understanding of business, and the lectures are given by the faculties of Universities and business experts working to promote local business. The basic curriculum of the workshop is given in the table 1.

Table 1: The Curriculum of the workshop during CATET

Theme	Type	Details
<b>1. Business Design I</b>	Lecture	Creating new value and consequently gain competitive advantage
a. Understanding the market	Lecture	Case Example of successful rural enterprises and its market in Nepal
b. Designing your own business model canvas	Activity	Development of business model canvas market in charts
<b>2.Business Design II</b>	Activity	<ul style="list-style-type: none"> <li>• Problem Solving</li> <li>• Idea generating</li> <li>• Drafting Business Model Chart</li> </ul>
a. Market survey / feasibility study	Lecture	Importance of Market survey and feasibility study in establishing business
<b>3. Business Designing III</b>	Activity	Developing Business Model
a. Technology	lecture	Importance of Appropriate Technology for community based enterprises
b. Product Design	Lecture	Value Added Product Design
c. Design thinking	Lecture	Strategies for problem solving in product development
d. Sustainability	Lecture	Sustainable use of resources and business sustainability

During the workshop, problem definition is explored through series of talks and activities. Genuine problem is then identified, and solution is proposed through the development of technology. Business opportunities can be identified in the capacity to solve everyday problem Baron (2004). Considering this the CATET model focus on the problem identification in order to identify the business opportunities and technologically intervention as a solution to the existing problem. In the field of science and innovation, University-industry technology transfer has long been eagerly pursued as. Generally, for the mutual enhancement of innovative potential, governments support universities and companies to collaborate in research projects (De Jong, et al., 2015). Various business idea is generated through this workshop and in later phase its feasibility analysis is done to develop those ideas into real business items.

2. Market feasibility and Technical feasibility Analysis: The marked survey is done both by the community people as well as the team from the NITEC. Based on the survey results, market feasibility report is prepared. Research & Development Team developed by NITEC works on the technical feasibility of the developing prototype.

3. Prototype Development: Proposed solution and technology development is done by Research & Development projects run by the Professors, Researchers and students of Pokhara University and partner Universities both locally and internationally. These R&D projects were supported financially and technically by NITEC. The prototype developed is later installed and tested in pilot village and further modification is done based on the result.

4. Enterprise development: To develop these rural enterprises into scalable business they are provided with further business consultation and seed grant. Support from various governmental and non-governmental organization was provided with the assistance of NITEC. They are also given chance to incorporate themselves in the huge network of industries, private companies and government bodies to promote and create a market for their business. The overall framework of CATET is shown in fig 1.

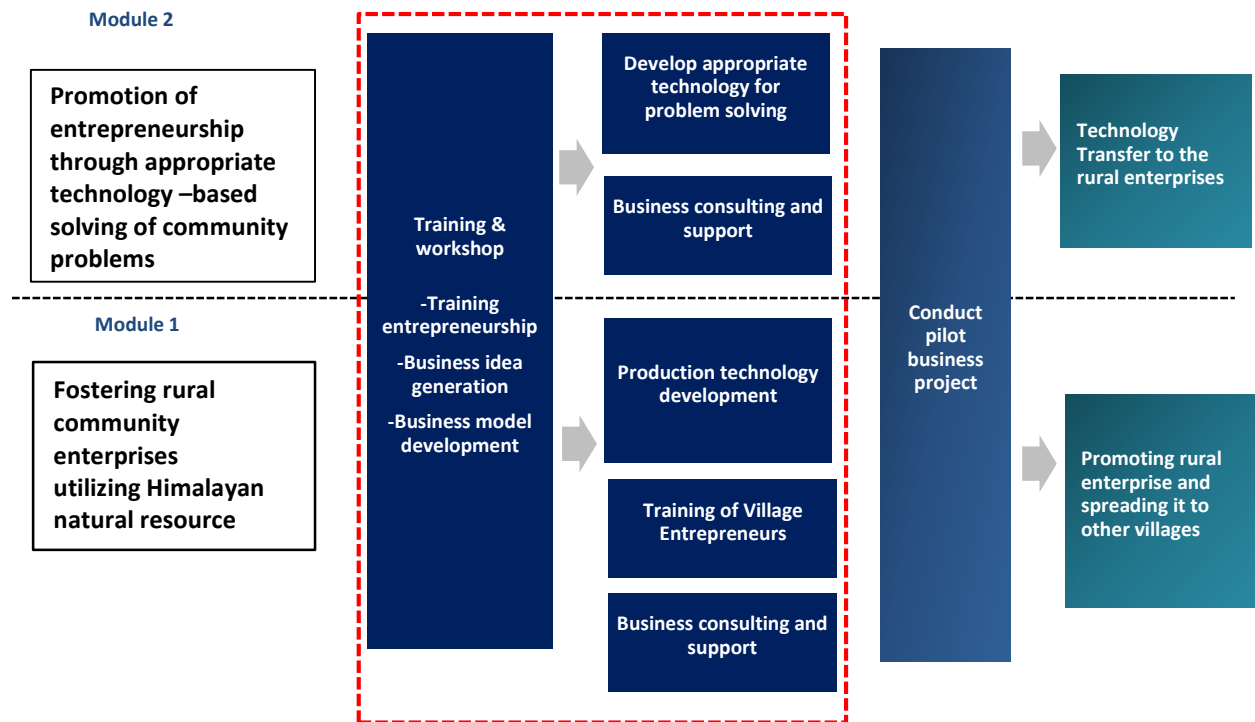


Fig 1: The overall framework of CATET

### Data Collection

NITEC worked closely with all the community members who participants at CATET program. Different kinds of surveys were done to collect the information during the program. To measure the effectiveness of the program two types of surveys were conducted; one to measure identify the knowledge gained by the participants comparing the pre and post program result and another called satisfaction survey which measure the satisfaction of participants regarding the program. The satisfaction survey was designed to see the various aspect of the program like its content and methods for further improvements and to see how satisfied the participants were regarding the program. Business model canvas were developed and collected from the participants to analyze the nature of business ideas. For the new enterprise development, the copy of the enterprise registration were kept for the record at NITEC. Also field visit to those enterprises were done frequently to gather further information and provide necessary assistance.

### RESULT

Since 2016, total number of 261 participants from various rural communities participated in seven different C-ATET. All these ATET programs were targeted to community people to impart the entrepreneurial knowledge and provide them technical and financial assistance with objective to develop new enterprises. Table 2 shows the details of various CATET programs organized

successfully so far. These workshops targeted the community people encouraging them to start community-based enterprises or build the capacity of existing enterprises by providing them technological support and financial aids.

Table 2: Details of CATET programs

S.N	Name of Workshop	Year	No of Participants	Business Ideas
1	C-ATET I	2016	24	7
2	C-ATET II	2016	35	7
3	CATET III	2017	46	8
4	C-ATET (Rural)	2018	35	2
5	CATET IV, Phase I	2018	40	10
6	CATET IV, Phase II	2018	43	13
7	CATET V	2019	38	8
<i>Total</i>			261	55

More than 70% of the participants were women belonging to marginalized and low income communities. Figure 2 shows the outreach of CATET programs to the various region of Nepal. The most participants are found to be in the region of Kaski District and its nearby districts. The communities from eastern mountains to western mountains of Nepal participated in the program.

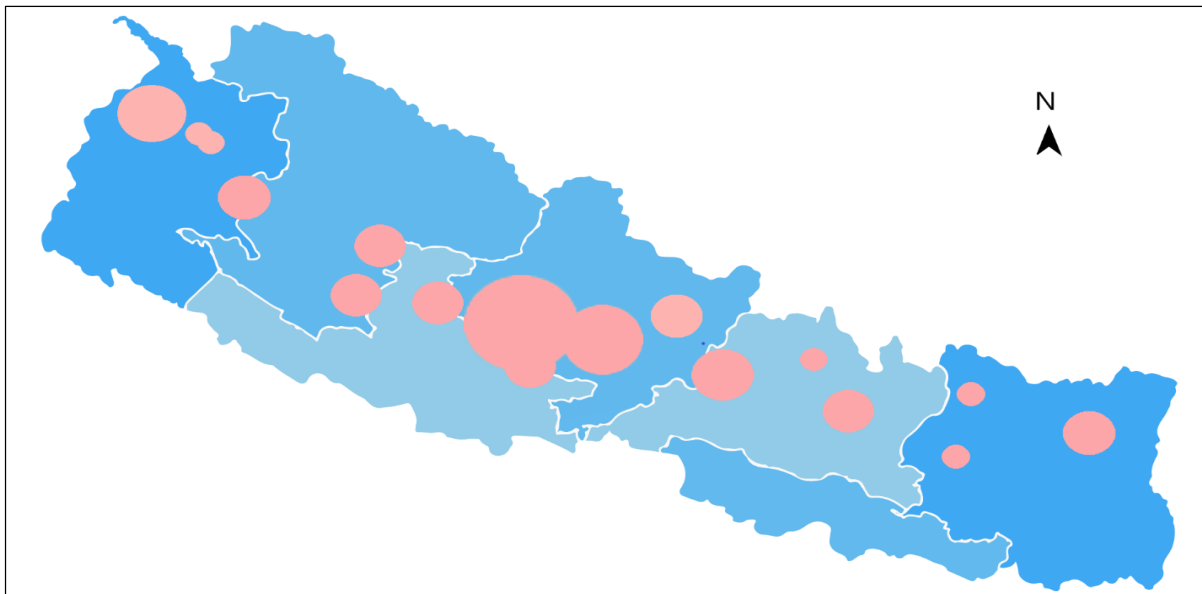


Fig 2: Map of Nepal Showing the participants from various regions

### Education Effectiveness

The pre and post survey was conducted to the participants specially to measure their knowledge about entrepreneurship and various aspects of business such as market research, design thinking,



business model and more. Figure 3 shows the comparison of pre and post workshop regarding the knowledge of participants on the subject matters.



Fig 3: Comparison of participants' knowledge regarding subject matter, pre and post CATET

The result shows 40.25% were able to understand about entrepreneurship after attending the program who, prior to this program were unaware about entrepreneurship. 44.55% of the participants previously didn't know about business model, learnt about various components of business model like, value proposition, cost structure, customer needs and market size after the completion of the program.

The participants were also able to learn and explain about the market research including customer segmentation, target customers and competitors with significant increase of 37.95% as compared to pre and post surveys. Only 32.26% of participants previously knew about design thinking and its components like empathy, prototype; this number significantly grew to 80.06% after the completion of program. This is increase of 52.80 % after the completion of the program.

### Satisfaction Survey

Similarly, the satisfaction survey was designed to see the various aspect of the program like its content and methods, for further improvements and to see how satisfied the participants were regarding the program. The result showed that participants were pretty satisfied with the program as the mean of overall satisfaction of the program was 3.9 which is higher than the average mean value of five-point Likert scale based on the various ratings provide by the participants. 65.15% of participants agreed that the knowledge and skills obtained from the program has been helpful in enhancing the capacity to build social innovation venture in the future and 28.79% strongly agreed on this.

The program method has mean value of 3.89, this means participants were satisfied with the program method which includes the classroom and training equipment, activities, group work, participation opportunities and course materials.

### Business Idea and their Nature

Altogether 55 different ideas and groups participated in the six different CATET programs. Figure 1 shows the classification of the business ideas based on their nature of business. Amongst 70% are forest-based businesses because Third and fourth workshops were specially targeted to forest-based enterprises. 24% accounts to agro-based business and remaining are equally distributed to skill-base, service oriented and trade business.

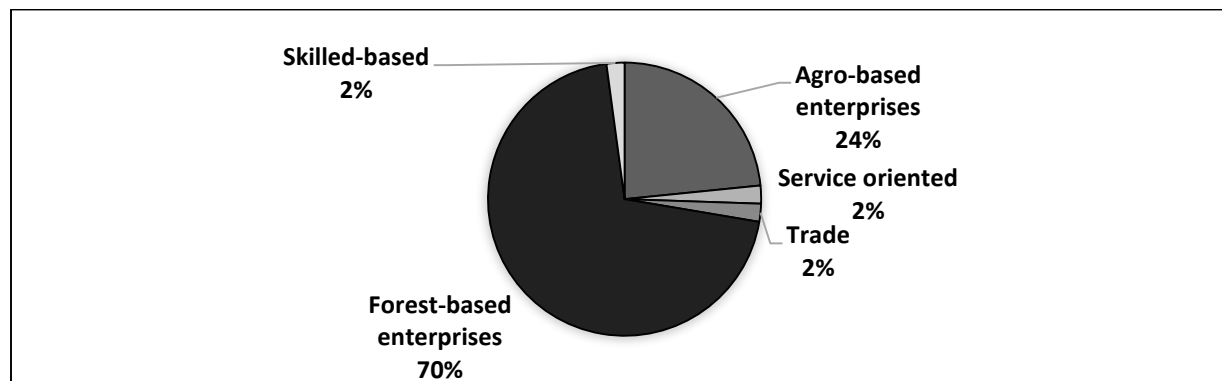


Figure 4: Classification of the ideas based on the nature of business

### Development of Appropriate Technology for rural enterprise

The CATET program as discussed is designed to address communities' problem and provide technological intervention by establishing and supporting community-based enterprises. Various appropriate technologies were developed in the course which helped communities not just by increasing efficiency but also contributed in their income and employment generation. Table 3 shows the details of various technologies developed as part of CATET program. These technologies were outcome of R&BD projects which went under continuous modification and testing to develop as final product. The Allo refining system was the most widely adopted technology which was designed to extract fiber form the Himalayan Giant Nettle found in high hills of Nepal. These technologies are successfully being implemented in various rural based enterprises all over Nepal.

Table 1: Appropriate technologies developed for rural enterprises

	Developed Technology	Function	System Developed
1	Allo Refining System	System to extract fiber from the bark of Himalayan Giant Nettle	25
2	E-boiler	Boiling lokta bark for making handmade paper	3
3	Solar powered food drier	Drying Large Cardamom and other agricultural and herbal products	1
4	Smoke free Cardamom Drier	Drying large cardamom and other agricultural products.	1
5	Cost Effective Axial Bamboo Splitter	Splitting bamboo to make bamboo handicraft	1
6.	Fiber Opener and cutter	Cutting at desired length and opening of nettle fiber	2

### Startups and Job Creation

Entrepreneurship training programs often target existing and aspiring entrepreneurs, so the level of entrepreneurship or the number of start-ups after intervention is an indicator of success. (Patel, 2014). To determine the success rate, this study assesses the rate of start-ups originating from group or individuals who attended entrepreneurship training program. Total of 55 business ideas were generated by the participated in the different CATET programs. Out of these 55 ideas, 21 were already an existing business and the remaining 62% were the potential ideas. After the completion of the program 18 new enterprises were established. 52.9% of potential business ideas were turned into a real enterprise. Figure 5 shows the percentage of participants based on the phase of the business, where 33% of business ideas were turned into new enterprises. The Classification of the ideas based on the phase of business is given in figure 5.

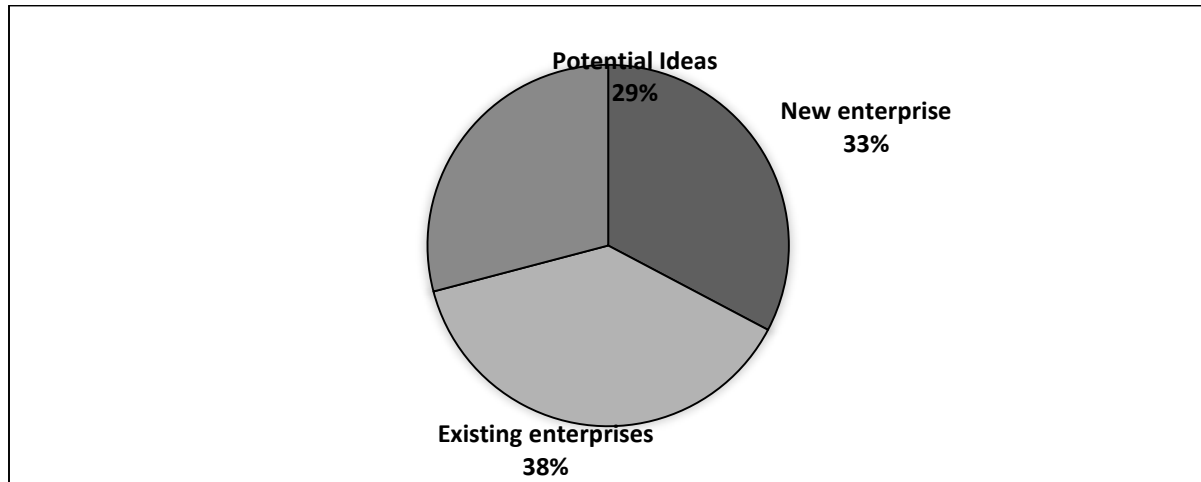


Fig 5: Classification of the ideas based on the phase of business

The 18 new enterprises established after the CATET programs generated 200 new direct employment opportunities. Apart from these new enterprises the already existed enterprises also grew their business.

### New Enterprises Nature of Business

The 18 new enterprises established after the CATET programs. Figure 6 represents the nature of the business enterprises established as the result of the CATET program

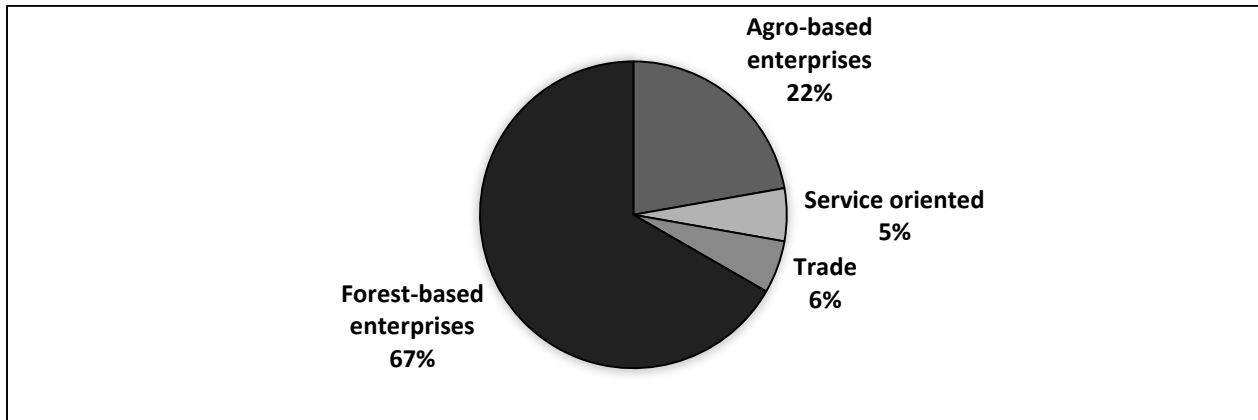


Fig 6: Classification of new enterprises established on the basis of their nature

Figure 6 represents the nature of the business enterprises established as the result of the CATET program. Maximum number of enterprises are the forest-based enterprises due to the greater number of agro based enterprises. Similarly, other forms of business include agro-based enterprises, trade and service-oriented with the least number of businesses.

## CONCLUSION

Rural communities in Nepal are mostly involved in agriculture and much of the population is living under national poverty line. Upliftment of these communities is very essential for the economic growth of country. Nepalese society lacks the entrepreneur culture, creating enterprises especially to these low income and marginalized people and running business profitably is a very difficult task. Nepal's rural communities consist of approximately 80 percent women labors and therefore there is a need of ease of doing business and in this case, AT can come the best means of technology in order bringing efficiency and high productivity in their daily business. Under the condition, of affordability and utilization of local resources, AT comes to play significant role in utilization of local resources at community level taking maximum benefit, which ultimately contributes to overall country's economic growth. Appropriate technology by its aim and purpose, is an important option for people in rural communities of Nepal. NITEC developed a tool called Appropriate Technology based Entrepreneurship Training for Community Development which integrated entrepreneurship education with innovation combining the academic knowledge and communities to solve the local problems.

The CATET program included the communities from the most rural part of Nepal. More than 70% of the participants were women belonging to marginalized and low income communities. The program was able to develop the understanding of entrepreneurship to more than 40% of the participants involved in the program. Six different type of technologies were developed from the R&D projects involving the faculties and researchers of different Universities. More than 55 business ideas were generated out of which 18 ideas were developed into real business. The result from CATET shows that this model can be important tool for encouraging more communities to be engaged in entrepreneurship. It is recommended that more Universities and governmental

institution in Nepal should connect with the communities for enterprise development. These community based enterprises can gradually lead to the utilization of the natural resources available in Nepal and can ultimately create jobs in the localities for the rural people. CATET can contribute in building community enterprises all over Nepal and can play a huge role in poverty alleviation in Nepal.

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