

Nepal Innovation Technology & Entrepreneurship Center (NITEC)

The Nepal Innovation Technology & Entrepreneurship Center (NITEC) is part of a program initiated by South Korea's Ministry of Science, ICT and Future Planning (MSIP) to provide science and technology assistance for developing countries. Located in the Himalayan region of Nepal, NITEC is based in the Pokhara University (PU) campus. **NITEC aims to promote the science and technology capacity of PU through the development of appropriate technology that can be commercialized.** It is pursuing projects to improve the quality of life of local community through appropriate technology based businesses.

Starting from 2015, NITEC has been supporting and managing numerous joint projects between Handong Global University (HGU) in South Korea and Pokhara University (PU) in Nepal. Projects range from the development of appropriate technology to commercialization, and they encourage the active participation of Nepalese experts and local communities. **NITEC intends to foster the appropriate technology based manufacturing industry and spread local business models to other communities in order to raise their economic self-sufficiency.** By developing appropriate technology items based on local needs into sustainable profit-making businesses, NITEC seeks to promote community-specific regional development that resolves the problems of poverty in each community.

Vision

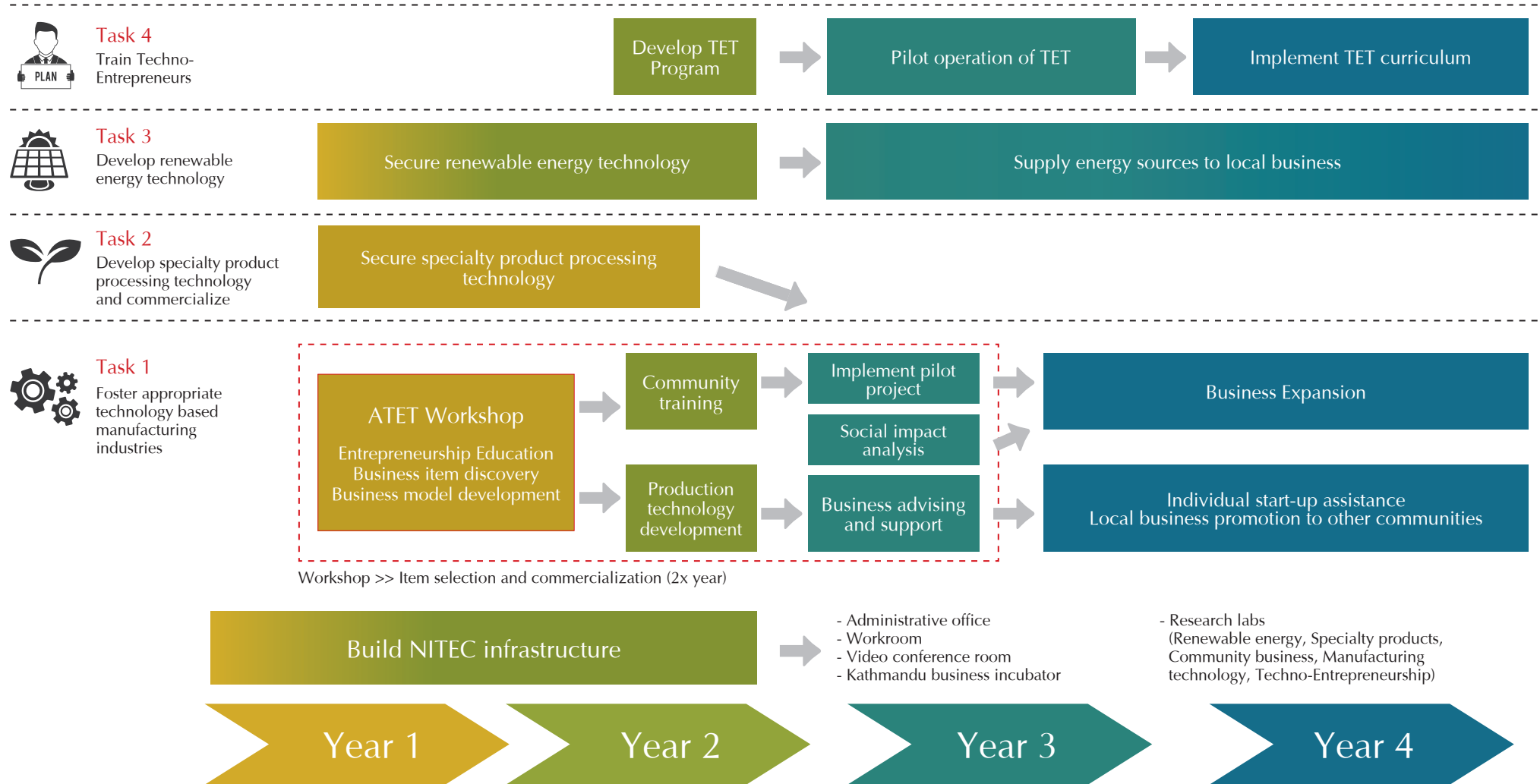
- Developing Communities through Appropriate Technology-based Community Business
- Revitalizing the Foundation of the Manufacturing Industry in Nepal through Techno-Ventures

Goals

- Develop innovative technology for processing specialty product for community enterprises
 - Disseminate renewable energy technology for community enterprises in remote regions
 - Develop manufacturing businesses based on appropriate innovative technology
 - Foster techno-entrepreneurs through techno-entrepreneurship training curriculum
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Project Roadmap

- Project Duration: 4 years (July 2015 to June 2019, 48 months in total)
- Project Outline: 4 main tasks



*ATET : Appropriate Technology based Entrepreneurship Training / TET : Techno-Entrepreneur Training

Project Outline

Task 1.

Foster appropriate technology based manufacturing industries

In this phase, NITEC holds **Appropriate Technology based Entrepreneurship Training (ATET)** workshops for Nepalese locals and university students in order to discover appropriate technology based business items and turn them into businesses. Outstanding business items that are discovered through the workshops receive needed support in technology development, production and distribution from an R&BD team composed of HGU and PU faculty and experts in technology and business management. Some workshop participants are given the opportunity to pursue pilot projects and receive business incubation services.

Task 2.

Develop processing technology for strategic specialty products and establish local businesses

In this phase, NITEC develops processing technology for high value-added specialty products utilizing Himalayan cash crops. It helps establish and support local businesses that produce such specialty products so that community residents can continuously create profit. Processing technology, manufacturing systems and local business models are disseminated to other regions, expanding self-sufficient businesses led by locals in other communities.

Task 3.

Develop renewable energy technology

In this phase, NITEC secures technology for renewable energy, such as photovoltaic and pico-hydroelectricity energy, and develops systems that enable the self-generation of electricity. HGU faculty and Korean technology experts support the R&BD for such projects by serving as technology development advisors. They help enhance the capacity of energy technology research at PU and produce energy technology professionals by educating and training students. The electricity that is produced through technology development is supplied to local businesses in rural areas, promoting revenue growth in communities.

Task 4.

Develop curriculum to train techno-entrepreneurs

NITEC is developing the educational contents of the ATET workshops into a regular curriculum at PU. The **Techno-Entrepreneur Training (TET)** program will offer four courses that encompass entrepreneurship, technology-based businesses and business start-ups. As future entrepreneurs equipped with professional knowledge, students who complete the TET program will receive support in establishing and operating real technology-based businesses.

Task 1.

Foster appropriate technology based manufacturing industries

Objectives

- Support locals to discover appropriate technology based business items and develop business models in manufacturing industries
- Help communities reach economic self-sufficiency by building appropriate technology based local businesses

Description and Anticipated Effects

ATET (Appropriate Technology based Entrepreneurship Training) Workshops

- Who: University students, local community members, general public
- When: Twice a year (summer, winter)



Description and activities

- Lectures by HGU faculty and experts from various sectors, hands-on training
- Educational sessions on entrepreneurship and appropriate technology-based business
- Discover appropriate technology based business items and develop business models

- Educational sessions on business planning and start-up businesses

Workshop Outline

| Theme | Contents |
|---------------------------------------|--------------------------------------------|
| Entrepreneurship | 1. Economics Growth of South Korea |
| | 2. Introduction to Social Entrepreneurship |
| | 3. Appropriate Technology and Business |
| Appropriate Technology based Business | 4. Business Item Idea Development |
| | 5. Business Model Design |
| | 6. Product Development |
| | 7. Start-up Business |
| | 8. Business Planning |

Follow-up support during the business process

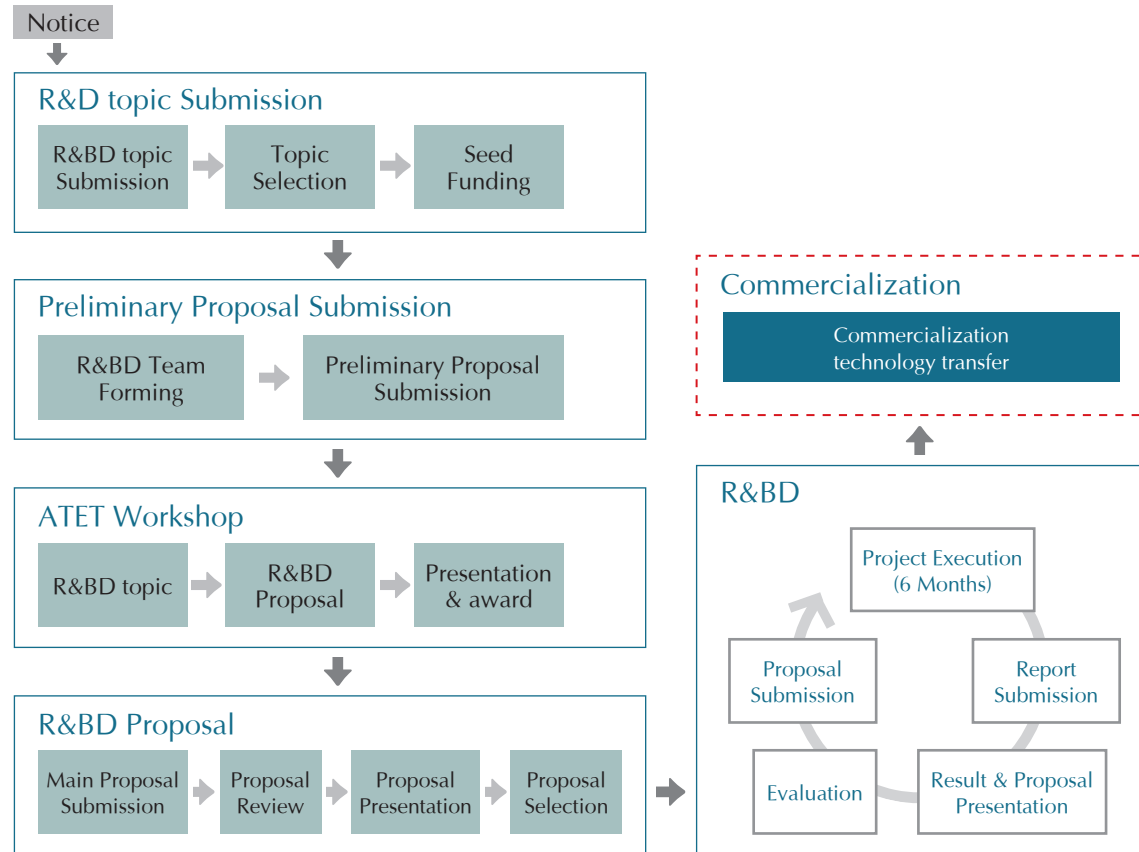
- Business development support from PU faculty and NITEC professionals
- Consultation and resource linkages with technology and business management experts on commercialization
- Consultation and resource linkages with domestic and international corporation experts on local businesses

R&BD (Research & Business Development) Projects and ATET program

The NITEC is performing projects that aim to develop innovative technology for processing special Nepalese products for business. **This Project for promoting development of Nepal will be called the Research & Business Development (R&BD) Project.** Receiving project proposals from those of the Nepali people will proceed with the selected project. Before a R&BD Project proposal submission, ATET Workshop so called 'Appropriate Technology based Entrepreneurship Training' will be conducted. **During the ATET workshop the participants will develop the AT-related topic into R&BD proposals.** R&BD proposals must be submitted by a team. The final proposal selected through a competition will be commercialized after research and development for 6 months.

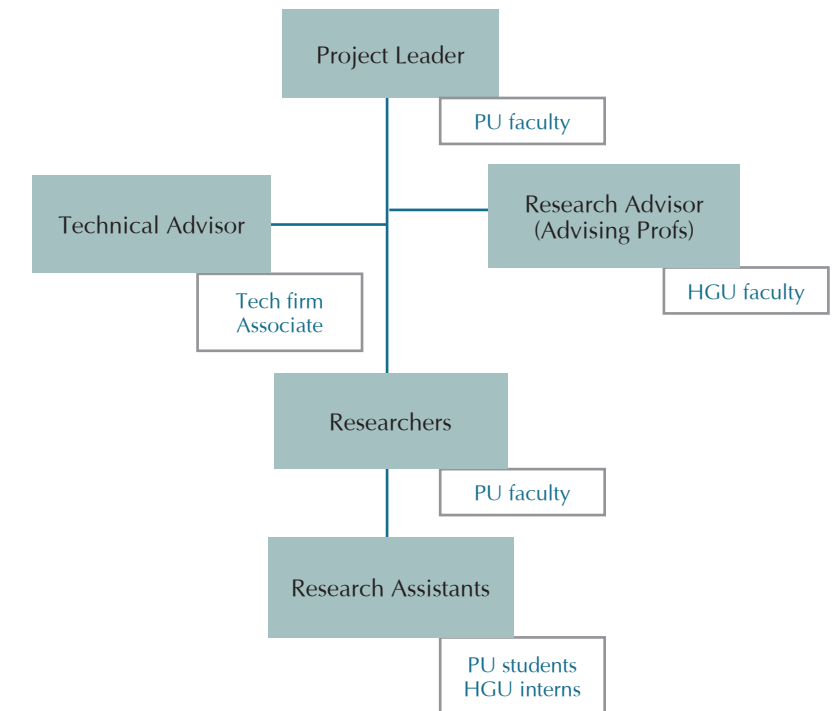
R&BD Project Procedure

- The Procedure for the members of Pokhara University



Research Team

- Appoint PU faculty members to head each research center
- Organize an advisory committee for each research center (HGU faculty and tech experts)
- Provide R&BD support for TPC professionals in NITEC



Task 2.

Develop processing technology for strategic specialty products and establish local businesses

Objectives

- Launch a R&D team for specialty product processing technology in PU and build needed equipment
- Secure appropriate technology to process specialty products from the Himalayan region
- Establish local businesses based on processing technology for Himalayan specialty products

Description and Anticipated Effects



- Operate research center for processing specialty products
 - Investigate current state of Himalayan specialty products and perform R&D on processing technology
 - Enhance research capacity of PU in specialty product processing

- Establish local businesses and operate pilot projects

- Build production and processing equipment for specialty products at the village level
- Offer education and training to locals (linkages with regional development NGOs)
- Provide support in establishing and managing local businesses



- Build foundation for raising rural household income and achieving community-level economic sufficiency
- Disseminate and expand business models for local businesses based on specialty product processing technology

Timeline



Task 3.

Develop renewable energy technology

Objectives

- Launch a renewable energy R&D team at PU and build necessary equipment
- Secure and disseminate photovoltaic and small hydropower generating technology for rural, mountainous, and off-grid regions
- Power transmission to local businesses and factories
- Train Nepalese experts and technical professionals in power generation

Description and Anticipated Effects



- Operate a renewable energy research center

- Perform R&D on photovoltaic and pico-hydroelectricity generating technology
- Secure small-scale photovoltaic power generation system technology for experimental use
- Conduct a research investigation on the environment for small hydropower generation technology and develop an optimized system
- Enhance the technological research capacity of PU in the renewable energy sector

- Install a power supply system for local businesses and begin power transmission

- Educate local residents about renewable energy and train technical professionals

Timeline



Task 4.
Develop curriculum to train techno-entrepreneurs

Objectives

- Offer a regular university curriculum for discovering and training young techno-entrepreneurs
- Enhance the capacity of university students and young adults to start technology-based businesses

Description and Anticipated Effects



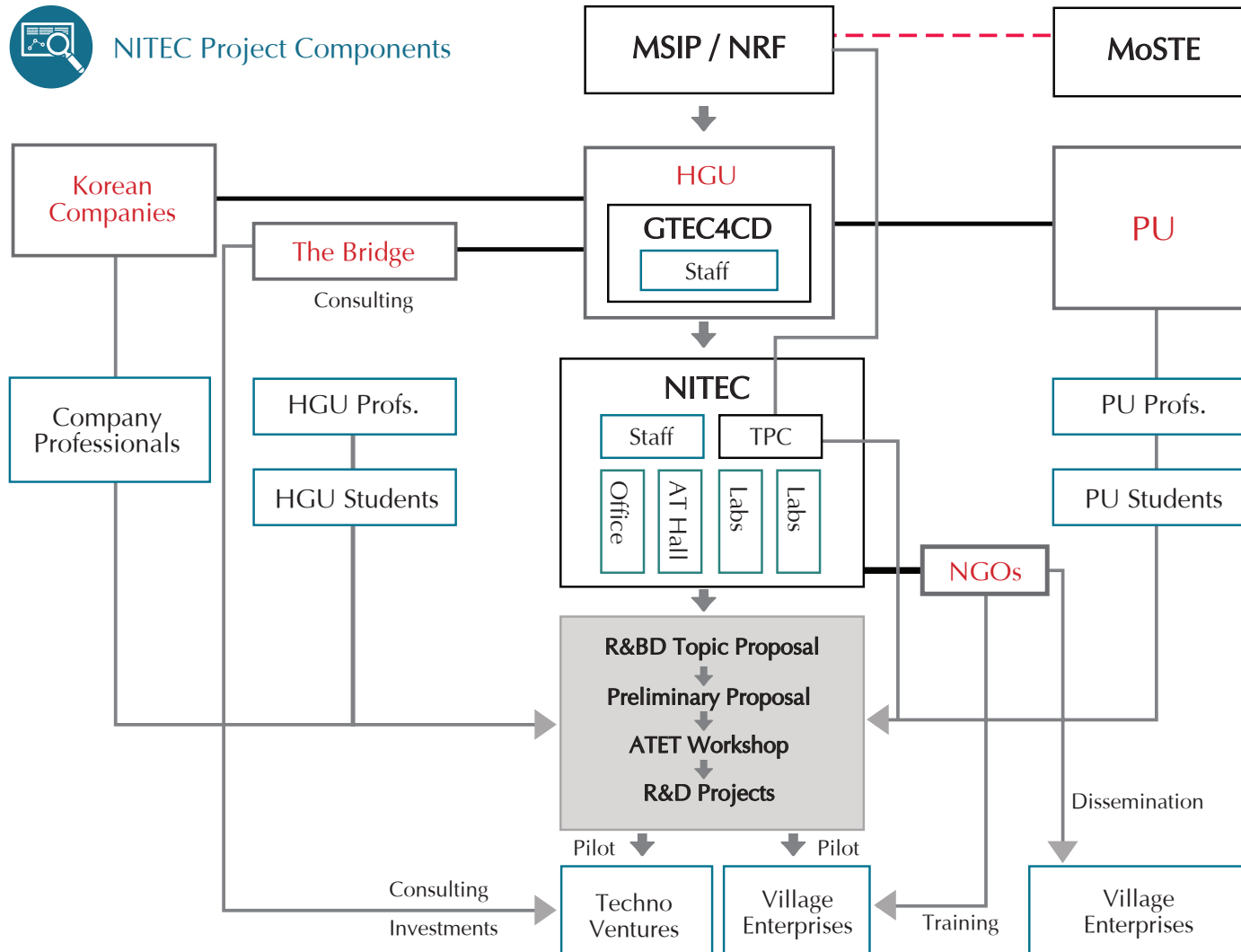
- Develop a regular curriculum for technology-based entrepreneurship at PU
 - Institute the TET (Techno-Entrepreneur Training) program at PU (3 credits per course, 4 courses in total)
 - Organize a hands-on learning curriculum that combines techno-entrepreneurship theory and on-site work experience
 - Promote student-led discovery of technology-based business items and support business model development
- Provide pilot project support and start-up resource linkages for TET graduates

Curriculum Outline

| Course Name | Description | Credits |
|--------------------------------------|-----------------------------------------------------|---------|
| Techno-Entrepreneurial Practicum I | The Entrepreneurial Mind | 3 |
| Techno-Entrepreneurial Practicum II | Business Solutions, Business Models & Planning | 3 |
| Techno-Entrepreneurial Practicum III | Marketing, Accounting /Finance, Management Strategy | 3 |
| Techno-Entrepreneurial Practicum IV | Capstone Project, Product Development & Production | 3 |

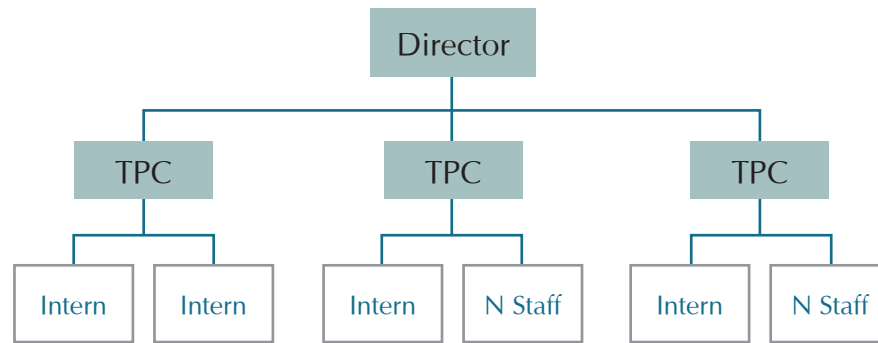


Organizational Structure of NITEC Project



- **MSIP:** Ministry of Science, ICT, and Future Planning, Korea Government
- **MoSTE:** Ministry of Science, Technology and Environment, Nepal Government
- **NRF:** National Research Foundation of Korea
- **GTEC:** Green Technology & Entrepreneurship Center
- **TPC:** Techno Peace Corps (dispatched by NRF)
- **The Bridge:** Social enterprise for consulting, invest & impact analysis, crowd funding

NITEC Organization



Director

- Oversees NITEC operations and management of projects

Student Interns

- Support R&BD project teams
- Support TPC professionals

TPC Professionals

- Support and manage project R&D
- Provide R&BD education and consulting
- Support center operations

Nepalese Staffs

- Support TPCs and interns
- Provide support in administration

Operational Committee

Composition

- Project leaders, NITEC Director, research center leaders, and PU faculty serve as core members

Roles

- Build a system of close collaboration between NITEC, HGU project headquarters, and PU
- Support project operations and manage execution

Facilities in NITEC



Office Space and Classrooms

- Office space
- Video conference room
- ICT classrooms for distance learning

NITEC-affiliated Research Labs

- Conduct technology development research for projects and pursue commercialization
- Launch research centers headed by PU faculty

Research Labs

Renewable Energy Research Lab

- Photovoltaic power generation
- Pico-Hydroelectricity generation

Specialty Products Research lab

- Specialty product processing technology
- Specialty product processing machinery

Manufacturing Technology Research Lab

- Mechanical workshop (machine tools, welding tools, 3D printer/scanner)

Techno-Entrepreneurship Research Lab

- Start-up and consulting
- Business development network

Community Business Research Lab

- Community building
- Library of Community business

Appropriate Technology Business Exhibition Hall

- Introduce revenue models that combine appropriate technology and business
- Exhibit cases of technology-based business operations that use appropriate technology items
- Display and hold demonstrations of appropriate technology products

Kathmandu Business Incubator

- Build a space for promoting techno-entrepreneurship and consulting

Main Cooperating Organizations

Participation of 17 domestic and foreign organizations offering technical assistance, business and community development support, support for start-ups, etc.

Technical Assistance

Technical support related to appropriate technology, renewable energy based business

| | | |
|----------|--------------------------|-------------------------------------------------------------------------------------------------|
| Domestic | Korea Solar Energy | Support in photovoltaic power generating technology |
| | Nexearth | Comprehensive solutions on renewable energy |
| | Seoyoung Tech | Support in wind power generating technology |
| | Daedong Engineering | Support in general appropriate technology development |
| | Erom | Support in specialty product manufacturing and processing |
| | Sharing and Technologies | Technical assistance in appropriate technology development and related network support |
| | Canaan Farmers School | Research in sustainable development model for target region and agricultural technology support |
| | Korea Solar Energy | Support in photovoltaic power generating technology |

Business Development Support

Business development support and business management consulting

| | | |
|----------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Domestic | Global Startup Network | Business development and start-up support based on experience in start-up education in overseas business regions |
| | The Bridge | Center operation cooperation and business development support based on business consulting experience in developing countries |
| | Impact Investing Research Center | Business performance evaluation and sustainable business consulting through social impact analysis |

Community Development Cooperation

Cooperation in strategizing development projects to raise quality of life for local communities

| | | |
|---------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Foreign | Good Neighbors Nepal | Regional development cooperation based on experience in income-raising projects (e.g. special crop cultivation technology education) |
| | Korea Food for the Hungry International - Nepal | Regional development cooperation based on experience in childhood education development and regional development projects |
| | Nepal Dail Community | Regional development cooperation based on experience in education, health and sanitation projects |
| | Rural Self-reliance Development Centre | Community training cooperation based on capacity enhancement projects in rural regions of Nepal |
| | Nepal New Village Movement | Regional network linkages centered on development cases of pilot Saemaul village in Nepal |
| | Divghayu Nepal | Regional development know-how centered on local communities (Community development NGO in Pokhara) |
| | Good Neighbors Nepal | Regional development cooperation based on experience in income-raising projects (e.g. special crop cultivation technology education) |

Support for Start-ups

Provide education and consulting for start-ups

| | | |
|---------|------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Foreign | Rajdhani College | Support in technology-based appropriate science and technology education (PU-affiliated educational institution in Kathmandu) |
| | GBM Networks Pvt. Inc. | Product manufacturing know-how based on examples of food production business development in Africa |

Handong Global University

Our society needs people who are interested in solving various problems in the world and have a wide and discerning perspective on the realities facing their towns, countries and the entire world. Handong Global University (HGU) is a cradle of academics that raises individuals who practice “love” for their neighbors and the world through “service” with hearts of “humility”. HGU nurtures bright minds who are equipped with the school’s foundational Christian spirituality, academic intellect that strives for excellence in their field of study, and a good character developed through diverse community activities. These individuals live out the school’s motto, ‘Why Not Change the World?’ By producing trained individuals of true character who can confront real problems and solve them with creative intellect, HGU is doing its best to contribute to the development of South Korea and the prosperity of humankind throughout the world.

Green Technology and Entrepreneurship Center for Community Development

As an affiliate organization of HGU, the Green Technology and Entrepreneurship Center for Community Development seeks to improve the quality of life for people living in areas that are marginalized from the benefits of science and technology by executing green technology support projects. Moreover, by building organizational infrastructure for science and technology assistance in developing countries, the Center aims to promote effective networking between domestic and foreign researchers and research organizations so that they may better serve areas in need of science and technology assistance. With these objectives in mind, the Center is implementing the research projects and initiatives.

Initiatives like Science and Technology Organization Cooperation Project for Developing Countries (2010-2011), Global Engagement and Mobilization (GEM, 2010-2013), and “The Green Appropriate Technology “ initiative of the UNESCO-UNITWIN program (2010-present) have led to the development of various appropriate technology products. Such products include a hot water heating system, persimmon sorting machine, manual soil brick molding machine, Bio-sand Filter for arsenic removal, sugarcane charcoal molding machine, sugarcane charcoal grinder, sugarcane charcoal mixer, and moringa oil press.



Pokhara University

Pokhara University is located in Lekhnath Municipality of Kaski district, thirteen kilometer east to the heart of the Pokhara city. It has already built its academic complex in the serene and scenic location of seven lake city, Lekhnath, in the lap of the beautiful Himalayan range and peaks such as Mt. Machhapuchhre and Mt. Annapurna. In addition, Begnas lake and Rupa lake are walking distance of its academic complex and central office. It is planning to develop the infrastructure for School of Engineering Sciences on the bank of Khudi River and School of Medical Sciences on the bank of Seti River, five minute walking distance from Prithivi High Way.

Nepal adopted the multi-university concept in 1983. The idea of Pokhara University (PU) was conceived in 1986; however, it was established only in 1997 under the Pokhara University Act, 1997. It has started its academic activities as guided by the Government’s act since 1996. Its main function is to produce skilled human resources necessary for the national development by providing quality education. In order to achieve such objectives, Semester system based curriculum and evaluation were carried out with high priority to practical knowledge and researches. A non-profit autonomous institution, PU is partly funded by the Government of Nepal and partly by revenues from its students and affiliated colleges.

The mission of Pokhara university is to develop the institution into a Center of Excellence for Higher Education by enhancing teaching, learning and research activities; to accelerate the national development process by producing job market-driven, responsible, productive, welfare focused and committed human resources; to link the university system with community services, and to unfold the potential and creativity of learners, advocating humanism, reason, innovation, and search for truth



