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Faculty of Regional Development and International Studies

**Promoting Sustainable Rural Development
in the Ccapi District, Peru**

Diploma Thesis

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Brno 2015

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Abstract

JANÁLOVÁ, Karolína. *Promoting Sustainable Rural Development in the Ccapi District, Peru.* Diploma Thesis. Brno, 2015

This diploma thesis presents and analyses the possibilities of promoting sustainable rural development in the Ccapi District, Cusco Region in Peru. The aim of the thesis is to propose a development project which contributes to an increase in economic, environmental and social opportunities for the poor and improvement in standard of living of the local communities with regard to their cultural values. The project is designed in response to the major causes of poverty and environmental degradation in the rural Andean areas of the Ccapi District. Based on results obtained from the literature, field survey, and semi-structured interviews with the local families and authorities, the paper analyses the initial situation and proposes a set of innovations which should be adopted by the vast majority of the residents living in the communities and therefore should contribute to the sustainable rural development. At the end, concrete results of the implemented project are presented and recommendations for further research in the area suggested.

Keywords: Peru, Ccapi, sustainable rural development, poverty, sustainable agriculture, landscape potential

JANÁLOVÁ, Karolína. *Podpora udržitelného rozvoje venkova v okrese Ccapi, Peru.* Diplomová práce. Brno, 2015

Tato diplomová práce prezentuje a analyzuje možnosti podpory udržitelného rozvoje venkova v okrese Ccapi v regionu Cusco v Peru. Cílem práce je vytvořit projekt, který přispívá ke zvýšení hospodářských, environmentálních a sociálních příležitostí pro chudé a zlepšení životní úrovně v místních komunitách s ohledem na jejich kulturní hodnoty. Projekt je navržen v reakci na hlavní příčiny chudoby a zhoršování životního prostředí v andských venkovských oblastech okrese Ccapi. Na základě výsledků získaných z literatury, terénního šetření a polostrukturovaných rozhovorů s místními rodinami a autoritami, práce analyzuje výchozí stav a navrhuje soubor inovací, který by měl být přijat převážnou většinou obyvatel komunit a přispět tak k udržitelnému rozvoji venkova. Na závěr jsou předloženy konkrétní výsledky realizovaného projektu a navržena doporučení pro další výzkum v této oblasti.

Klíčová slova: Peru, Ccapi, trvale udržitelný rozvoj venkova, chudoba, udržitelné zemědělství, potenciál krajiny

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1 Introduction

In recent years there has been a significant increase in development studies and projects. A lot of approaches, theories, and strategies have been designed in order to analyse and overcome causes and consequences of poverty. However one of the greatest challenges these days remains the poverty eradication and the ways of achieving it. In the rural areas, the agriculture is still the main source of food, income and employment opportunities. Unfortunately, many farmers exploit the land with their degrading and inadequate agricultural practices so the levels of rural poverty persist or intensify.

Several Latin American countries including Peru have experienced in the 20th century a considerable economic growth and poverty reduction. However, these trends hide distinctive urban and rural differences since the rural highland areas remain trapped in poverty. What is more, the poverty and inequality remained or even deepened. Recent international economic integration and the trade prosperity did not help to alleviate the poverty in Peru sufficiently and the similar situation persists in the whole Latin American continent.

During a month internship in Peru, author started to closely cooperate with non-governmental organization Pachamama Raymi which is providing continuous trainings through passing the expert knowledge and experience on indigenous rural population. During the project proposal preparation, the author could see and compare the achieved results of the innovative methodology which promotes and implements rural development projects throughout Peru and other countries in Latin America, but also in Africa and South Asia.

Outlying rural communities in the District of Ccapi create a part of the Andean Region in Southern Peru. In these highlands people produce limited amount of crops and land potential is not efficiently managed. As a result, they have less variability in food that they consume and suffer from malnutrition and very poor standard of living. Though these devastated landscapes can be recovered by changing agricultural practices. The main challenge remains to implement projects that improve healthcare conditions, educational attainment, increase agricultural productivity, forestry, and household income while achieving a sustainable rural development.

2 Literature Research

2.1 *Concept of Sustainable Development*

According to Rogers, poverty is the most significant socioeconomic dimension of sustainable development and he uses several aspects to define it. The most obvious aspects of the poverty are **physical**: hunger, disease, long hours of work, unhealthy work, environments, substandard housing, the lack of basic necessities, and inadequate income. Another aspect is **legal**: of all people, the poor have the greatest difficulty in claiming rights to services and accessing justice. An **emotional** aspect of poverty is humiliation of dependency, powerlessness, and shame because of social exclusion. Finally, there is a **moral** aspect: having to make decisions based on budget limitations regarding basic human needs (to eat, to attend medical need, etc.) [1]

The term sustainable development was generally defined by World Commission on Environment and Development in 1987 as “*development that meets the needs of current generations without compromising the ability of future generations to meet their needs and aspirations.*” [2] This was the first time when the environmental approach was also included in the concept of development and as a result, the concept of sustainable development was introduced.

The approach of sustainable development was widened and included the basic needs as highlighted by International Labour Organization, Streeten, and Ul Haq. Consequently, the civil participation through NGOs started to expand and a greater focus on skills and human development emerged which can be observed for instance in the work of Nobel Laureate Amartya Sen. [3]

Amartya Sen’s understands the concept of sustainable development holistically and systematically, not one-dimensionally, not simply economically or socially, politically or anthropocentrically. According to Sen, development must be synonymous with substantive and instrumental freedoms, including those relating to:

- Political expression, dialogue and organization;
- Economic and income sufficiency;
- Social opportunity such as health and education;

- Transparency and openness in government and social interaction;
- Security in terms of welfare, food sufficiency and employment. [4]

Based on the UN World Commission on Environment and Development's report *Our Common Future*, sustainability reflects the need for careful balance between economic growth and environmental preservation. Critical objectives for environment and development policies that follow from the concept of sustainable development include among others:

- Reviving growth;
- Changing the quality of growth;
- Meeting essential needs for jobs, food, energy, water, and sanitation;
- Ensuring a sustainable level of population;
- Conserving and enhancing the resource base;
- Reorienting technology and managing risk; and
- Merging environment and economics in decision making. [5]

As Kidd argues, there isn't and shouldn't be any single definition of sustainability. That is to say that the uncertainty or multidimensionality over the meaning of sustainability has not reduced the popularity of the concept. On the contrary, it might be strength in a very diverse world. [2]

In a classic definition, a development path is sustainable "*if and only if the stock of overall capital assets remains constant or rises over time.*" [6]

Three objectives of development according to Todaro and Smith:

1. To increase the availability and widen the distribution of basic life-sustaining goods such as food, shelter health, and protection.

2. To raise levels of living, including, in addition to higher incomes, the provision of more jobs, better education, and greater attention to cultural and human values, all of which will serve not only to enhance material well-being but also to generate greater individual and national self-esteem.

3. To expand the range of economic and social choices available to individuals and nations by freeing them from servitude and dependence not only in relation to other people and nation-states but also to the forces of ignorance and human misery. [7]

2.2 Sustainable Rural Development and Agriculture

Rio Declaration is a very important statement of sustainable rural development principles and as Kiss and Shelton claim it includes several principles of general character. The Rio Conference adopted Agenda 21 with following conditions to achieve a sustainable agriculture and rural development:

“Major adjustments are needed in agricultural, environmental and macroeconomic policy, at both national and international levels, in developed as well as developing countries, to create the conditions for sustainable agriculture and rural development. The major objective of sustainable agriculture and rural development is to increase food production in a sustainable way and enhance food security. This will involve education initiatives, utilization of economic incentives and the development of appropriate and new technologies, thus ensuring stable supplies of nutritionally adequate food, access to those supplies by vulnerable groups, and production for markets; employment and income generation to alleviate poverty; and natural resource management and environmental protection.” ... “The success of SARD will depend largely on the support and participation of rural people, national governments, the private sector and international cooperation, including technical and scientific cooperation.” [8]

Based on the theory of regional development rural development is defined as a change which includes several economic indicators, but also improvement in the well-being of the rural population, solving their basic problems, and exploiting the opportunities for economic development. Indigenous people themselves are both involved in their development and its consequences. [9]

UN World Summit for Social Development in its Programme of Action also suggests how rural development and poverty should be addressed with clear objectives. [10]

Based on Agenda 21, there are several areas which should be included in sustainable agriculture and rural development. Selected aspects will be taken into account during the project preparation:

- Agricultural policy review, planning and integrated programming in the light of the multifunctional aspect of agriculture, particularly with regard to food security and sustainable development;
- Ensuring people's participation and promoting human resource development for sustainable agriculture;
- Improving farm production and farming systems through diversification of farm and nonfarm employment and infrastructure development;
- Land-resource planning information and education for agriculture;
- Land conservation and rehabilitation; [1]

A recent transition in the field of rural development theory is a move from a narrow agricultural sector approach, to one which adopts broader and more comprehensive territorial perspective. This new approach also understood as a new rurality, was introduced in Latin America in the middle of 1990s and considers socioeconomic, institutional, as well as environmental aspects. [11]

Pretty and Vandermeer define people involved in the promotion of sustainable agriculture as people whose aim is to create a form of agriculture that maintains productivity in the long-term by:

- Improving the use of available resources through combination of various factors of the farm system, such as plants, soil, water, animals, climate and people in the most efficient way;
- Reducing the use of external and non-renewable inputs harmful to the environment or the health of indigenous people;
- Turning to the local agro-ecosystem and resources;
- Enhancing the cropping patterns in order to ensure long-term agricultural sustainability;
- Conserving biological diversity of both plant and animal species;
- Adopting local practices, knowledge, and innovative approaches. [12]

Conditions for sustainable agriculture and rural development based on Todaro and Smith are:

- *Land Reform.* Land reform is often proposed as a condition for agricultural development through more equal distribution of agricultural incomes and land ownership. It usually stands for a redistribution of ownership or use of land away from large landowners in favour of cultivators with very limited or no landholdings.

The Economic Commission for Latin America and Caribbean (ECLAC) has identified land reform as a necessary precondition for poverty alleviating agricultural and rural development. Unfortunately in Latin America, the efforts of land redistribution reform have failed due to a political pressure from powerful landowners.

- *Supportive Policies.* To achieve a land reform, there must be corresponding changes in rural institutions and control production (such as banks, moneylenders or fertilizer distributors), in supporting government aid services and government pricing policies related to both farm inputs (access to needed credit) and outputs (raising their productivity).
- *Integrated Development Objectives.* As explained previously, rural development depends primarily on the small-scale farmer agricultural progress, however implies much more than that. It encompasses:
 - Raising rural incomes through job creation, rural industrialization, and other non-farm opportunities and the increased provision of education, health, and nutrition, housing, and a variety of related social and welfare services;
 - Decreasing inequality in the distribution of rural and urban-rural incomes and economic opportunities;
 - Need for environmental sustainability;
 - Capacity of rural sector to sustain and accelerate these improvements over time.

Todaro and Smith also define integrated rural development is the broad spectrum of rural development activities. These include improvements in: small-farmer

agriculture, physical and social infrastructure, rural nonfarm industries, and the capacity of the rural sector to sustain and accelerate these improvements over time. [7]

Hence, according to Berry and Cline, agricultural development strategies can best contribute to the goal of increasing agricultural output by emphasizing small farm development. These development strategies also favour the improved distribution of income. [13]

In accordance with McIsaac and Edwards, the concept of sustainable agriculture is a relatively recent response to the decline in the quality of the natural resource base associated with modern agriculture. Nowadays, the agricultural production has developed from only technical sector to a more complex one characterized by social, cultural, political and economic dimensions. That is why the concept of sustainability has been controversial because of its often conflicting definitions. Despite these diverse interpretations, the concept of sustainable agriculture is valuable as it based on Reijntjes “*captures a set of concerns about agriculture which is conceived as the result of the co-evolution of socioeconomic and natural systems.*” It is necessary to pursue studies of agriculture, global environment and social systems to achieve a complex understanding of these factors and the overall sustainable agricultural development through new management methods. [12]

Green explores the transformation of the social landscape in rural Latin America and introduces concepts to get an understanding of rural development. Green and Zimba provide a good discussion of theory of rural development highlighting its social, economic and environmental dimensions. [14]

Johnson discusses why rural policy is a useful, what equity means in this context and why rural areas are more prone to certain forms of market failure. Based on his review of the OECD New Rural Paradigm, Johnson describes two policy approaches of New Rural Paradigm: policy that relies on local knowledge and causes institutional changes, and rural prosperity focused on many community assets. [14]

According to Desai and Potter, agricultural policies with both sustainability and poverty-reduction aims should adopt a multi-track approach that emphasizes following components:

- Small farmer development linked to local markets;
- Agribusiness development – both small businesses and export-led;
- Agro-processing and value-added activities to ensure that returns are maximized in-country;
- Urban agriculture;
- Livestock development to meet local increases in demand for meat. [15]

2.3 Poverty

Based on World Summit for Social Development Programme of Action, the poverty has several characteristics such as: *“lack of income and productive resources sufficient to ensure sustainable livelihoods; hunger and malnutrition; ill health; limited or lack of access to education and other basic services; increased morbidity and mortality from illness; homelessness and inadequate housing; unsafe environments; and social discrimination and exclusion. It is also characterized by a lack of participation in decision-making and in civil, social and cultural life.”* Absolute poverty is characterized by UN as serious deprivation of basic human needs, such as food, safe drinking water, sanitation facilities, health, shelter, education and information. These deprivations do not depend only on income but also on access to these services. [10]

Based on Todaro and Smith, the most valid generalizations about the poor are that they are:

- Disproportionately located in rural areas;
- Mainly engaged in agricultural and associated activities;
- More likely to be women and children;
- Often concentrated among minority ethnic groups and indigenous people. [7]

2.3.1 Poverty and Environment

It is easy to see how environmental degradation induces poverty. Pierce and Warford claim that for development to be sustainable, development policy must pay far more attention to natural resources and built environments. Pierce and Warford highlight that the poorest people in the world depend directly on natural resources for their food, energy, water, and income. [6]

Swinton and Quiroz examine determinants of poverty such as soil erosion, soil fertility decline, overgrazing, and deforestation. They argue that natural resource sustainability is not correlated with poverty but it differs based on management activity. As they highlight in the multiple regression analysis of 1999 farm survey data from the Peruvian Andes, soil erosion and fertility loss are reduced by fallowing, practiced by poor farmers. In contrast overgrazing and range species loss are increased by herd size but reduced by rotational grazing. Deforestation is the only example of a link between poverty and environment, which results from fuel wood harvesting by the poorest households. Based on their research authors claim that natural resource policies should focus on diffusing knowledge about natural resource stewardship using affordable practices. [16]

Natural resources sustainability and human management are a point of discussion already in work of Thomas Malthus who predicted a considerable increase in poverty with static production technology, fixed land resources and increasing population. He states that as farmers are pushed by population growth and poverty, they carry out degrading cropping practices on fragile marginal lands. [17]

In most cases, the literature usually focuses on the “vicious circle” between poverty and land degradation based on Malthusian point of view. Based on this theory also examined by Dasgupta, Mafiler, Pierce, Warford, or Mink, the degradation reduces yields which make farmers even poorer. The suggestion of this theory is that poverty alleviation will reduce environmental degradation and vice versa, revoking of the environmental deterioration will help the poor as debated by Leonard, Cleaver and Schreiber. Reardon and Vosti examine these links in their research in Peru and offer a new conceptual framework to examine them. [18]

Malthusian pessimists, such as Boserup, Templeton, Scherr, Tiffen, Mortimore and Gichugi believe that rising population density and agricultural intensification has enhanced productivity and technological and behavioural change. They provide also several articles and case studies related to the given topic. [17]

Boserup argues that population growth does not result in limited carrying capacity of the land. On the contrary, population density is a key cause driving

agricultural intensification which can lead to economic growth and sustained productivity increases. [16]

Figueroa, who deals with Peruvian rural economy and poverty in detail, has designed analytical and empirical study of peasant economy during Peru's economic crisis in 1970s. The author also deals with social exclusion and factors explaining social inequalities. [19], [20]

Mink deals with environment's impact on poor and discusses it through two meanings. Firstly, environmentally vulnerable and degraded land where rural population lives as a result of erosion, inadequate water and sanitation infrastructure, poor access to health-care services and income generation. Secondly, rural poor lack the means to avoid the impacts of environmental degradation based on their financial resources. [21]

Both Figueroa and Mink argue that rural population growth without prosperity inhibits productivity-enhancing investments, undermining future productivity and leading to increased poverty.

Reardon and Vosti examine rural poverty from a viewpoint of rural people's capacity to invest in sustainable natural resources. They suggest that rural household and village income, land use, and investment strategies affect the impact on poverty and discuss what levels and types of assets households need to make those investments. [22]

Swinton, Escobar and Reardon deal with factors contributing to the rural poverty in Peru such as limited governmental assistance, remoteness from markets and steady emigration, or natural resource degradation in the forms of soil erosion, deforestation, and biodiversity loss. [17]

The view of Jalan, Ravallion, Engerman and Sokoloff represents a hypothesis that natural geographic externalities could be the main reason of rural poverty. Geography in Peru has a great importance as it consists of 84 different climate zones and landscapes with rainforests, high mountain ranges and dry deserts. Thus, these differences might play a very important role in explaining regional differences in income and well-being. Escobal and Torero examine what are the main causes of

poverty in Peru, considering both geography and unequal access and possession of public and private assets. [23]

2.4 Participatory and Capacity Development

Rogers highlights an importance of participatory development as a social dimension of sustainable development. It is the process through which the stakeholders influence or share control over development initiatives, decisions, resources, and outcomes. According to Rogers, participation enhances sustainability. When people are involved in the project, they develop a sense of ownership of the endeavour and feel motivated to sustain it, especially when they are empowered to monitor and manage the system and can obtain appropriate support when needed. [1]

Cazorla argues that the rural development projects require a continuous mutual learning approach to achieve its goals. He introduces a participatory model which integrates a social approach on a rural development project in Puno, Peru. Working with people (WWP) is considered as a conceptual approach for rural development projects. The key idea is that the project has to be developed by people with an active role instead of for people. Logic-participatory working models are also discussed by Chambers, Cernea, Korten, and Uphoff. Based on Cernea, rural people's participation in the project means "logical community action". Social learning through experiencing change, knowledge and mutual learning through expert knowledge transfer is also explained by Friedmann. This new approach to rural development projects was successfully applied in Aymara communities in Peru. [24]

In accordance with Nobel economist Amartya Sen, a key aspect of sustained results is a capacity development. Sen argues that life should be seen as a set of "doings and beings" that are valuable. The quality of life is assessed by evaluating the functioning and the capabilities to function. This cannot be done by the commodities or incomes only but examining the capability of the person to achieve them. Capability reflects a person's freedom to choose between different ways of living and to assess the quality of life. Sen highlights the importance of motivation, focusing on freedom, and experience-based learning. [25]

Rogers, Jalal, and Boyd argue that when the target population involved in training is asked to analyse through a participatory process to identify important changes and the additional skills necessary to implement them, their motivation and learning is maximized. They also highlight that this should be financed as an integral part of the project. [1]

UNDP defines capacity development as “*the process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives over time*”. Capacity development commonly refers to the process of creating and building capacities and their (subsequent) use, management and retention. This process is driven from the inside and starts from existing national capacity assets. [26]

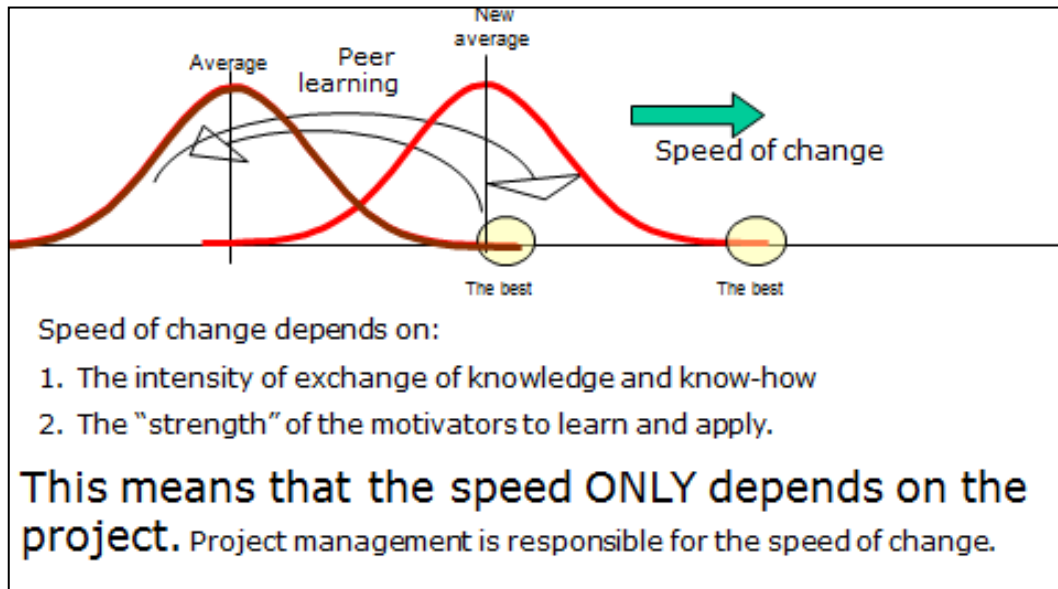
Capacity development is the process through which individuals and their organizations acquire and develop knowledge, know-how and skills, which translates in possessing new capacities. This enables (groups of) people to improve their performance and unfold their potential. [27]

Stakeholders must understand that only they can manage and maintain their own development as the quality of their livelihood and lives is included. [1]

Moreover, knowledge and know-how that determine profitability, productivity, environmental reclamation, and in general sustainable development, can be learned and developed. However, gaps in the knowledge and know-how require projects to apply expert technical assistance. There are only few people within the population who possess these skills. The majority of the population is the average with a “normal distribution” of knowledge. Based on Immerzeel’s research, it can be explained by the bell shapes of normal distribution as indicated in the figure 1. The larger the population is, it is more likely that people with exceptional characteristics will be found based on the “law of the big numbers”. As Immerzeel explains, knowledge and know-how that determine sustainable development can be acquired. This means that people, who are close to “normal”, can move towards becoming experts, to learn whatever is needed. That is to say, they can “learn from the best”. If many would learn and apply the newly acquired knowledge and know-how, it would be possible to move the whole curve

towards the right. These people are essential to keep the whole curve moving and to accelerate the positive change. [27]

Fig. 1 - Learning from the Best Methodology



Source: W. H. M. Immerzeel [27]

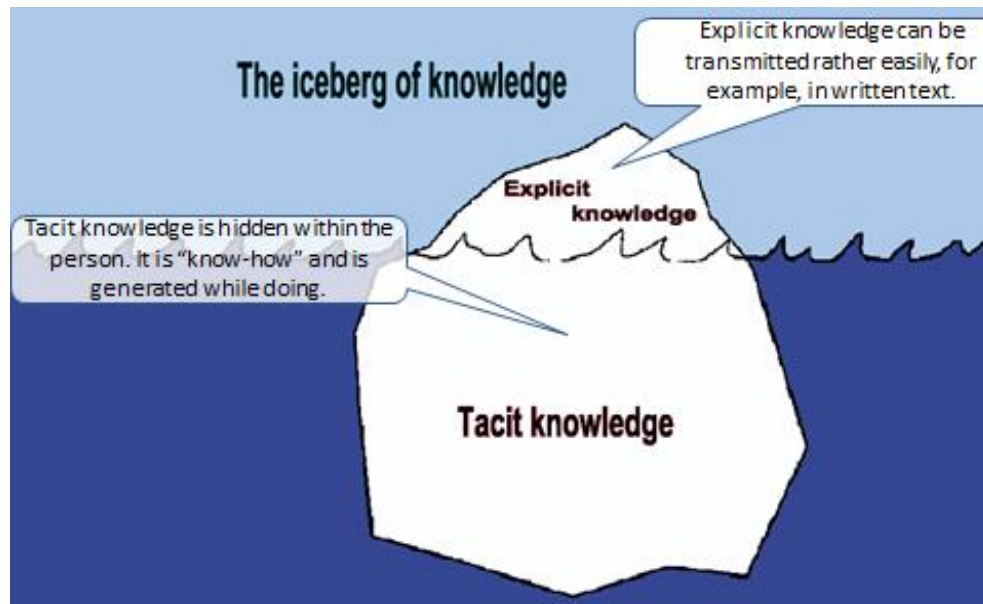
The opposite approach, top-down, has resulted in many conflicts such as urban-rural differentiation discussed by Chisholm, urban-rural society division reviewed by Deane, land use argued by Clark, increasing socio-economic differences explained by Razin, Hasson, or Murtagh, changes in society and family business disappearance examined by Moore, and so on. Since 1990s, the era of postmodernism and cultural changes in rural areas have arrived such as discussed by Cloke, or Halfacree. [24]

2.4.1 Tacit and Explicit Knowledge

Based on Marchant, Robinson, Herbig and Patel, there is a general agreement that tacit knowledge is acquired through an individual's direct experience of whatever their tacit knowledge concerns. As Wagner highlights, for example the job training and informal learning are important means of acquisition. With the emphasis on the individual, Horvath claims that tacit knowledge is acquired with little help from others. However, Collins, Leonard and Sensiper believe that personal contact and observation of others are critical factors in its acquisition. [28]

Tacit knowledge refers to knowledge that is deeply rooted in the body and mind, so that it is hard to codify and communicate. Tacit knowledge is acquired through: observation, imitation, and practice. Its diffusion requires learning and face-to-face interaction. [29]

Fig. 2 - The Iceberg of Knowledge Model



Source: W. H. M. Immerzeel [27]

Tacit knowledge is also the capacity to respond efficiently to new problems and challenges as a result of accumulated personal experience. This implies that transferring it to other people (learning) is difficult and complex. [27]

On the contrary explicit knowledge according to Polanyi refers to knowledge that is codified in formal, systematic language (so called encoded knowledge). It is knowledge that can be combined, stored, retrieved, and transmitted with relative ease and through various mechanisms such as words, numbers, figures, etc. [29]

Kolb considers that tacit experiential learning can enable tacit knowledge to become explicit and understandable for others by understanding their own context and experiences. Kolb's theory involves a four-stage cyclical process consisting of:

1. Experiencing - immersion in undertaking a set of activities;
2. Reflecting - reviewing what happened, and how people felt about it;

3. Conceptualizing - analysing this information and interpreting events to arrive at theories, models or concepts that explain the experience in terms of why things happened the way they did; and
4. Planning - translating new experiences into priorities for (improved) actions to be taken. [30]

Gasteyer and Herman focus on leadership and participation as key elements of bottom-up development efforts in rural areas. The authors highlight the importance of local decision-making as the rural development has been often led by outside interests and organizations. Authors give an example of two case studies to demonstrate how participation of communities in local organization and development is crucial. [14]

2.4.2 Innovation Approach to Development

The process of innovation cannot work without effective approaches so that it is important to review theories of successes that helped to innovation process in the developing areas.

Innovation approaches based on Barnett and Jones should:

1. Use system diagnosis to understand the different actors, their interactions and power relations, and to determine constraints and identify opportunities;
2. Recognize that the institutional context (local policy, culture, ways of working and social values) strongly influences behaviour and therefore innovation;
3. Facilitate networks and linkages between actors to provide channels for information flow. Informal links, in which actors trust one another, can be particularly effective, though relationships can be both collaborative and competitive;
4. Balance power relations between the supply push of the research community and the demand pull of the users of new knowledge. Usually the demand pull needs strengthening because small-scale farmers lack purchasing power and the ability to influence the research agenda or the allocation of research resources;
5. Strengthen intermediaries between the suppliers and users of new knowledge. Intermediaries find out what producers (and their customers) want, search through existing and new knowledge, and find options that best meet farmer needs, often on a continuing basis;

6. Create incentives that motivate people and organizations to play their role in the innovation process. Removing disincentives is part of this;

7. Use both tacit and codified knowledge;

8. Experiment and invest in learning so that individuals and organizations continuously improve their performance so that learning becomes an evolutionary process. This includes analysing and responding to new constraints and opportunities as they arise. [31]

To sum up, the scientific expertise is essential to make the difference and make the different parts of the system work.

2.5 NGOs and their Role in the Development Assistance

As Todaro and Smith highlight, it is increasingly recognized that development success depends not only on a vibrant private sector and an effective public sector but on a vigorous citizen sector as well. Relying on the former sectors alone has been compared to trying to sit on two-legged stool. Organizations of the citizen sector are usually termed non-governmental organizations (NGOs) in the development context but are also referred to as non-profit, voluntary, independent, civil society, or citizen organizations. [7]

A technical definition is offered by Hudson and Bielefeld who claim that NGOs are organizations that provide useful goods or services, thereby serving a specified public purpose, are not allowed to distribute profits to persons in their individual capacities, and are created and run based on voluntary decision and initiative by members or a board. Furthermore NGOs exhibit value rationality, often based on strong ideological components. [32]

The United Nations Development Program defines an NGO as: “*any non-profit, voluntary citizens’ group which is organized on a local, national or international level. Task-oriented and driven by people with a common interest, NGOs perform a variety of services and humanitarian functions, bring citizens’ concerns to governments, monitor policies and encourage political participation at the community level. They provide analysis and expertise, serve as early warning mechanisms and help monitor and*

implement international agreements. Some are organized around specific issues, such as human rights, the environment, or health.” [7]

In other words, an NGO is also defined as a non-profit organization, group or institution that operates independently from a Government and has humanitarian or development objectives. The designated national or international NGO must have the legal status to operate in accordance with the laws governing NGOs in the programme country. [33]

Teegen et al. define NGOs as private, non-profit organizations which goal is to serve particular societal interests by focusing advocacy and/or operational efforts on economic, political and social goals that include health, human rights, education, equity, and environmental protection. [32]

Organizational comparative advantages of NGOs based on Todaro and Smith are:

- *Innovation.* NGOs can play a key role in the design and implementation of programs focused on poverty reduction and other development goals. For instance, NGOs working directly with the communities may design new and more effective programs that reach the poor, facilitated by this close working relationship.
- *Program flexibility.* An NGO can address development issues viewed as important for the communities in which it works and it is not constrained by the limits of public policy or other agendas. Flexibility can be identified as localized innovations to suit particular needs.
- *Specialized technical knowledge.* National or international NGOs may be greater repositories of technical expertise and specialized knowledge than local governments or businesses based on their experiences of many countries and qualified models and possible solutions for poverty problems.
- *Targeted local public goods.* Goods and services that are rival but excludable, including those targeted to socially excluded populations, may be best designed and provided by NGOs who know and work with these groups.

- *Common-property resource management design and implementation.* A large amount of the world's people and particularly poor rely on local natural resources for most of their income and consumption. Targeted programs, including training, assistance with organizational development, can help address common-property mismanagement and related issues.
- *Trust and credibility.* NGOs may have advantages over government in gaining the trust of and providing effective services to groups with special needs, notably those in extreme poverty. NGO's local presence and relationships, frequent interaction and communication, and greater avenues for participation may generate greater trust among the poor and other citizens. The NGOs help mobilize resources that would otherwise not be available for local residents. Also private sector may prefer to partner with NGOs than with governments or other official actors to gain credibility in socially responsible investment activities.
- *Representation and advocacy.* NGOs might hold advantages in understanding the needs of the poor, who otherwise are often excluded from political processes. NGOs have advocating, protective and representative role for the poor oppositely to the private or the public sector.

Therefore successful and sustainable economic development requires improved functioning of the public, private, and citizen sectors. Each of them has weaknesses that have to be addressed, though each plays a very important and inseparable role in attaining sustainable development. [7]

2.6 Development and Historical Background: Latin America and Peru

The extreme rural inequalities in Latin America, hence Peru, generally come from the Spanish and Portuguese colonial period, in which indigenous people were exploited and slaved. Overcoming this legacy has been a long and difficult process, which still has a lot to be achieved. Especially the areas with less favourable agricultural conditions and concentration of minority population such as the Andean region tend to have persistently high poverty levels. Very extreme rural inequality and poverty suppresses progress in these areas both because of reduced access by the poor to credit and other inputs and because elites effectively continue to block political participation by the

poor, who often receive low levels of government services. These factors will require sustained action by government and civil society aimed at rural development and particularly agricultural sector. [7]

Over the last two centuries, Latin America has experienced two completely different economic development strategies. After its independence in the beginning of 19th century, Latin America adopted an “outward-oriented” model in order to increase international trading integration.[34] Development strategy of so called “banana republics” was mainly based on exports of primary commodities which led to periodic financial crises.

However, after the Wall Street Crash in 1929, the demand for goods decreased dramatically as the external market collapsed. As a consequence of the Great Depression which emerged in late 30s the economic strategy based on protectionism developed and domestic industrialization from within (“desde dentro”) started. This inward-oriented model called “import substitution industrialization”, despite its rapid economic growth but pronounced inequalities failed in 1980’s. The increased external borrowing and hyperinflation caused by recycling of the petrodollars resulted in the debt crisis. As a result, this period was called Lost Decade. [35]

The Brady Plan, designed to address the debt crisis, required the introduction of measures that would attract private international capital flows. This was achieved by neoliberal open trade policies codified in the Washington Consensus, proclaimed by Williamson as the solution to the problems of the lost decade. Despite the revival of the outward-oriented, export-led development strategy, the growth rates did not reach the same levels as in case of the import substitution industrialization. Many countries have been overwhelmed by financial crises. [34]

Williamson recently argued: *“Everyone agrees that the Washington Consensus did not contain all the answers to the questions of 1989, let alone that it addresses all the new issues that have arisen since then. So of course we need to go beyond it.”* [36]

When the Lost Decade in 1980s emerged in the form of the economic crises, the problem of poverty and inequality became more pronounced. However, it didn’t

become a major research theme, oppositely, the emphasis of the research focused generally on the economic issues, leaving behind the social and environmental aspects.

Finally, in the 1990s, there were two major approaches to the study of poverty:

- Quantify poverty with the help of living standards surveys;
- Evaluate impact of different policies in certain groups of population. [7]

Recently, the concept of development has progressively become wider in order to include aspects related to the culture, the environment, and the development assistance. [3]

2.6.1 Agrarian System

As Pisani and Franceschetti argue, the terms rurality and rural economy are often used as synonyms for agrarian system and agrarian economy. Also Cloke highlights the importance of rurality as concepts and approaches. Regarding the approach of rurality, De Ferranti claims that there are three ways to describe rural economy: sector approach highlighting sector's contribution to GDP, household income approach including farm and non-farm productive activities, and territorial approach examining rural space. [11]

Agrarian systems high in sustainability can be considered as those that aim to make the best use of environmental goods and services, while not damaging the assets. [7]

In Latin America agrarian structures are not only part of the production system but also a basic feature of the entire economic, social, and political organization of rural life. The agrarian structure that has existed in Latin America since colonial times and is still widespread in a substantial part of the region is a pattern of agricultural dualism known as latifundio-minifundio. Latifundio is a very large landholding, usually defined as farms large enough to provide employment for more than 12 people, however some can employ thousands. Oppositely, minifundios are the smallest farms that are considered too small to provide employment for a single family (2 workers) with the typical incomes. In Peru, the GINI coefficient to measure the degree of land ownership remains highly unequal with coefficient of 0.91 remains quite dominant. [7]

2.7 Context of Peru

2.7.1 Land Use and Agriculture

Based on Dillehay and Piperno, the history of agriculture in the region dates back to at least 9 000 years ago, when important crops such as potato, squash, cotton and possibly maize started to be produced around this time.

Butzer and Denevan argue that minimally 15 million people living in Peruvian Andes mostly dependent on agriculture and land transformation. For instance, construction of terraces had already taken place in Andes during Columbus era. [37]

According to the Framework of Agriculture Policy of Peruvian Ministry of Agriculture, only between 2.7% and 5.9% of land in Peru is suitable for agriculture. Of this land, only 30% has some kind of operational irrigation system. Furthermore, only from 15 to 23% of agricultural production in Peruvian Andes enters the market, the rest is used for self-consumption and local use. [38] Despite this fact, the Andes region is defined by extreme poverty and high dependence on agriculture, where 45 from 50 areas of the population are in agricultural production zones. [39]

What is more, only 0.01% of Peru's GDP is invested into research and technological development. Thus the progress concerning improvement of crops, conservation or new technologies almost doesn't exist. [38]

In Peru, there are very distinctive social, economic and technological differences. Based on The International Fund for Agricultural Development, agriculture and society in Peru have a dual character. In the coastal valleys there is efficient and advanced agricultural production oriented on export of mango, asparagus, paprika, etc. On the other hand, millions of households in Peruvian Andes are characterized by subsistence farming only. [40]

2.7.2 Rural Poverty

According to the poverty data of indigenous people in Peru, a majority of indigenous groups live in extreme poverty. The data demonstrate the fact that being indigenous

greatly increases the chances that an individual will be malnourished, illiterate, in poor health, and unemployed. [7]

The rural poverty issue has drawn the attention of many researches in the last decades mainly due to its seriousness. Poverty in rural areas in Peruvian highlands is a problem affecting almost all inhabitants in these areas as the majority of extremely poor is concentrated there. Trivelli, Shimizu and Glave, discuss the situation of rural poor in Peru and suggest that strategic development plans should be designed. Based on Trivelli, studies of rural poverty in Peru were up to the 1980s very general. A large proportion of rural poverty studies was handled as a minor part of bigger evaluations on the health of the economy. In 60s and 70s there were two approaches to study rural poverty: to explain the distributive problem and the “dualism” of Peru’s economy; and to understand the relations at the core of the rural society. [41]

Authors such as Zoomers and van Niekerk analyze poverty alleviation and rural development in Peru in terms of sustainability and its implications. Zoomers concentrates on the rural areas in Andes and claims that they still belong to the poorest areas of the country. Furthermore, he encourages the implementation of appropriate rural development policies in the area which take into consideration the diversity and dynamics of the livelihood strategies. [42]

Löfving analyses concepts and methods of poverty eradication in Latin America and examines differences between qualitative and quantitative approach. [43] Zoomers also explains how qualitative aspects’ such as soil fertility, or access to land influence farmers’ livelihoods. This approach is also discussed by authors such as Aramayo, Bebbington, Herve, Morlon or Zimmerer. [44]

As Zoomers explains in terms of the Peruvian Andes, and as Scott argues more generally, major reason for project failure is probably a misunderstanding of the way indigenous people get by and get things done. Based on these experiences and van Niekerk’s studies of the impacts of NGO interventions in the Peruvian and Bolivian Andes, van Niekerk concludes that: *“If the market is the determining factor in the definition of rural policy, Andean agriculture has two possibilities: to disappear, or to modernize violently to achieve competitive levels of productivity and production.”* Van

Niekerk argues that neither of these scenarios is likely to happen in Peru in these days as the limits on public investment and the inability of cities to receive migrants. [42]

2.7.3 Farm and Agriculture Development

Land in many rural areas in Peru, especially in the Andean region, is being unsustainably overexploited by existing population. That is why meeting this target will require radical changes in the distribution, use, and quantity of resources available to the agricultural sector. [7]

The great majority of farmers in Peruvian highlands are peasants who still farm small plots of land, usually in marginal environments utilizing indigenous and subsistence agricultural methods. One of the salient features of these still prevalent traditional farming systems is their high degree of biodiversity. Based on Wilken and Denevan, using inventive self-reliance, experiential knowledge, and locally available resources, peasants have often developed farming systems adapted to the local conditions enabling them to generate sustained yields meeting their subsistence needs, despite marginal land endowments and low use of external inputs. [45]

Based on Berry's and Cline's empirical research and arguments given, there is a great potential for small-farm progress. However, public policies rather put more importance on larger wealthy landowners than smaller farmers. Consequently, these small-scale farmers have a limited access to the inputs such as irrigation, fertilizers, insecticides, credit, and so on and generally worse conditions to enter the market. [13]

Increased accessibility of agricultural inputs to small farmers and the introduction or reintroduction of sustainable methods of farming would help create attractive alternatives to current environmentally destructive patterns of resource use. Land-augmenting investments can greatly increase the yields from cultivated land and help ensure future food self-sufficiency. Secondly, more than half of the economically active people in the developing world depend on agriculture, hunting, fishing, or forestry. This environmental income is essential to a majority of the poor and under the right policy conditions can offer a pathway out of poverty. New technology and innovation play a very important role in farm practices and they are preconditions for sustained improvements in levels of output and productivity. [7]

3 Methodology

The first part of the diploma thesis, the literature research, is focused on the theory of the given topic. The concept of sustainable development and poverty is examined and explained, as well as its link to the environment, agriculture and rural areas. Consequently, the concept of participatory and capacity development is introduced as a suitable motivational tool to accelerate the change and improvements in the Andean rural communities. Furthermore, the role of non-governmental organizations in the development assistance is explained along with their organizational advantages. In the second part of the literature research, the focus is put on socioeconomic and environmental aspects of rural development in Latin America and its challenges in the context of Peru. The bibliography was selected from adequate literature, articles in academic databases such as Science Direct, Ebsco Publishing, Wiley, Mendeley, CABI, Google Scholar, universities and statistical databases (UN, INEI Peru, FAO data).

In the practical part, for a complex understanding and analysis of the current situation, method of qualitative research was applied. Author conducted a field research in the selected communities of the Ccapi District in Peru, where observed the natural conditions in situ as described by Hendl. [46] The author took continuously field notes based on participant observation of the terrain and semi-structured interviews with the local people as well as local authorities (i.e. mayor, teachers, and presidents of the communities) and non-governmental organizations. Available data such as strategic documents and statistics were gathered and analysed in order to get a complex understanding of the socioeconomic and environmental context. All the interviews were carried out with a representative of NGO Pachamama Raymi, who is a native Quechua speaker. The Quechua language was used during the interviews, and was subsequently translated into Spanish.

In order to get both theoretical and practical insight, the author also observed similar development projects in the region (i.e. Ccarhuayo, Ocongate, Soqma, Patacancha) and interviewed project implementers from both NGOs (Expand Peru, Awamaki, Un techo para mi país, etc.), local government authorities (Regional Government of Cusco, Municipality of Ollantaytambo, etc.) or Czech embassy in Peru. After observation and comparison of various implemented projects, the author started to

cooperate with NGO Pachamama Raymi, which is very effective and successful development projects implementer in the area.

In order to introduce the development project in the Ccapi District, the author prepared a proposal based on the specialized literature, data collection from the local communities, and Pachamama Raymi methodology and data. All the project management tools necessary for the project proposal were used based on Rotary Club guidelines and donors' requirements.

To process project proposal, logical framework analysis was used. Assessment of the actual situation and key stakeholders, action plan with objectives, results, and activities, and monitoring and evaluation plan, as well as risk analysis was included and summarized in the logical framework matrix.

The project goals and contents are defined with respect to the social, economic and environmental sustainability. The objectives will be achieved by the Pachamama Raymi methodology which has five basic elements consisting of peer learning, clear and demanding goals, motivation, systemic approach, and monitoring and evaluation.

Peer learning also known as farmer-to-farmer learning means acquiring and applying new knowledge. The method of learning is based on role models. The expert farmers "peer-learn" the local community farmers to improve health and the use of natural resources. By sharing their know-how, the participating families are able to implement required innovations.

Learning processes will include sharing knowledge with talented practitioners, implementing study trips as learning by visiting methodology, in situ training and internships, as well as using development communications techniques to perform linkage and enabling functions.

Further important aspect is clear and demanding goal setting involving what should be improved (improving preventive healthcare, management of crops, animal husbandry, and natural resources). The main requirement is that each participating family starts or improves own business (e.g. raising guinea pigs, trout farms, handicrafts, etc.)

To achieve sustainable results, Pachama Raymi strives to achieve “tipping point” as described by Gladwell [48]. The tipping point occurs when innovations spread to the rest of the population without the need of outside intervention, thus when at least 30% of the population of a village adopted the innovations. However, project launch will result in many people coming back to their old habits and management practices. Tipping point plus compensation for this reduction determines the total percentage of population in each village that should adopt the list of innovations. Pachamama Raymi puts the percentage to produce sustainable results at 50%. Projects of shorter duration (e.g. a year) will suffer from a higher percentage of people coming back to their old habits. Under such conditions, the methodology sets the numerical target at 60%. To achieve this goal, the participating families should be strongly motivated. The Pachamama Raymi methodology uses a combination of following motivating factors:

- *Contests*, organized between the families of each community and between the communities of a district on the quality of the application of all innovations. The competitions make it possible to provide incentives to families and communities to advance and to adapt the innovations to their particular conditions;
- *Study trips* for community and government representatives to see and understand the potential of their landscape;
- *Strengthening cultural identity* of the target group (celebrations honouring Pachamama - Mother Earth, goddess revered by the indigenous people)
- *Creation of a clear picture of an attractive and attainable future*. Many role models show real-life options (contests request people to draw images of their present situation and of the future they want to work for).

Based on systemic approach, rural communities are perceived as constantly changing complex systems (social, economic, ecological) that interact with the outside world and with each other. Demanding goals require the use of a systemic approach of each one of the mentioned systems. A systemic approach of the social system starts with strengthening of cultural identities of the target population, strengthening the families and local government. Families as the target group require the most attention, while the local governments and the project organization are perceived as partners in the development of the communities. Pachamama Raymi applies a systemic approach of the

socioeconomic and ecological systems through computer simulations, finding which elements are essential to recover the economy and the environment.

To achieve the set goals, monitoring and evaluation process is necessary in order to determine how much progress is made in the adoption of the many innovations, and which of these innovations are falling behind. The M&E system of the Pachamama Raymi methodology uses the data generated by the contests on the adoption of innovations. The contests enable to get detailed and continual information on what is required by the project and what was achieved. Also other monitoring and evaluation tools are used such as bimonthly meetings with community representatives, monitoring and supervising of participants' activities and adopted changes, reports, presentations and publications.

4 Situation Analysis and Project Justification

Indigenous people of the project area inhabit small and dispersed Andean communities of difficult access. Most of the population lives in poverty and/or extreme poverty with high levels of illiteracy and strong migration to cities. Household income mainly depends on agriculture oriented to direct consumption. Farmers often do not use effective and efficient natural resource management, quite the contrary. This lack of know-how and knowledge goes along with the cultivation of monocultures with a low nutritional value.

People living in the poverty have often feeling that there is no possible solution to improve their situation. The context of their situation and the environment they live in has a considerable effect on them. Even though the ecosystem has quite difficult and vulnerable character, there is very positive potential which can be developed.

4.1 Geographical Aspects

Tab. 1 - Administrative Division

Country:	Peru
Region:	Cusco
Province:	Paruro
District:	Ccapi
Rural communities:	Ccapi, Huatta, Tucuyachi, Percca, Parcco, Chocho, Uyllullo, Ccoyabamba, Cajapucara, Quehuayllo, Incakona, Callancha

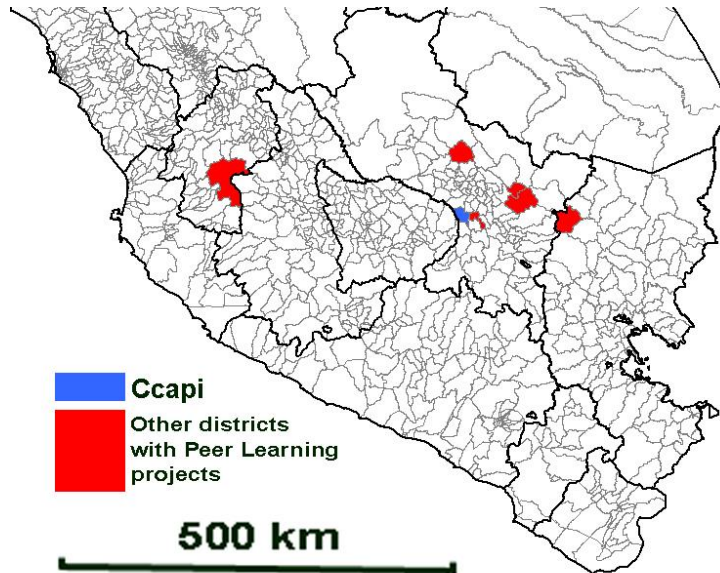
Source: own work based on Municipality of Ccapi data [53]

The Ccapi District is located in the western part of the Paruro Province in the Region of Cusco with a total area of 334.85 km². Paruro Province is geographically located at 13°50'58" south latitude and 72°04'53" west longitude and covers a total area of 1984.42 km². [53] Paruro is divided into 9 districts including the Ccapi District as the third largest (see the figures 3 and 4).

The altitude of the territory ranges from 2550 meters in the lower areas up to 5438 meters. The access to the Ccapi District is through trunk road Cusco - Paccarectambo - St. Thomas, with a distance of 88.4 km and the average journey duration of 3 hours 10 minutes from Cusco. The access is very complicated since all the

communities lie in the remote highland areas. [53] The communities in the district are mostly accessible through a dirt road as can be found in the *Annex A*.

Fig. 3 - Map of the Ccapi District



Source: NGO Pachamama Raymi

Fig. 4 - Map of the Paruro Province and the Ccapi District



Source: own work based on Municipality of Ccapi data [53]

4.1.1 Climate

The district lies in the subtropical highland climate, which is mainly dry and temperate with dry and wet seasons. Rainy summers start in September/October and peaks in March/April, whereas dry winters from April to October are characterized by a lot of sunshine, and occasional freezes during the night. Between day and night there is a significant oscillation of temperature. The coldest month of the year is July with an average temperature of 10°C.

In the lower altitudes, the district has a typical behaviour of an Andean valley defined by precipitation and relative humidity, which refers to its high potential to grow vast variety of crops including fruit. In higher altitudes, the temperature is in average lower, but it is a good environment for planting trees such as pine, eucalyptus, or *Cedrela Lilloi* which is on the Red List of Threatened Species published by International Union for Conservation of Nature.

The average annual temperature in the area is 10°C with maximum of 18.4°C and minimum of 0.3°C respectively. The temperature in the project area is influenced mainly by altitude and relief.

4.1.2 Water Resources

The district is located in the Apurimac River basin, which is a tributary of the Amazon River. The source of water for the communities is located in the 2 reservoirs above the Ccapi village. [55] In the district there are a few small streams, though they are drying up during the dry season. In few communities there is a problem with access to the potable water which causes severe intestinal problems, especially among the children. The water resources of the district are listed in the table 2 below.

Tab. 2 - Water Resources

Lagunas	12
Rivers	5
Streams	43

Source: own work based on Municipality of Ccapi data [52]

4.1.3 Landscape

As indicated in the table 3 and figure 5, the most of the land in the district remains unused, even though there is a great agricultural and forestry potential. Only 8.7% of the land is used for the agricultural purposes, while only 3.8% is being irrigated. The rest of 91.3% remains untouched. [47]

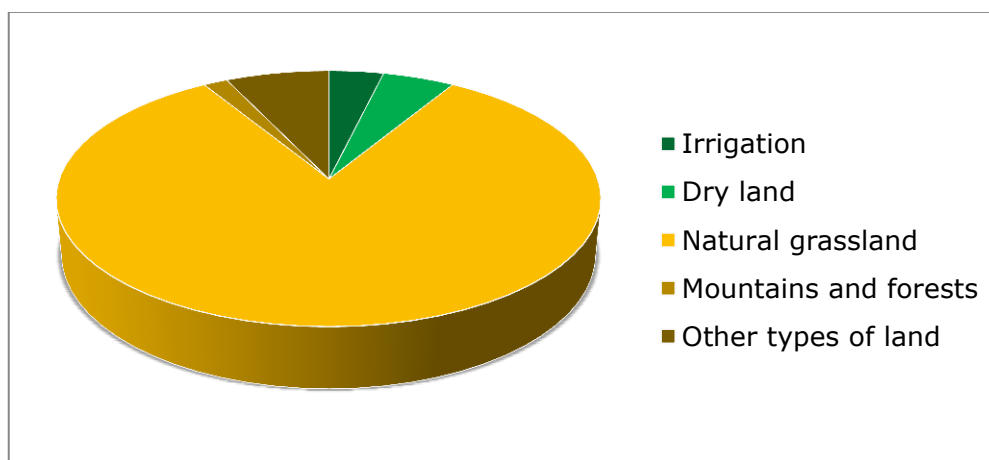
The fertility of the region is threatened by the use of chemical fertilizers and also wasting with organic matter such as animal dung. The animals in Ccapi graze freely on severely degraded grass. Due to free grazing, the land is degraded since it has no chance to recover from grazing. As a result, the loss of productivity occurs and the areas with agricultural potential become unproductive.

Tab. 3 - Land Use in the Ccapi District

	Hectares	%
Agriculture	1 422.15	8.7%
Irrigation	613.10	
Dry land	809.05	
Nonfarm	14 901.71	91.3%
Natural grassland	13 472.34	
Mountains and forests	269.84	
Other types of land	1 159.53	
TOTAL	16 323.86	100.00%

Source: own work based on Municipality of Ccapi data [53]

Fig. 5 - Land Use in the Ccapi District



Source: own work based on Municipality of Ccapi data [53]

4.2 Social Aspects

The District of Ccapi is among the 3% poorest districts of Peru. [47] According to INEI Map of poverty from 2009, the percentage of poverty in the district is 87.7% from which 54.3% of population is extremely poor. [49] In the table 4, development indicators of the district are shown in detail.

There are several socioeconomic causes of poverty, mostly related to health and income issues such as:

- Lack of food
- Lack of preventive health care (e.g. hygiene)
- Illiteracy
- Lack of access to basic services
- Lack of health personnel
- Lack of livestock and crop production
- Lack of irrigation management
- Extensive infertile areas in need of reforestation
- Lack of accessible roads to communities
- Alcoholism, which also generates family violence, poor job performance or job losses [47]

Tab. 4 - Development Indicators

Area	Population		Human Development Index		Life Expectancy		Literacy		Schooling		Educational Attainment		Family Income per capita	
	Inhabitants	Rank	HDI	Rank	Years	Rank	%	Rank	%	Rank	%	Rank	N. Soles/month	Rank
Peru	27 428 615		0.623		73.07		92.9		85.71		90.5		374.1	
Cusco	1 171 403	7	0.58	17	70.76	21	86.1	19	87.60	7	88.6	18	262.5	15
Paruro	30 939	145	0.51	190	67.70	181	72.2	185	88.58	44	77.6	178	119.4	191
Ccapi	3 861	991	0.502	1776	67.51	1728	72.4	1691	84.02	1118	76.3	1663	104.3	1786

Source: own work based on Municipality of Ccapi data [53]

As indicated in the table 4, Human Development Index in the district is 0.5, which is significantly below the rate of Cusco Region and Peru in general. This is caused by the lower literacy rate, which is 72.4% compared to 86% representing Cusco and therefore the lower level of schooling and educational attainment. Most of the children finish only lower level of elementary school since in the whole district there is secondary education available only in Ccapi, the capital of the district. As a result, students who leave for a secondary school mostly never come back. There is also a very significant difference in household income per capita which in Ccapi is only S/.104.30 compared to average income of S/.262.50 in the Cusco Region. Position of the Ccapi District in HDI ranking is 1776 from all the 1882 districts in Peru. [47]

4.2.1 Child malnutrition

In the Map of chronic child malnutrition in Peru, FAO presents Cusco Region as one of the areas with the highest vulnerability in terms of child malnutrition reaching 36.9%. [49] It is generally known that people need to have an adequate and diversified diet in order to build a stronger immune system and avoid morbidity and mortality. The communities in the district are very difficult to reach and usually it takes several hours to get from the community to the city or vice versa.

Ccapi District represents the area with one of the highest rates of chronic infant and child malnutrition and maternal-child mortality in the Cusco Region. These problems are caused by chronic and acute malnutrition, acute respiratory infections, and diarrheal diseases. Especially the malnutrition is a very serious problem since 73% of children under age of 5 have nutritional difficulties. At the same time, high rate of children under age of 3 suffer from serious nutritional difficulties as indicated in the table 5.

Tab. 5 - Percentage of Infantile Malnutrition and Anemia in the District

Infantile Health Problems (less than 3 years old)	%
Chronic Malnutrition	50
Acute Malnutrition	39
Anemia	66

Source: author's archive based on Municipality of Ccapi data [52]

4.3 Economic Aspects

District lies in the Cusco Region, however, far away from the area of touristic interest. Provinces such as Province of Urubamba which has strategic position because of Machu Picchu, or Calca which benefits from its position in Sacred Valley, are considered to be poor, however, the poverty doesn't reach such high levels as for example in Ccarhuayo District (Quispicanchi Province) or Ccapi District (Paruro Province). The disadvantage of these districts in general is very poor accessibility. Roads are in bad conditions (as shown in *Annex A*), in the major area of the district there is no public transport and

people have low access to all the basic services. The new bridge and road to the Ccapi from Cusco was built just three years ago.

Primary problem in the area is poor agriculture which works mostly on the principle of subsistence farming. Even though there is a great potential of the area to produce high value crops such as cactus fruits, avocados, peaches, or trees such as *Caesalpinia Spinosa*, *Cedrela Lilloi* or pine trees and to improve the livestock quality, people often do not have enough knowledge and know how to take advantage of it.

As indicated in the table 6, the most important economic activity in the district is the agriculture production and animal husbandry representing 85.5%. These activities are a source of subsistence farming as well as source of income for local farmers. Paradoxically, based on the interviews, families often stated that the local government doesn't support investments into the agriculture but to the reinforced concrete.

Tab. 6 - Economic Activities in the District per Sector

Agriculture and Livestock	85.5%
Commerce	2.3%
Clerk	1.8%
Construction	2.3%
Education	2.8%

Source: own work based on Municipality of Ccapi data [53]

4.3.1 Agricultural and Livestock Production

Agricultural growth and reducing poverty levels are closely interconnected. In Latin America, GDP growth originating in agriculture is estimated to be 2.7 times more effective in reducing poverty than growth outside agriculture. [45]

The main economic activity in the Ccapi District is crop production for families' own consumption. The total cultivated area covers approximately 754 hectares representing 31% of corn and 22% of potatoes production (see table 7 and figure 6). The farming conditions in the area are convenient for agriculture, livestock, and forestation. However, this potential hasn't been sufficiently exploited yet.

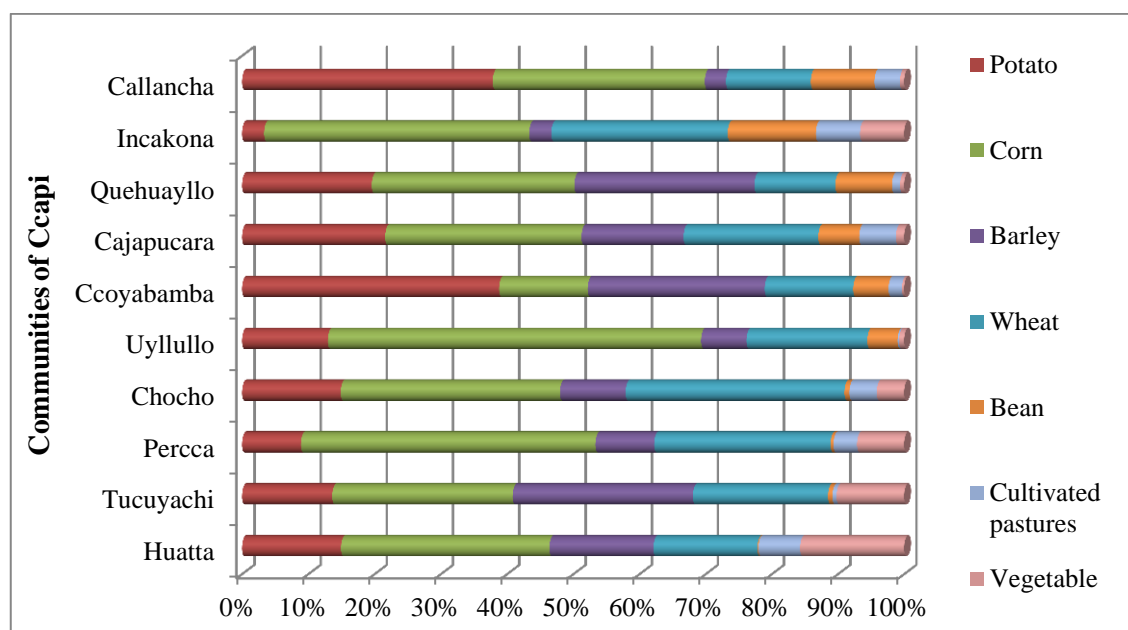
Animal husbandry in the project area is a complementary activity to the agriculture. Its production is subsistence and quite limited. The livestock production in the district is represented in the table 8. Main breeds of small animals consist of guinea pigs and chicken (each family has in average 9 guinea pigs). Small animals are kept often in a kitchen or unsuitable conditions outside in the cold weather. Also the cattle production serves mostly just for subsistence farming, however represents the highest proportion.

Tab. 7 - Agricultural Production in the Ccapi District

COMMUNITY	Communal Total in Hectares							Total per community		
	Potato	Corn	Barley	Wheat	Bean	Cultivated pastures	Vegetable	Hectares	%	
Huatta	4.6	9.6	4.8	4.8	0.05	1.92	4.8	30.5	4	
Tucuyachi	6.4	12.8	12.8	9.6	0.32	0.29	4.8	47	6.2	
Percca	6.7	33.5	6.7	20.1	0.34	2.68	5.36	75.4	10	
Chocho	3.2	7.20	2.2	7.2	0.16	0.9	0.9	21.8	2.9	
Uyllullo	4.8	20.7	2.5	6.7	1.68	0.08	0.28	36.8	4.9	
Ccoyabamba	55	19	38	19	7.60	2.85	0.48	143.9	19.1	
Cajapucara	25.9	35.5	18.5	24.4	7.40	6.66	1.48	119.9	15.9	
Quehuayllo	10.9	17	15	6.8	4.76	0.68	0.34	55.6	7.4	
Incakona	3.5	42	3.5	28	14	7.00	7.00	105	13.9	
Callancha	44.8	38	3.8	15.2	11.4	4.56	0.76	118.6	15.7	
Total per product	Has	165.9	253.3	107.9	141.8	47.7	27.6	26.2	754.39	
	%	22	31	14	19	6	4	3		

Source: author's archive based on Municipality of Ccapi data [52]

Fig. 6 - Agricultural Production in the Ccapi District



Source: author's archive based on Municipality of Ccapi data [52]

Tab. 8 - Livestock in the Ccapi District

Livestock	Amount
Sheep	7432
Cows	6260
Guinea Pigs	5900
Goats	1546
Swine	840
Chicken	785

Source: own work based on Regional Government of Cusco data [54]

5 Model Project

5.1 *Project Characterization*

Following part deals with rural development project designed for the Ccapi District located in Cusco Region in Southern Peru. The project proposal will be introduced in order to address the issues discussed and analysed in the previous chapter. The project will meet the needs of local stakeholders by increasing the eco-sustainable production, as well as promoting the consumption of healthy food with a high nutritional value. Furthermore, the Millennium Development Goals identified by the United Nations will be addressed. Namely 1) to eradicate extreme poverty and hunger, number 4) reduce child mortality, number 5) improve maternal health, and number 7) ensure environmental sustainability.

The aim of the project is the adoption of a set of innovations by the vast majority of the population in each community of the district. These innovations will improve the economy, preventive healthcare, people's self-esteem and reclaim the environment. This will be achieved through several means such as "healthy homes", improved agricultural and animal husbandry production, forestry, and overall environmental reconstruction. In addition, the local government will be integrated into the project and motivated to subsidize the projects that increase fixed capital, household incomes, and improve health and environmental conditions. Therefore the results generated by the project will be socially, economically and environmentally sustainable.

Main elements of the project are:

- Clear and explicit definition of the learning contents;
- Demanding goals in terms of amount of people adopting the innovations in short-term (rural population leads its own development based on their own capacities);
- Peer learning (permanent local knowledge management and peer exchange processes);
- Comprehensible motivators (strengthening local stakeholders);

- Coherent management of family and community life and local government (introducing sustainable management of natural resources, promoting partnerships between private and public sectors).

Project implementer is NGO Pachamama Raymi based in Cusco. The president of the NGO, Willem H. M. van Immerzeel, MSc has been working in rural development since 1981 and participated in many projects in various countries such as Guinea Bissau, Bangladesh, Peru, Nicaragua, Tanzania, Ecuador and others. He designed and implemented the methodology Pachamama Raymi firstly in 1986 in rural development project PRODERM which was searching for ways to improve field irrigation techniques. To define general issues of the methodology, the computer simulation techniques were used. His very innovative methodology of peer learning which stresses the importance of knowledge, know-how and experience that people possess was later successfully implemented in many projects in Latin America and beyond. The main logic of Pachama Raymi is very unique and innovative with clear development goals: to introduce the change (innovation), to state how many people should adopt the changes, and the exact procedure how these changes will be done.

The thesis provides the documentation necessary for the project implementation based on Pachamama Raymi methodology and Rotary Matching Grant Application Instructions (see *Annex B*). Very significant progress will be made already during the first year of the project implementation through peer learning and motivation of local population.

5.2 Target Group/Key Stakeholders

The target group consists of the inhabitants of the communities in the Ccapi District. Based on data from 2010 gathered at the Municipality of Ccapi, total population is 3861 residents and 669 families as indicated in the table 9.

Based on project schedule, in twelve months about 60% of the families of each community will participate in the selected projects and will start at least one business. These estimations are made according to the previous experiences of Pachamama Raymi with development projects.

Tab. 9 - Participating Families

Community	Number of families	Population	%
Ccapi	151	862	22
Huatta	24	137	4
Tucuyachi	32	182	5
Percca	67	389	10
Chocho	18	104	3
Uyllullo	28	162	4
Ccoyabamba	95	551	14
Cajapucara	74	429	11
Quehuaylo	34	197	5
Incakona	70	406	11
Callancha	76	441	11
Total	669	3861	100

Source: own work based on Municipality of Ccapi data [47]

5.2.1 Groups of Families

In accordance with Pachamama Raymi observations in the long-term, large communities almost invariably had lower participation rates, no matter the context. That is why in case of large communities (e.g. 150 families) they decide to split the community per maximum amount of 50 families. The optimum group-size the organization works with is between 40 and 50 families.

This size seems to be consistent with what is mentioned about group size by Dunbar [50] or Gladwell [48] and other literature, where groups close to, but less than 150 people appear to be the most dynamic. Dunbar found out that the maximum amount of people that a person is able to keep up stable social relationships was 150. However, in accordance with Dunbar, 150 is the upper limit on group size which depends on the degree of social dispersal. In case of dispersed communities, where individuals meet less often and are less familiar with each other, group sizes should be smaller. [50] That's the reason why the larger communities are asked to register for participation in groups from 40 to 50 families.

5.3 Project Activities

The participating families and communities will adopt a new complex of innovations which will improve their health, economic situation and restore the economy. Each

participating family will choose at least one business from a wide range of possible businesses according to their interest and possibilities such as raising guinea pigs, trout farming, alpaca farming, ham and jerky production, beekeeping, etc. Family associations are promoted with related businesses.

All improvements are implemented by the families themselves, which is possible due to people's newly acquired knowledge and intense motivation. Pachamama Raymi methodology rejects any kind of direct help except of farmer-to-farmer knowledge and know-how transfer. Families learn how to improve their situation themselves. They improve or rebuild their houses when necessary, learn how to cultivate the land, seed the trees, take care of animals, etc. If they fulfil all this criteria, they are motivated by the contests where they can win a grant to grow their businesses.

Participating families will be supervised and guided by the expert farmers, who will increase their capabilities and awareness to implement the necessary innovations in the communities, and enhance regional development opportunities. Based on Pachamama Raymi methodology, participating families will:

- *Take relevant preventive health measures* (e.g. water chlorination to reduce intestinal parasites, improved diet and eating habits through production of vegetables, regular health checks, improving child and maternal care, etc.);
- *Improve soil fertility through better range land management* (use of organic fertilizers such as biol¹, biocides, improving production of fodder by sowing grass, seed management, irrigation techniques, etc.);
- *Improve animal husbandry and pasture management* (control of breeding, productivity of pastures, rotational grazing)
- *Improve or rebuild the houses* (improving hygiene standards, order in the house, separate bedrooms for children, improved kitchen, building and proper using of a stove with chimney, building furniture, avoiding having animals in the kitchen, etc.);
- *Plant trees;*

¹ biol is a leaf fertilizer prepared with organic ingredients

- *Build guinea pig sheds;*
- *Construct trout farms;*
- *Follow appropriate waste management practices;*
- *Improve communal organization and cooperation with local government.*

5.3.1 Improvement of Preventive Health Measures

The project to improve people's health includes several preventive healthcare measures to prevent the most frequent and serious diseases (bronco-pulmonary and intestinal), improve people's diet and hygiene, and facilitate access to governmental healthcare services. The project also strengthens the local government support to guarantee improving people's health continuously.

The reduction of the intestinal parasites is achieved by water chlorination, avoiding bringing animals into the house, keeping dishes in closets, improving personal hygiene, etc. Another health problem in the communities is iron-deficiency, so called anemia, which affects many, especially young women and children. The improved diet and eating habits will be achieved through the production of fruits and vegetables with the use of organic fertilizers such as humus, compost, boil and biocides which will increase the crop production.

Innovations are clearly defined and introduced to the population by a team of expert farmers through peer learning. The majority of these expert farmers already worked in communities where Pachamama Raymi generated the necessary changes. The expert farmers advise the families to remodel their homes into "healthy homes" with separate bedrooms for their children, improved order and hygiene standards, renovated kitchen, removed smoke, built furniture, etc. (for the complete list of activities see *Annex C*). The expert farmers also help the local farmers to enhance and streamline rangeland management, animal husbandry, crop management, etc.

As a result of the adoption of these changes, the families will have improved diet and changed eating habits. Most of their food will come from what they produce themselves in their own garden. In coordination with the local health centres (in Ccapi and Ccoyabamba) regular health checks on the size and weight of the children, pre and post natal controls, etc. will take place.

The local government and local health services will also organize initiatives and campaigns to reduce infection with intestinal parasites in animals and in people. Therefore families will be more aware of this problem and will take the preventive measures independently.

Correct waste management practices are another aspect which cannot be looked over, thus it is also a part of peer-learning process.

5.3.2 Guinea Pigs Breeding

In Peru there is a great market for guinea pigs (cuy in Spanish), which are consumed in communities generally on special occasions.

Even though guinea pig breeding is adopted by the majority of the communities, they are often held in the harsh conditions, malnourished, and do not have suitable conditions for reproduction. Thus they have almost no economic value. However, there is a great potential to improve people's diet, generate income in a short-term and therefore motivate people to start a profitable business. Depending on weight, the guinea pigs cost between 18 and 22 Nuevo Soles per animal and can be sold for both consumption and reproduction. Pachamama Raymi promotes guinea pigs farming through peer-learning, study tours and contests (see concrete activities and rules in *Annex C*). The same can be done with alpacas, or trout which is also a good alternative to a family business.

5.3.3 Irrigation, Crops and Pastures

Free grazing and poor irrigation techniques result in serious soil degradation and consequently in decreased capacity of the ecosystem to provide goods and services for the local population.

First, the soil will be recovered through rotational grazing as in the majority of the communities the ordered grazing is not established. Regarding the irrigation for fodder and vegetable production, sprinkler irrigation technique is commonly used, however, there are many fields which are not irrigated yet.

Communities will improve the management of their pastures and their cattle which will result already within a year in higher productivity of meat, milk, etc. Further, better management of crops, seeds, production of biol, and reduction in crop losses to rodents will be achieved.

5.3.4 Forestation

Combination of short-term and long-term income is crucial. Short-term income such as guinea pigs farming is necessary in order to motivate people already in the beginning. However, long-term income in the form of forestation is also very important part of the project as it significantly increases farmers' fixed capital. According to Pachamama Raymi calculations, the Net Present Value of 1 hectare of recently planted trees is about US\$ 20 000. The trees can be later logged and sold as timber which is based on data from the local government approximately US\$ 64 per tree in 30 years.

Land in the Ccapi District is highly deforested (see *Annex A, picture 2*) so that the goal is to plant on average 1 000 trees per household per year (approximately 1 hectare). The strategy of economic and environmental recovery through forestation is long-term process, however first economic benefits will appear already between 5 to 12 years when mushrooms start to naturally grow in the pine forests. The mushrooms are called *Boletus Edulis* (Porcino, Porcini) and according to Pachamama Raymi data, each hectare of trees produces between 300 and 1500 kg of mushrooms annually. The market value for these Porcino mushrooms at the local market is between S/. 25 and 30 (US\$ 8 - 9.5) per 1 kg.

The local market for *Boletus Edulis* already exists, however this kind of medium-term income for households is another economic opportunity which with short-term and long-term prospects motivates indigenous people to plant trees and start new businesses.

Forestation will be done mostly with pine trees and *Cedrela Lilloi*, which is a valuable native species of the Mahogany family. Other tree species which could be planted are among other Eucalyptus, Apple, Peach and Avocado trees, or *Caesalpinia Spinosa* (Molina).

The role of Pachamama Raymi is to get the interest and motivate local government and families of Ccapi, respectively. This is achieved through study tours to Granja Porcón in Cajamarca, which is the most successful forestation project in the Andes of Latin America under similar environmental conditions as in Ccapi. The project was introduced about 30 years ago by the Belgian government agency for development cooperation. Cajamarca is approximately 1 900 km away but is worth the “wow effect” and motivation achieved. Based on Pachamama Raymi experience, the participants (usually representatives of the communities and municipal government) also wanted to adopt these great changes as seen in Cajamarca. Another important outcome of the study tours are the people’s capabilities obtained in harvesting, peeling, drying and preparing mushrooms.

Further role of Pachamama Raymi is to guide the construction of tree nurseries, motivation of communities to work collectively to build tree nurseries, and the local government to invest in this business. On average it costs about 1 Peruvian Nuevo Sol or US\$ 0.32 to buy the plastic bags and special soil in which to incubate seedlings. The plastic bag is filled with a mix of various soil types, including nutrient rich “potting” type soil, which is purchased and transported to the site by the local government. The population makes the seedbeds and helps with transplanting the seedlings.

5.3.5 Peer Learning and Motivation

The activities listed above will be achieved through peer learning and motivation which are key aspects of the whole project. Living conditions in the communities are influenced by high level of environmental degradation, limited resources, health issues and social tensions. These factors create vicious circle of rural poverty which needs to be intervened by creating optimism about people’s potential and possibilities. Peer learning and motivation facilitate to recover cultural identity and self-esteem of the population.

Peer learning and motivation will be provided through:

- 1. Expert farmers**, who already came through the necessary changes, improved their situation, and have the valuable experience and know-how. They will guide the families to implement a set of innovations to improve:

- a. ***Preventive healthcare*** by reducing the most common diseases (intestinal and bronco-pulmonary), reducing malnutrition and anemia, improving diet, associating with the national insurance healthcare system, etc.;
 - b. ***Agricultural productivity*** by improving selection and manipulation of seeds, enhancing soil fertility through better natural resources management: use of biol, control of plant pests using biocides, improving animal husbandry, control of breeding, advanced productivity of pastures, etc.;
 - c. ***Environmental recovery*** through changes in grazing and afforestation;
 - d. ***Economic activities*** as each participating family will start a new business.
2. **Study tours** to already vitalized areas with representatives of the communities. After experiencing what can be done in forestation project in Cajamarca (massive change of the landscape and income generation), presidents of the Ccapi communities, mayor and other municipality representatives will travel to the districts such as Colcha, Ocongate, and Ccarhuayo, where Pachamama Raymi has worked for 1 up to 3 years and achieved great results. The Ccapi authorities will do their own survey and interviews with local representatives who were also facing similar problems.
 3. **Government participation** can significantly contribute to communities' positive attitude to the project. The stakeholders will also visit local governments of already revitalized districts as their mayors can become a role model for them.
 4. **Learning materials (videos and brochures)** such as for example: "A year of competitions" (see the video [58]). The videos will show progress of similar communities after 6 months, 1 year and 2 years. Training materials will also serve as memory aid.
 5. **Contests** between families and communities in order to apply the innovations they learned with their newly acquired capacities.

Regarding to Pachamama Raymi's experience, within three years after project launch, the families will earn at least the legal minimum of income by starting viable businesses while transferring from marginal economic activities. Adopted innovations

by the communities are being practiced even many years after the project completion. What is more, the innovations also spread among the people in communities who did not decide to participate in the beginning.

5.3.6 Contests

Contests are used as a motivation tool to make sure that families apply correctly what they have learned. To motivate people to participate in the project, the financial reward to invest into their business is set. However, the point of contests is not only about getting points and winning prizes but it has also a spiritual meaning. In Andes, local people revere “Mother Earth” or “Pachamama” in Quechua language. She is a fertility goddess who cares for us if we care for her and might be perceived as the environment, nature, in a religious and powerful context. The purpose of the contests is who cares the best for Mother Earth which is for indigenous people of great significance.

Contests are organized between families but also between communities. Before the contest launch, goals, rules and requirements (so called “wish lists”) are clearly defined. Materials and manuals for family businesses are distributed based on the effort and progress of the families.

Families can choose one or more businesses, according to their possibilities. In the table 10 below, the categories of contests and the maximum amount of grades are listed. For a detailed list of rules, activities and grading see *Annex C*.

Tab. 10 - Contest Categories

Categories	Maximum (Total Grades)
1. Home and Health	240
2. Irrigation, Crops, and Pastures	170
3. Forestation	200
4. The Family Business	300
Total	910

Source: Pachamama Raymi data

5.3.7 Rules and Regulations

Every family can subscribe and participate in the contest: single mothers, widows, widowers, also singles without children if he/she is living in own house and works independently. Usually, the woman is a head of the family, so she will register them.

Family can be disqualified by the qualifying jury for:

- Failure to achieve at least 50% of the maximum amount of points;
- Stating false information;
- Not sending children to school;
- Not having and/or not using bathroom or latrine;
- Having a smoke inside the kitchen (not having a stove connected to chimney);
- Having somebody from household relatives living in miserable conditions;
- Not taking proper care of cattle (e.g. too many ticks);
- Behaving inappropriately during the grading process;
- Other serious inadequacies, when assessed so by the Jury.

5.3.8 Results

Results of the grading will be recorded and signed by the Board of Juries. Consequently the results of winning families and sub-villages will be announced in public by Chairman of the Board of Juries, maximally in four days after finalization of grading. The Chairman will also inform the mayor of the District of Ccapi and Pachamama Raymi coordinator.

Grades awarded by the jury are irreversible and shouldn't be subject to any disputes or questioning.

5.3.9 Award Winning Ceremony

Board of Juries will organize the award winning ceremony which usually takes place in the village winning the first place. The Board of Juries might invite local government authorities, public officials and other authorities.

5.4 Project Objectives

5.4.1 Overall Objective

The overall project objective is to alleviate rural poverty in the Ccapi District by strengthening local families, communities and the municipality government. Socioeconomic and environmental well-being will be reclaimed through improved preventive health measures, recovered agricultural and livestock production, and reforestation. As a result, fixed and financial capital of the local people will be increased by innovation projects adopted by the vast majority of the population.

5.4.2 Specific Objectives

- Attaining at least the equivalent of the legal minimum income for more than 50% of the families;
- Afforestation of the area and achieving at least a value of US\$ 20 000 of people's fixed capital;
- Improving people's health by introducing preventive health measures and facilitating their connection with the public health services;
- Considerable reduction in incidence of serious diseases and health related problems such as intestinal and bronco-pulmonary infections, anemia, and malnutrition;
- Reducing child malnutrition and maternal-child mortality;
- Strengthening capacities of local farmers in terms of agriculture, livestock, forestry, and preventive healthcare;
- Creation of short-term, medium-term and long-term viable businesses within the communities;
- Food security and production surplus;
- Integration of local government into the project;
- Cooperation between community authorities and local government;
- Reducing undesirable migration to urban areas.

5.5 Project Team

5.5.1 Expert Farmers and Coordinators

Project team is made up of expert farmers and Pachamama Raymi coordinators. The amount of staff members depends on the number of participating communities and population. At default, field staff is formed by 2 up to 3 people per community, while there should be 1 coordinator per 3 expert farmers. Communities that have more than 50 families are divided into groups, each of 50 families maximum.

For example, 3 communities of 13, 18, and 19 families will require only one field staff as it comprises in total 50 families. Based on this methodology, 669 families in the Ccapi District will employ 15 expert farmers and 5 coordinators (see table 11).

Another member of the team will be supervisor who will continuously monitor project progress, report it to relevant departments of Pachamama Raymi organization and take care of project administration and also monitoring and evaluation.

First Pachamama Raymi coordinators shall get to know well the communities to understand and examine their particular living conditions and to propose the possibilities of the projects implementation.

Tab. 11 - Expert Farmers and Coordinators per Community

Communities	Population	Families	Communities' Sectors (Number of Expert Farmers)	Number of Coordinators
Ccapi	862	151	3	1
Huatta	137	24	1	1
Tucuyachi	182	32	1	
Percca	390	67	1	
Chocho	104	18	1	1
Uyllullo	162	28	1	
Cajapucará	429	74	1	
Ccoyabamba	551	95	2	1
Quehuayllo	197	34	1	1
Incakona	406	70	1	
Callancha	441	76	2	
Total	3 861	669	15	5

Source: own work based on Pachamama Raymi Methodology [47]

5.5.2 Qualifying Jury

In each sub-village, 2 jurors will be selected. The jurors might be two women, or a man and a woman from whom at least one must be literate. If there are more than 25 participating families, an additional juror will be assigned per every 25 families. The jurors will actively participate in organizing the contest and they can also become a qualifying jury in other sub-villages. Together with field staff of Pachamama Raymi, they will organize grading of families and sub-villages (communities divided into the groups). The jurors will also take place in study tours and will help to guide and supervise participating families.

The Qualifying Jury will be elected by the General Assembly from all the juries in the district. Participating families and sub-villages will be graded by this qualifying jury based on the criteria and grades listed in the brochure (as represented in *Annex C*).

Sub-villages with less than 15 participating families may be disqualified by the jury, however, these families might be registered with a neighbouring sub-village. If only few families reached the acceptable grade, the jury can declare the prizes invalid.

5.5.3 Logistics

Expert farmers, coordinators, supervisor and juries will use motorcycles to transport within the work area. There will be placed also a central office which will serve as a background for administrative work and storage.

5.6 Project Results

5.6.1 Outputs

- Over 400 families will apply improved and sustainable agro-ecological practices and farming techniques;
- Over 400 families will adopt new economic activities while achieving equivalent of the legal minimum income or more;
- Over 400 families will adopt a set of preventive health measures;
- Over 200 families will breed guinea pigs to improve their diet and sell them on the local market to generate income (sheds with more than 300 guinea pigs);

- Over 20 families will introduce trout farming for the same reason;
- At least 150 families will harvest, dry and sell edible mushrooms;
- At least 11 organizations will market the products from the Ccapi District;
- All the 11 communities will participate in the project and thus their community development;
- Over 800 hectares of trees of different species will be planted by the local people, including pine trees, Cedrela Lilloi, Eucalyptus, Apple, Peach and Avocado trees, Caesalpinia Spinosa (Molina) and others, which is more than 1 000 trees per participating family.

5.6.2 Impact

- Food security of farmers and their families;
- Reforestation of the area;
- Improved standard of living of participating families and rural communities due to their enhanced capacities and know-how;
- Sustainable rural development of all the communities with regard to their traditional and cultural values;
- Strengthening of the Municipal Government of Ccapi (by adopting Pachamama Raymi methodology into its development program);
- Poverty eradication in the district.

5.7 Project Sustainability and Risk Reduction

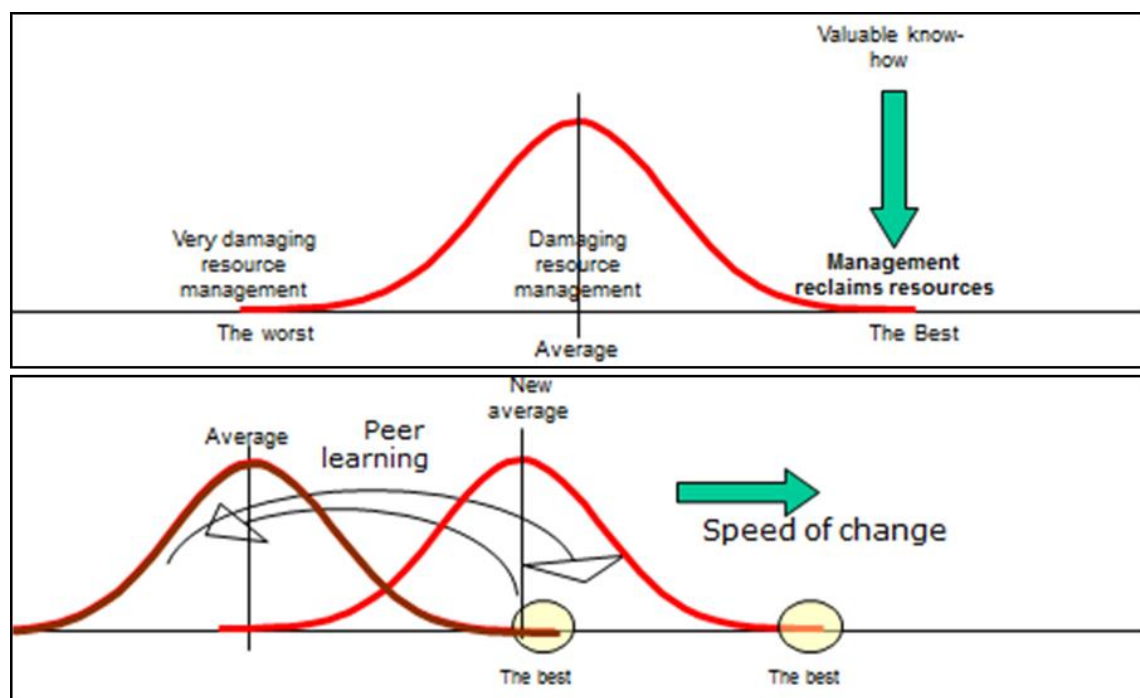
Project should be supported by the Municipality of Ccapi, especially regarding afforestation and promotion of new family businesses and preventive healthcare.

As described already in the chapter 5.3.5, peer learning and motivation are major elements that make the project sustainable and cause it has control over the speed of improvements in the communities.

Figure 7 represents basic principle which allows quality control management of the project. In the first graph normal distribution of knowledge within population is illustrated via bell curve. The bell curve represents people’s knowledge and know-how about natural resources management, preventive healthcare, etc. The “average” knowledge and know-how of the majority of the population has a form of damaging natural management practices. However, there are still people who possess the valuable knowledge and know-how about how to reclaim degraded natural resources. These exceptions and represented on the extreme right of the bell curve in the first graph.

Peer learning process has to be very clear, understandable and systematic. The expert farmers (“The Best” as indicated in the figure 7) who transfer their knowledge on the local farmers should be those who have gone through similar situation and have achieved great successes, so that they already possess the valuable know-how. This new knowledge and know-how can be learned by the majority of the population and that is how the bell curve moves from the average in the middle to the right (see figure 7, the second bell curve). In other words, people, who are close to normal distribution (average), can move towards and become the experts by “learning from the best”.

Fig. 7 - Spreading of know-how and innovations based on Pachamama Raymi methodology



Source: Pachamama Raymi

Further, the project controls and is responsible for the speed of change. The experience of projects using Pachamama Raymi methodology is quite important, since it shows us a methodology capable of producing very quick and sustainable change of eradicating poverty while reclaiming natural resources.

As soon as the farmers acquire new knowledge and know-how and establish a new curve, it accelerates the change. To keep the curve moving, it is necessary that people apply these innovations and spread them among the rest of the population eventually. To motivate people to do so, contests with awards are organized.

The information about contests, rules and regulations is clearly defined to everyone. Expert farmers share all the information about the winning innovations and how the best results can be reached by showing the concrete examples (e.g. tools how to plant the seeds, how to handle and cultivate the crops, where to sell them, etc.). Peer-learning uses direct communication and manifestation, but also written and illustrated manuals, videos, or radio.

5.8 Monitoring & Evaluation

External evaluation will be carried out at the end of every project year to assess if the results fulfilled the objectives set. It is also necessary to monitor if the innovations are adopted in time corresponding to the duration and indicative plan (see in the chapter 5.9). Indicators used for monitoring and evaluation of the project progress are the number of families and communities participating and grades obtained in each contest. From each contest the average of all the grades are calculated. By default, the amount of participants is increasing with each contest as long as the innovations are spreading among the population. As the competition is increasing, the average results (final grades) are also improving.

Monitoring & Evaluation is a very important aspect of the methodology as it tracks the speed of applying all the innovations necessary to fulfil all the rules and regulations of the contests. The actual speed of change depends on the intensity of knowledge transfer and motivators. This is monitored by the regular visits and grades obtained in the contests. If the adoption of innovations isn't fast enough, several steps

should be undertaken, such as making the exchange of information more understandable and relevant, or increasing the strength of motivators.

All the activities listed in the rules of contests have to be fulfilled. That is why it is necessary to regularly monitor and check if all these changes are properly adopted. The issues listed must be accomplished since they are conditions for overcoming and eradicating poverty. Local jury fills out the monitoring sheets evaluating the progress of each participating family and community six times a year. The grades are awarded per each activity separately.

5.9 Duration and Indicative Plan

Project schedule was processed into a Gantt chart as represented in the tables 12 and 13. The schedule illustrates summary and duration of the project activities but also the whole project.

5.9.1 Preparation Phase

As illustrated in the tables 12 and 13, the first step during the preparation phase is that the Pachamama Raymi staff will travel to the Ccapi District and will meet local authorities (mayor, presidents of communities). Pachamama Raymi methodology and results achieved will be introduced to them, landscape potential will be observed, and interviews with local people will be executed. Contact will also be established with other relevant institutions operating in the area.

After formal agreement with the local government, the local authorities including mayor and presidents of the communities will participate in study tours and training. The study tours will be organized in order to demonstrate the potential of their communities regarding forestation, agriculture and animal husbandry by visiting areas which have adopted the innovations and already achieved great results.

Afterwards the teams will be formed and rules and regulations will be introduced in the communities. During the first month, all the educational materials, rules and regulations will be prepared and distributed among the participating families. The participants of the contest will be registered and will choose a jury, consisting of

the representatives of communities. Consequently, these representatives will elect the jury. Two jurors will be chosen per each community and trained for grading.

Besides awarding grades, they will also assist in the contest organization and spreading of knowledge and know-how. This jury will evaluate each participating family and community by filling out the monitoring sheets based on their progress. At six different times during the first year they will also fill out the sheets for monitoring and information about which activities have already started and which haven't.

5.9.2 Process Phase

The process phase and official start of the project is launched by a ceremony, so called "despacho" in honour of Mother Earth, organized for the communities and the local government. During the ceremony the first contest is officially initiated and will last six months. There will be two levels of the contests, first between families in each of the communities, and in parallel, between all the communities.

The field staff will enroll the families and communities in the contests, and will organize peer-learning courses. The participants will learn necessary innovations regarding planting trees, natural resource management, animal husbandry, preventive health measures, and so on. Expert farmers will supervise them while implementing these innovations and will pass their knowledge and know-how. The experts will also monitor which issues are not having required progress, and the adoption rate of all the activities will be reported. If necessary, corrective action is taken such as comprehensible explanation of the particular practices, etc.

According to the duration and indicative plan, further contest will start after half a year in June, and will follow the same timeline as during the first contest, only the activities will be relevant for that part of the year (rainy or dry season). Knowledge and know-how will be deepened and the first incomes from the previous investments will be generated. The level of registration and participation in the second contest should exceed 60% of the population in each community.

5.9.3 Evaluation Phase

Two more years are necessary to consolidate the results and deepen the implementation of innovations. During these two years the Raymi's representatives will regularly visit the district to monitor the implementation of the projects and to talk to participants and representatives of the target population and municipality. In the evaluation phase, the NGO will monitor and evaluate the progress of the project via periodic visits of the communities. Furthermore, they will carefully monitor the budget, and will produce a financial report each 3 months. Evaluation will be also performed through presentations, publications, and media.

What is more, the Committee consisting of Pachamama Raymi, communities, and local government representatives will be formed in order to discuss progress and challenges of the project at bimonthly meetings. The total duration of the project should take at least three years to achieve sustainable results.

Detailed process of monitoring and evaluation will be carried out as already explained in the chapter 5.8.

Tab. 12 - Duration and Indicative Plan (Part I.)

Activity	YEAR 1										YEAR 2	YEAR 3	Participants		
	Q1					Q2								Q3	Q4
	January				February	March	April	May	June						
	Week 1	Week 2	Week 3	Week 4											
Traveling to and within work area, introduction to the district and communal authorities														PR, EF, LG, FA	
Preparation of educational materials, rules and regulations														PR, EF	
Establishing working relations with other organizations in the area														PR, EF	
Study tours														PR, EF, LG, FA	
Team formation, formulation of rules & regulations														PR, EF, LG, FA	
Registration of participants, selection of a jury														PR, EF, LG, FA	
Training of jury for grading participants														PR, EF, LG	
Selecting conformation of Board of Jurors														PR, EF, LG	

Tab. 13 - Duration and Indicative Plan (Part II.)

Activity	YEAR 1											YEAR 2	YEAR 3	Participants	
	Q1					Q2					Q3				Q4
	January				February	March	April	May	June						
	Week 1	Week 2	Week 3	Week 4											
Peer-learning courses															PR, EF, LG, FA
Ceremony of the first contest in each work area					●										PR, EF, LG, FA
Delivery of a little material support according to progress and effort of each family/community															PR, EF, FA
Constant monitoring by expert farmers															PR, EF, FA
Launching ceremony of the second contest											●				PR, BJ, LG, FA
Grading of each participating family, organizing an award ceremony and a fair															PR, BJ, LG, FA
Deepening the knowledge and know-how, getting the results from the previous investments															PR, EF, LG, FA
Monitoring and evaluation															PR, EF, LG, FA

Source: own work based on Pachamama Raymi methodology²

² PR – Pachamama Raymi; EF – Expert Farmers; LG – Local Government; FA – Families; BJ – Board of Jurors; Q – Quarter; Blue colour – Preparation phase; Yellow colour – Process phase; Pink colour – Evaluation phase; ● – one-shot action

5.10 Financing

There are several sources the project could be financed from. Firstly, the local government should subsidize the project as the authorities will take part in study trips and will be familiarized with what can be achieved and how.

There are also other options such as grants from European Union, German Technical Cooperation Agency (GIZ) or Swiss Agency for Development and Cooperation (SDC). The calls for proposals should be monitored regularly.

Initially, the project was designed based on Rotary Club guidelines for project proposals (the whole matching grant application is shown in *Annex B*). However, in the meantime the guidelines were changed and the project assignment would need further research in the area in a form of concrete questionnaires.

Pachamama Raymi collaborates with several donors and foundations which could be a reliable source of funding since majority of them already experienced work and achievements of the organization.

The benefactors might be for example Peer Learning Foundation (Piet Romein) based in Netherlands, which financed the project in villages in the Districts of Challabamba, Caicay, Ocongate and Lares or the Greer Foundation based in USA, which already financed projects in rural communities of the Districts of Ccarhuayo and Ocongate. The donors were already contacted.

5.11 Budget

Detailed budget of the project is represented in the table 14 below. The budget is divided into 3 main parts: peer learning, motivators and central provisions. The total cost of the project is estimated at 702 401 Nuevo Soles and 223 339 US Dollars at actual USD – PEN exchange rate 3.145. [57] The budget is calculated for all 669 families and 3681 persons. The total cost per person is US\$ 58.

Tab. 14 - Budget

	Item	Unit	Number of Units	Months	Unit Cost per Month	Total Cost / Nuevo Soles	Percentage of total budget	
Peer learning	533 465	Salaries and travel allowance	Persons	30	12	–	381 600	54%
	76%	Salaries	Persons	30	12	–	270 600	
		Coordinator	Persons	5	12	660	39 600	
		Expert farmer	Persons	15	12	600	108 000	
		Facilitator	Persons	10	12	410	49 200	
		Social Security	–	–	–	–	73 800	
		Travel allowance	Persons	30	12	–	111 000	
		Coordinator	Persons	5	12	350	21 000	
		Expert farmer	Persons	15	12	300	54 000	
		Facilitator	Persons	10	12	300	36 000	
		Internships and teaching materials					118 475	17%
		Local study tour	Tours	3	–	8 000	24 000	
		Regional study tour	Tours	1	–	15 000	15 000	
		Training Courses	Pieces	55	–	170	9 350	
		Educational materials	Pieces	669	–	5	3 345	
		Transport and field offices					33 390	5%
		Motorcycles	Pieces	3	12	178	6 390	
Maintenance	Pieces	3	12	400	14 400			
Fuel		3	12	250	9 000			
Province office and its materials	–	–	12	300	3 600			
Motivators	123 000	Motivators				123 000	18%	
	18%	Prizes for contests	–	–	2	19 500	39 000	
		Grading by jury members	Persons	30	2	350	21 000	
		Expenses on award ceremony	–	–	2	7 500	15 000	
		Seeds, plants and forestry equipment	–	–	12	2 000	24 000	
		Guinea pigs/chicken/fingerlings	–	–	12	2 000	24 000	
Central Provisions	45 936	Central Office and General Expenses				21 936	7%	
	7%	Expenses of central office (equipment, rent)	–	1	12	390	4 680	
		Staff costs of central office	–	1	12	1 438	17 256	
		Supervision, Monitoring and Evaluation					24 000	
		Supervisor Pachamama Raymi	Person	1	36	540	19 440	
		External Evaluator	Person	1	1	600	600	
		Transport (Supervision and M&E)	Person	1	36	110	3 960	
Total Cost	Total Cost in Nuevo Soles	–	–	–	–	702 401	100%	
	Total Cost / US\$							
	Total Cost in US\$	–	–	–	–	223 339		
	Total Cost in US\$ per person	–	–	–	–	58		

Source: own work based on Pachamama Raymi data

5.12 Risk Analysis

Risk analysis represented in the table 15 is based on the deep situation analysis in the Ccapi District. Potential risks which might accompany the project implementation are illustrated as well as the prevention to overcome them. Also both internal risks (e.g. insufficient interest of families in participating in the project, incorrect application of innovations, or families' resistance to change) and external risks (diseases or natural disasters) threatening the project execution are assessed. As not all the risks are equal, the severity of potential impact and probability of risk occurrence were identified.

Tab. 15 - Risk Analysis

Risk	Severity of Impact	Probability of Occurrence	Prevention
Insufficient interest of community members in improving their livelihood	Project failure	Medium	<ul style="list-style-type: none"> • Field surveying and interviewing the local representatives • Motivational study trips to reconstructed communities to experience what can be achieved • Peer learning to reclaim and manage their resources in a sustainable manner • Empowerment and motivation of farmers by contests
Low or no Local Government's support	Decrease in project quality	Low	<ul style="list-style-type: none"> • Presenting to the authorities the successful projects and results achieved • Study tours to regions where the projects are already successfully working
Families incorrectly apply knowledge gained from the peer learning with expert farmers	Decrease in project quality	Medium	<ul style="list-style-type: none"> • Proper situation analysis • Evaluation and monitoring • Contests (results are evaluated) • Continuous peer learning of families participating in the project
Diseases/Natural Hazards	Decrease in project quality	Medium	<ul style="list-style-type: none"> • Preventive health measures adopted by participants • Closer cooperation with local government regarding public healthcare • Peer learning on emergency planning and prevention of livestock diseases and water chlorination
Lack of qualified expert farmers	Decrease in project quality	Low	<ul style="list-style-type: none"> • Widen the network of professional expert farmers in the project area • Selection procedure in advance
Families' resistance to change	Project failure	Medium	<ul style="list-style-type: none"> • Promote changes which have already generated great successes and have been validated under the same or very similar conditions • Application of motivators (study trips, peer learning, contests)

Source: Author's Archive

5.13 Logical Framework Matrix

The logical framework matrix summarizes the results of this entire project and illustrates it in a nutshell. The main purpose of the logical framework matrix is to define the project structure, understand its internal logic, and formulate objectives. The results of the previous analyses in the district were used as the basis for the logframe matrix summary in the table 16.

Tab. 16 - Logical Framework Matrix

	Narrative Summary	Objective Verifiable Indicators	Means of Verification	External Factors (Risks, Assumptions)
Overall Objective	To eradicate the poverty by strengthening families, communities and the local government of the Ccapi District	Over 60% of the families in every community apply what they learned and within three years; families acquire at least the equivalent of the legal minimum income by starting viable businesses	Statistics of families and communities participating in the project and contests; regular grading; bimonthly Committee meetings; NGO's final report; annual municipal report	<i>Risk:</i> Insufficient motivation and interest of participants, low or no local government's support <i>Assumption:</i> Peer learning with expert farmers, motivation by contests, local government's participation in study trips to regions where the projects successfully work
Specific Objectives	To improve a level of income (at least to legal minimum) thanks to new businesses; to improve people's health and reduce child malnutrition; to strengthen the capacity of the local authorities to promote economic development of their population; to increase the sustainable farm production and farmers' capacities	The level of the legal minimum income for over 50% of the population; more "healthy" homes; tree nurseries; reforested areas; guinea pigs' sheds; trout farming; improved crop and graze management	Monitoring of establishment of new businesses; wish lists and grading of preventive health, economic and ecological improvements; contests' results	<i>Risk:</i> Families incorrectly apply knowledge gained from the peer learning with expert farmers <i>Assumption:</i> Proper monitoring and continuous peer learning of families participating in the project
Results	Higher level of standard of living of small-scale farmers and their families due to their strengthened capacity and better access to information; improvement in families' incomes; the adoption of sustainable agro-ecological farming practices; the Municipal Government of Ccapi is strengthened and incorporates Pachamama Raymi methodology in its local economic development program	Local communities participation in the project; local government participation and financing	Field evaluation with the application of a survey that collects the physical progress of the main themes developed in the contests; annual reports of NGO Pachamama Raymi and local government	<i>Risk:</i> Failure in cooperation with community members and local government <i>Assumption:</i> Proper monitoring and continuous peer learning of families participating in the project, their motivation, study trips and training materials
Activities	Peer learning; motivation; planting trees and reclaiming degraded areas; construction of guinea pig sheds; implementation of vegetable gardens; construction of trout farms; improvement in production of fodder by sowing grass and range land management; improving housing, and taking other relevant preventive health measures; improving communal organization	Inputs: NGO Pachamama Raymi staff including expert farmers; families and communities; local government	Expected costs: 223 339 US\$ Timetable: Preparation phase: 1 month Process phase: 35 months Evaluation phase: 24 months	Preconditions: To contract with the Local Government the cooperation; obtain financing from local government and donors, or other sources; motivate and learn the local families how to apply the gained knowledge

Source: author's archive

5.14 Concrete Results

After finishing the project proposal by the end of the year 2013, both author and Pachamama Raymi organization checked for several calls for project proposals. Project planning phase and negotiations with partners-benefactors and the local government continued also after the author left the project area.

Finally, one year later, in December 2014, the project was supported by the Municipality of Ccapi and The Greer Foundation. So far, the project is being implemented for 359 families (approximately 2 000 inhabitants), which is 54% of the total population of the Ccapi District (see table 17 below).

Tab. 17 - Number of Participating Families

Communities	Families	Population
Huatta	24	137
Tucuyachi	32	182
Percca	67	389
Parcco	40	N/A
Chocho	20	104
Uyllullo	30	162
Cajapucara-Ccascas	80	429
Pampahuata	21	N/A
Quehuayllo	45	197
Total	359	Approximately 2 000

Source: Own work based on Pachamama Raymi data

5.14.1 Project Implementation

In October 2014, new Mayor of Ccapi was elected and is being in charge from January 2015. Immediately after the elections, Pachamama Raymi invited a number of newly elected mayors to participate in the project and to attend study tours and training sessions. As the new Ccapi government expressed their interest in the project, the study tours were organized to show them the potential of their extremely poor district through three examples: the Granja Porcón in Cajamarca (massive forestation project), and the Districts of Ocongate and Ccarhuayo, where the local governments in collaboration with Pachamama Raymi achieved a high level of prosperity for the majority of the

population within three years. This impact is based mainly on irrigated fodder production, guinea pigs production, and livestock and milk production.

The newly elected mayors from several districts including Ccapi, met the mayors of Ocongate and Ccarhuayo who discussed the impact their programs had on eradicating poverty, illustrated by many concrete examples of families and entire villages.

The study tours have had great impact on the outlook and plans of the mayors. The mayor of Ccapi and several newly elected Ccapi officials participated in both study tours and pledged to implement the required programs. They also visited the Pachamama Raymi main office in Cusco, requesting their assistance.

In January 2015, large tree nurseries were implemented by the local government of Ccapi following the study tour to Granja Porcón in November 2014. The production of trees has started just before the beginning of the rainy season. In general, the Municipality of Ccapi re-directed its investments into the productive projects (forestation, alpaca, trout, and guinea pig breeding, fruits and vegetables production, etc.) instead of investing in projects of reinforced concrete.

The municipality produced over half a million trees for the planting season 2015, which is a great achievement, especially because this was the first time the Municipality of Ccapi produced trees. What is more, families also produced and planted their own trees.

Population prepared the seedbeds and helped with transplanting the seedlings. In total 9 beds for Cedrela Lilloi, a valuable native species of the Mahogany family and 6 beds for pine trees were planted (30.5 m² each). Total amount of about 400 000 trees should be produced this year, to be planted in December. Pachamama Raymi itself provided 60 000 seedlings of Cedrela Lilloi to plant in the District of Ccapi. Cedrela Lilloi (in Spanish Cedro de altura) is endangered species by habitat loss thus it is both economically and ecologically valuable investment.

During the construction of tree nurseries in the villages of Ccasccas, Percca, Uyllullo and Huatta about 90% of the families participated. Families also started to sow fodder, prepared 1 500 avocado seeds which will partly replace corn production.

Official start of the project for the district with “despacho” (the ceremony paying respect to Mother Earth) was launched 27th January 2015. Pachamama Raymi team coordinated the beginning of the project with the presidents of the villages, started tree nurseries, and organized the ceremony. The average participation in the first peer-learning courses was very high, over 70% of all families.

It is anticipated that families will continue improving their economies, as it is happening in the communities in the Districts of Ccarhuayo and Ocongate, where the project left about 3 years ago. The families are expected to expand their guinea pigs and trout farms. The massive forestation will also result in significant increase of income from the harvest of edible mushrooms. The local government is supposed to continue supplying trees from its tree nursery for the whole district.

5.14.2 Updated Budget

The budget for these 7 communities and 277 families, for the first year was recalculated at US\$ 138 163 while the particular budget items as indicated in the table 13 remain the same. The local government is expected to contribute at least 27% of this amount. The requested amount from the Greer Foundation is US\$ 100 340, which is 73% of the total cost. However, the contribution of the local government could increase even more. The total contribution of the local government of Ccapi is expected to develop in a similar way as the contributions from the local government of Ccarhuayo, which contributed over 6 times more than the investment made by Pachamama Raymi donors, and almost 40 times more than the agreed upon contribution.

The communities which are the most developed such as the capital Ccapi, Ccoyabamba, Incakona, and Callancha are not included at the moment. However, more than 50% of the target population was included and Pachamama Raymi is keep looking for further sources of funding for the remaining communities.

6 Discussion

The discussion and recommendations are based on the author's observations and experiences in remote communities of the Ccapi District located in the Cusco Region, but also different communities under similar conditions (Ccarhuyao, Ocongate, Ollantaytambo Districts etc.). Generally, the District of Ccapi appeared to be very suitable for the project implementation. There is a lot of potential to be exploited such as afforestation, production of fruits and vegetables, but also animal husbandry (guinea pigs, trout, alpacas and lamas, etc.). Further, people showed their positive attitude to new projects and businesses, and they wanted to improve their standard of living. They just need to acquire knowledge and know-how to implement their capacities.

The experience of projects using Pachamama Raymi methodology is quite important, since it shows us a methodology capable of producing very quick and sustainable change of eradicating poverty while reclaiming natural resources, improving health and sanitation and increasing profitability. All of these changes are achieved through newly acquired capacities and skills to manage the productive activities and participate in the local market. The point is that this kind of investment is made by families themselves and they are in charge of all these changes and also their future development, which makes it sustainable.

It is also important to bear in mind that since the local government and municipality authorities directly invest into the project and participate in the innovations, it contributes to an efficient allocation of the public investments and project sustainability in future.

The main motivation lies in the contests, however, the Pachamama Raymi methodology is not only about competing but also teamwork and sharing knowledge, which helps people to escape from poverty. Contests provide small cash prizes for further investments into their businesses and thus create a link between the economic well-being and traditional values. As a result, local people are able to achieve with their own resources and know-how profitable, yet sustainable results.

When identifying the landscape potential, the interviews were conducted with a fairly open framework together with Pachamama Raymi representative in Quechua

language and translated into Spanish. Sometimes part of the information could be missed since the answers were summarized just in few sentences. Furthermore, reliability and expertise of the semi-structured interviews is limited due to imprecise information provided by presidents and families in local communities e.g. regarding number of inhabitants, available amount of hectares for afforestation or agricultural purposes, fruits and vegetables cultivated in the area, etc.

The reliability of the information might be also linked to the credibility of the interviewers as the author is at the first glance foreigner and does not speak Quechua, people might doubt her intentions and awareness of their culture, history, etc. Nevertheless, the field survey in the communities was very beneficial as the author could get a complex understanding of the context, and could observe in situ the conditions people live in (physical context, concrete people involved, including their behaviour and nonverbal communication).

Author also recommends that the assessment of the landscape potential should have a professional landscape and spatial planning background and shouldn't be based only on the information provided by the indigenous people. Therefore further research regarding landscape planning should be carried out to evaluate the landscape and spatial potential correctly.

At the moment, the majority of projects use pine trees as a non-invasive species, so that they can be easily planted and create great economic benefits for local people. However, if a native species would be found and would cover the similar characteristics as pine trees in terms of valuable wood and mushroom symbiosis, it would be much better alternative than using non-native, although non-invasive pine trees. A compromise among economic, social and landscape potential characteristics could be found through further research aimed at identification of environmental potential of the area in terms of native tree species.

It is also worth mentioning that even though Pachamama Raymi organization monitors and evaluates the improvements in health measures, income, and environment reclamation, it would be interesting to process further research on how these projects directly influence health, education and income indicators in the project areas.

Furthermore, only one field staff should work during the whole project because they build credibility and relationships with local people and can monitor and compare most effectively the progress and change. Also the interviews with local people should be prepared in more detail to decrease a risk that important information will be missed or misunderstood.

As the author could observe in the Ccapi District, the Pachamama Raymi methodology would be a suitable development tool. So far many NGOs have operated in the area, however, none of its outputs was sustainable in the long-term. Most of the NGOs apply conventional methodologies concentrating more on the consequences of poverty. For instance, kitchens and latrines were constructed but people do not use them since they didn't learn how or it just didn't meet their expectations. That is why it is crucial to work mainly with the resources people already have and the improvements that people are able to do themselves through their own capacities.

What is more, the author could compare families and communities who have participated in the projects (Ccarhuayo) and those who haven't (Ccapi). Based on the regional poverty map [56], Ccarhuayo is the poorest district of the Cusco Region and 5th poorest throughout Peru. The initial situation of Ccarhuayo District was very similar to the one in Ccapi. In 2010, Pachamama Raymi implemented projects in 6 communities of Ccarhuayo with about 3 300 inhabitants. By 2013 these projects were adopted by 68% of population. Great progress has been achieved for example in guinea pigs production but also many other businesses. While in 2010 (before the project launch), families had just a few guinea pigs in the kitchen in very messy conditions and there were no guinea pigs stables, 2 years later they turned it into a profitable business (see pictures before and after project implementation in *Annex F*). Big sheds for guinea pigs were constructed by the families themselves (in total 76) with part of materials provided by the local municipality. At the moment, the area of these stables is 3 300 m² with approximately 9 200 guinea pigs. Participants also improved their homes, management of their resources, and started to plant trees in completely deforested areas. Municipal nursery was installed and more than a million of trees were planted during the 3 years of project implementation, covering 900 hectares (3% of the total area of Ccarhuayo District). [51] It is a great example of what can be achieved also in the Ccapi District.

Even though the Ccapi District performs better according to the poverty rate, based on author's observation, people lived in much poorer living conditions (e.g. severely neglected and messy homes, poor natural resource management, etc.) than people in the Ccarhuayo District after the project implementation. To achieve the best possible results, it is required to continue in the projects over a period of three years. These innovations will be sustainable and performed by the families and communities many years after project completion since the people become empowered, self-sufficient and start to generate income. What is more, innovations are often diffused among more families and communities that initially weren't included in the project.

Even though Pachamama Raymi has been very successful compared to other development project which author could observe, the role of education seems to be a little bit overlooked and should be more emphasized. The integration of education into the projects might be done by motivating local government to invest also into this sector. In the whole district and in these remote Andean regions generally, the majority of children barely finish lower primary education with 4 grades in total (i.e. elementary school in Uyllullo). Thus the investment into the education and human capital shouldn't be underestimated.

An effective poverty eradication program should promote health, education, economic and natural resource development and should produce these results as fastest and cheapest possible while including the highest possible amount of people into these changes. Pachamama Raymi proved to be able to successfully promote the economic, environmental and to some extent health aspects in quite short-term (3 years in total) and to spread these changes among majority of the population (about 60-70% in average). However, it is hard to estimate development trend of these improvements in few more years.

To conclude, the context of the communities plays also a very important role. The methodology shouldn't be applied as a model project in any poor rural area but it has to be carefully adapted to the given conditions.

7 Conclusion

The main aim of this paper was to introduce a project which serves as a tool for poverty eradication in the Ccapi District in Peru.

Based on the obtained results, there are a few major aspects which should be further developed. First, integrating an element of education into the project since the project is concentrated mainly on improvements in ecological, economic and health well-being. Second, assessing the landscape potential in order to professionally and specifically plan and evaluate what kind of plant species is suitable to grow in the area. Moreover, a research regarding the direct influence of the project on health, education, and income indicators could measure the project impact and examine its direct influence on the verifiable indicators of development.

The main difference between most of the conventional methods combating poverty and the one applied is the motivation and peer-learning as the core project investment. Furthermore, very detailed and concrete conditions which have to be fulfilled by the families in order to eradicate poverty are set and carefully monitored. That is probably the main reason why the suggested method has proven to be different but very successful poverty eradication tool compared to the majority of traditional development methodologies. Also as long as the local government and municipality authorities directly participate in the project, it increases the project sustainability.

In January 2015 the project has been officially approved and since then is being implemented by the Pachamama Raymi organization. The project was put into effect mainly thanks to the excellent job of Pachamama Raymi, but also The Greer Foundation and the Municipality of Ccapi who financed the project.

8 Summary

The main topic of this work encompasses the Andean communities of the Ccapi District in the Region of Cusco in the Southern Peru. The main aim of this diploma thesis was to introduce a rural development project designed for the Ccapi District in Peru as a result of “Scholarly Internship in Developing Countries” organized by Mendel University in Brno in 2013.

The project preparation phase has started in 2013 by literature and internet research on rural development projects in poor Andean communities in Peru and has continued in Cusco in collaboration with NGO Pachamama Raymi. The method used to achieve a sustainable regional development of these poor Andean communities is the Pachamama Raymi methodology which is characterized by generating the adoption of a set of innovations by majority of the population. The main elements to achieve these innovations are motivational tools consisting of study trips, peer learning and contests between families and communities. These contests have a unique spiritual meaning for local people as the main idea is who cares the best for Mother Earth (Pachamama).

The practical part described recent situation in the Ccapi District based on social, economic and environmental aspects and potential of the communities. Suggested means of poverty eradication in the district consist of peer learning (farmer-to-farmer learning), motivation, clear and demanding goals, systemic approach, and monitoring and evaluation (Pachamama Raymi methodology). All these elements were incorporated into the project proposal in the practical part of the thesis.

The main idea of the project is to motivate people to improve all the elements necessary for sustainable development with their own resources. The methodology denies any form of direct donation or volunteering as the changes have to be done by the people themselves. People acquire new knowledge, know-how and capacities to improve their preventive healthcare, recover their neglected resources, and create new businesses. They are motivated to achieve these improvements as they might not only improve their standard of living but invest in their far future too.

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10 List of Abbreviations

UN	United Nations
UNDP	United Nations Development Programme
GDP	Gross Domestic Product
HDI	Human Development Index
NGO	Non-governmental organization
INEI	Instituto Nacional de Estadística e Informática (National Institute of Statistics and Informatics)
FAO	Food and Agriculture Organization

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- B. Sample of the Rotary Matching Grant Application for the Ccapi District
- C. Rules and Regulations of the Contests
- D. Before and After the Project Implementation in the Ccarhuayo District
- E. Project Implementation in the Ccapi District

14 Annex

A. Initial Situation in the Ccapi District

Pic. 1 Dirt Road to the Communities



Source: Jiří Schneider, 2013

Pic. 2 Areas for Reforestation in the Ccapi District



Source: Jiří Schneider, 2013

Pic. 3 Community Uyllullo



Source: Jiří Schneider, 2013

Pic. 4 Typical Landscape in Ccapi



Source: Jiří Schneider, 2013

Pic. 5 Local Family



Source: Jiří Schneider, 2013

Pic. 6 Degraded land and homes with adobe walls



Source: Jiří Schneider, 2013

Pic. 7 Square in the capital of the district - Ccapi



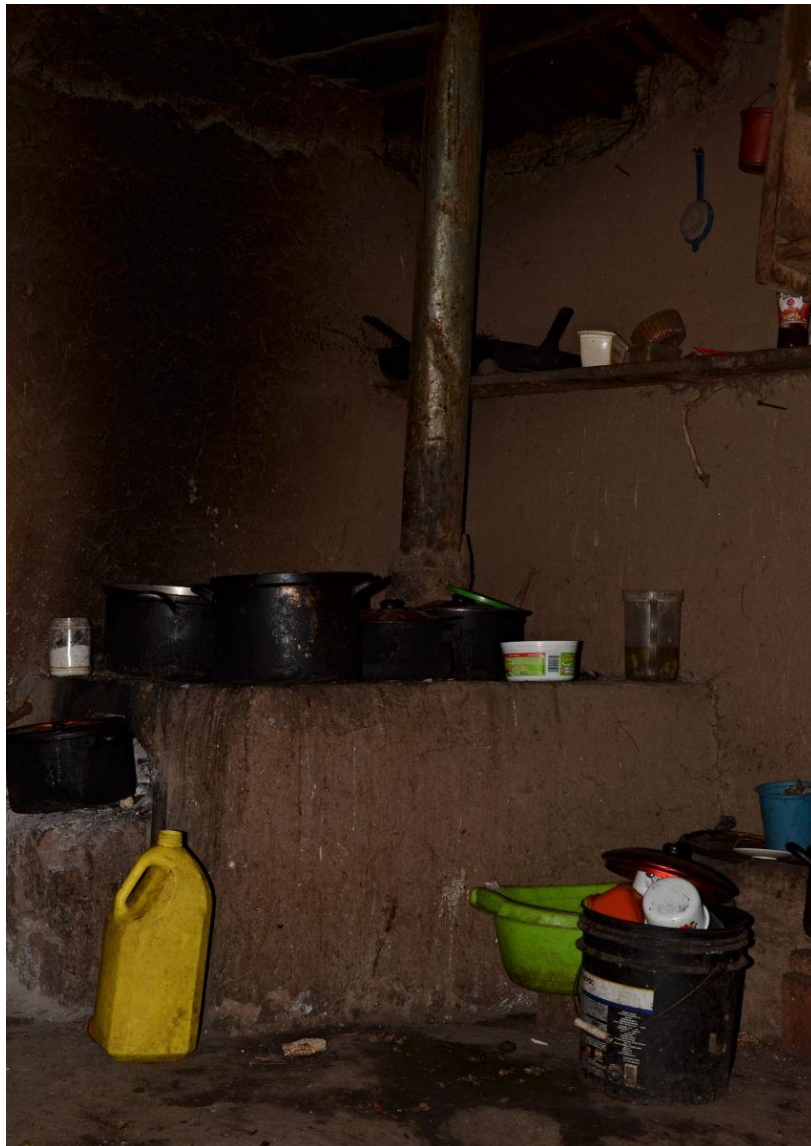
Source: Jiří Schneider, 2013

Pic. 8 Cactus fruits (Tuna) in Ccapi



Source: Pachamama Raymi, 2014

Pic. 9 Typical Kitchen



Source: Jiří Schneider, 2013

Pic. 10 Interviewing Local Authorities



Source: Jiří Schneider, 2013

B. Sample of the Rotary Matching Grant Application for the Ccapi District



The Rotary Foundation (TRF) Matching Grant Application Instructions

What is a Matching Grant?

Matching Grants support international humanitarian service projects. Rotary clubs or districts from two countries work collaboratively to implement a project.

Who can apply?

Rotary clubs and districts from two countries may apply. The clubs or districts must be in good standing with Rotary International. This includes payment of dues and being current on reporting for previous grants.

What are the requirements of a Matching Grant?

Matching Grants must involve a Rotary club or district in the project country (host) and a Rotary club or district in another country (international) implementing a humanitarian project. Partners are expected to:

- Maintain communication for the life of the project
- Establish a committee of at least three Rotarians to oversee the project
- Treat grant funds as a sacred trust
- Maintain clear and accurate accounting

All projects must have active Rotarian participation and oversight. Active participation can include:

- Managing project funds
- Visiting the project site on an as-needed basis
- The international and host partners sharing information via correspondence
- The partners sharing expertise
- Purchasing, shipping, or distributing items purchased
- Publicizing the project to local media and the district

What projects are eligible for a Matching Grant?

Matching Grants fund humanitarian projects that benefit a community in need. Many projects fall within this broad scope; however, certain items and activities are not funded through the program. The chart below gives a general eligibility outline. If you are unsure of the eligibility of your project, please contact the Humanitarian Grant Coordinator for the project location.

ELIGIBLE	INELIGIBLE
Revolving loans/microcredit	Establishment of a foundation, permanent trust, or long-term interest-bearing account
Short-term rent or lease of buildings	Purchase of land or buildings, rent for housing
Construction of infrastructure such as service roads, wells, reservoirs, dams, bridges, latrines, toilet blocks, water supplies, and other similar structures	Construction or renovation of any structure in which individuals live, work, or engage in any gainful activity. This includes buildings, containers, mobile homes, or structures where individuals carry out any type of activity such as manufacturing, processing, maintenance, or storage, including provision of new services or upgrade of facilities
Purchase of equipment or appliances	Provision of plumbing or electrification inside buildings
Short-term and/or contracted labor for project implementation	Salaries for individuals working for another organization
Administrative expenses for project activities	Operating or administrative expenses of another organization
Primary and secondary education, tuition, transportation	Postsecondary education activities, research, or personal or professional development
Domestic travel for beneficiaries and professional staff needed to implement the project	Domestic travel expenses for opening ceremonies or to report on a project
International travel for qualified Rotarians to implement a project. Eligible costs include airfare, travel insurance, immunizations, visas, lodging, food, and other ancillary expenses.	International travel for non-Rotarians or Rotarians that do not have a professional qualification needed to implement the project. Additionally, grant funds cannot be used for Rotarian travel to initiate, promote, or evaluate projects.

ELIGIBLE	INELIGIBLE
Detailed, itemized expenses	Contingencies, miscellaneous expenses
Assistance to land mine victims	Land mine removal
Publicity expenses such as newspaper fees, or printing of posters, brochures, or fliers to inform the community of an available service	Rotary signage
Vaccines and immunizations, if the project is consistent with the criteria, procedures, and policies of the PolioPlus program and World Health Organization	Transportation of vaccines or immunizations by hand over national borders
New Rotary-sponsored projects not already in progress or completed	Projects already undertaken and in progress, existing projects, activities primarily sponsored by a non-Rotary organization, or projects already completed
Maternal and prenatal health and education	Purchase and distribution of birth control devices and ultrasound equipment for use in sex determination
Budgeted and itemized humanitarian goods	Unspecified or cash donations to beneficiaries or cooperating organizations
Humanitarian or service activities benefiting a community in need	Fundraising activities or expenses related to Rotary events such as district conferences, anniversary celebrations, or entertainment activities that do not include a humanitarian aspect
Secular, nonreligious activities that benefit a community in need	Projects that support purely religious functions at churches and other places of worship

What are the funding limits?

Sponsors may request US\$5,000-\$200,000 from The Rotary Foundation. TRF matches \$0.50 for every \$1 of a cash contribution and \$1 for every \$1 from the District Designated Fund (DDF).

How and when to apply

Sponsors must complete a *Matching Grant Application* (141-EN) and submit it to TRF. Applications are accepted from 1 July to 31 March in any given Rotary year. It is recommended that the application be submitted as early as possible to avoid delays associated with submission of applications close to the 31 March deadline. If your project involves revolving loans or microcredit, the Revolving Loan Fund Supplement Form and Credit Group Plan must be included with the application. Requests of \$25,001-\$200,000 are considered on a competitive basis and must be received at TRF by 1 August for consideration at the October Trustees meeting and 15 December for consideration at the April meeting. *The Guide to Matching Grants* (144-EN) is available online to assist in developing the project and completing the application.

NOTE: Applications should be submitted single-sided, unbound, and should be typed, not handwritten.

What are the reporting requirements?

Reports are required at least every 12 months for the life of the project. A final report is due within two months of the completion of the project. Project partners must be up to date on reporting for previous projects as any incomplete or overdue reports will prevent a new application from being processed.

Helpful hints to speed up the Matching Grant process

- 1) Read through the entire application to ensure that all needed information is completed and submitted at one time.
- 2) Verify that all officer signatures on the application are from current year officers.
- 3) Finance your Matching Grant solely with DDF. Submitting cash contributions to the Foundation for a Matching Grant can significantly slow down the payment process. When cash contributions are submitted to TRF, they must be converted from over a hundred international currencies and booked to the individual grant account. Tax receipts must be issued and all recognition credit must be tallied. Matching Grants that are completely funded by DDF and matched by the World Fund are paid out significantly faster than grants that are fully or partially paid with cash contributions.

How to submit the application

Complete applications should be sent to:

Humanitarian Grants Program
The Rotary Foundation
One Rotary Center
1560 Sherman Avenue
Evanston, IL 60201-3698 USA
Fax: 847-556-2151
E-mail: contact.center@rotary.org

Glossary of commonly-used terms

Beneficiary: the recipient of goods or services
Cooperating organization: an entity that is directly involved in the implementation of a grant project, offering technical expertise and/or project coordination
DDF: District Designated Funds
DGSC: district grants subcommittee chair
DRFC: district Rotary Foundation committee
Host partner: the Rotary club or district in the project country
International partner: the Rotary club or district outside the project country
Primary contact: member of partner club or district who serves as main point of contact between TRF and project partners
Rotarian cooperating organization: an entity in which one-third or more of its Board of Directors and/or governing body is comprised of Rotarians and/or senior management who are also Rotarians directly involved with the grant project
Supplier: the entity providing goods or services being purchased with grant funds

NOTE: These instructions represent an overview of the Matching Grants process. Please be sure to review the Matching Grants section of the RI website at www.rotary.org for updates. It is beneficial to read *The Guide to Matching Grants* (144-EN) before submitting an application. This publication is available by download from the RI website and on request from Publications Order Services.



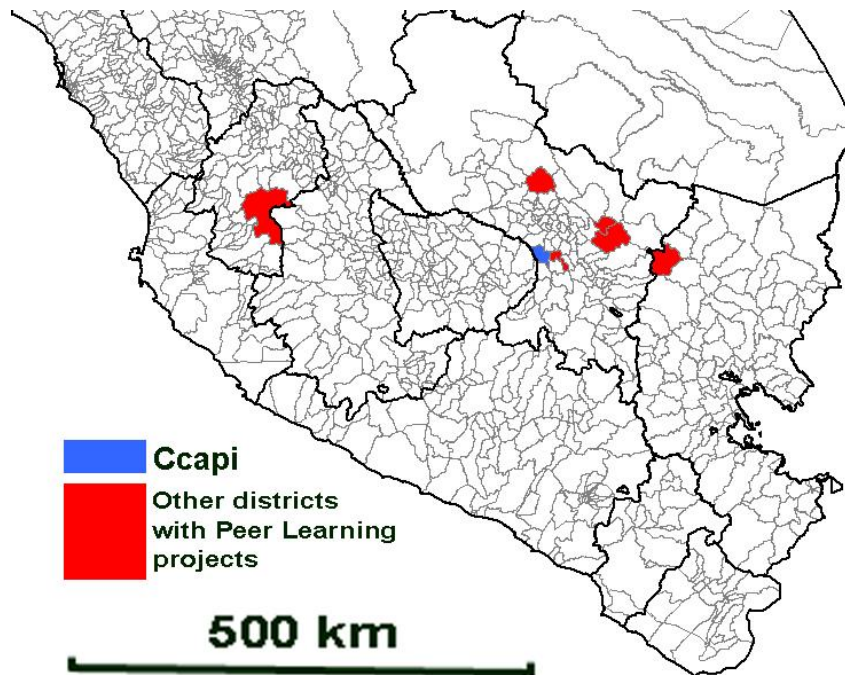
Matching Grant Application The Rotary Foundation (TRF)

PROJECT DESCRIPTION

Explanation: Matching Grants support the humanitarian service projects of Rotary clubs and districts. In this section, describe in detail the humanitarian need your project will address, the intent of the project, how the project will be implemented, and how Rotarians will be directly involved in the project. Involvement is required of both the host and international partners.

Please provide the name of the project site, the city or village, state or province, and country. List multiple locations, if applicable.

Project site	Rural communities of: Ccapi, Huatta, Tucuyachi, Percca, Chocho, Uyllullo, Ccoyabamba, Cajapucara, Quehuayllo, Incakona, Callancha
City/Village	District of Ccapi(see map)
State/Province	Province of Paruro, Department of Cusco
Country	Peru



Describe the project and the problem or need it will address, including the intended beneficiaries and how the project will benefit the community in need. Provide the estimated length of time needed to complete the project.

Main focus: Poverty eradication by improving incomes and health of the rural population of the district of Ccapi

Duration: Three years

Total required investment: US\$ xxx

Total request from the Rotary Foundation: US\$ xxx

Outlying communities in the Ccapi district create a part of the Andean Region. In these higher altitudes, people have less variability in the food that they consume because of the limited amount of crops and commodities that they produce. As a result, these parts have the highest rates of chronic child malnutrition and maternal-child mortality. These problems are caused by acute respiratory infections, diarrheal diseases and malnutrition. Especially, the malnutrition is a very serious problem in Ccapi as 73% of children under age of five have nutritional difficulties.

The communities in Ccapi district are difficult to reach and usually it takes several hours to get from the community to the city. Farmers often do not have effective irrigation systems and sufficient water availability on agricultural parcels. This lack of technology goes along with the cultivation of monocultures with a low nutritional value. Therefore, the ecosystem is very difficult and vulnerable, but with positive potential.

The objective of the project is to provide Peer Learning Project to 669 families (representing about 3 918 people) residing in villages which are part of the District of Ccapi.

Localization of the project

Ccapi district is located in the western part of the Paruro province in the department of Cusco. Paruro is geographically located at 13 ° 50 '58" south latitude and 72°04 '53" west longitude. The district has an area of 334.85 km², which is the third largest in the Paruro province. The whole province has an extent of

1984.42 km² and is divided into nine districts. The altitude of the territory is between 2550 meters in the lower areas, and up to 5438 meters in the high altitudes.

Climate

In the lower altitudes, the district has a typical behavior of an Andean valley defined by precipitation and relative humidity, which refers to its high potential to grow vast variety of crops including fruit.

In higher altitudes it is a good environment for planting trees such as pine trees, Cedrela lilloi, Tara, etc.

Economic aspects

The most important economic activity in the district is the agriculture and livestock. This activity is a source of subsistence farming as well as source of income for local farmers.

Agriculture and livestock	85.5%
Commerce	2.3%
Clerk	1.8%
Construcion	2.3%
Education	2.8%

Source: INEI; IX Censo Nacional de Población y IV de Vivienda 2007

Production in the District

COMMUNITY	Communal total							Total per community	
	Potato	Corn	Barley	Wheat	Bean	Cultivated pastures	Vegetable	Hectares	%
Huatta	4.56	9.60	4.80	4.80	0.05	1.92	4.80	30.53	4.0
Tucuyachi	6.40	12.80	12.80	9.60	0.32	0.29	4.80	47.01	6.2
Percca	6.70	33.50	6.70	20.10	0.34	2.68	5.36	75.38	10.0
Chocho	3.24	7.20	2.16	7.20	0.16	0.90	0.90	21.76	2.9
Uyllullo	4.76	20.72	2.52	6.72	1.68	0.08	0.28	36.76	4.9
Ccoyabamba	55.10	19.00	38.00	19.00	7.60	2.85	0.48	143.93	19.1
Cajapucara	25.90	35.52	18.50	24.42	7.40	6.66	1.48	119.88	15.9
Quehuayllo	10.88	17.00	15.13	6.80	4.76	0.68	0.34	55.59	7.4
Incakona	3.50	42.00	3.50	28.00	14.00	7.00	7.00	105.00	13.9
Callancha	44.84	38.00	3.80	15.20	11.40	4.56	0.76	118.56	15.7
Total per product	Has	165.9	253.3	107.9	141.8	47.7	27.6	754.39	
	%	22	31	14	19	6	4		

Source: Diagnóstico del Distrito de Ccapi. 2009

Objectives

Overall objective

The overall objective is to eradicate the poverty by strengthening families, communities and their local government of the Ccapi district.

Specific objectives

- Achieve at least the level of the legal minimum income for over 50% of the population;
- Increase the value of people's fixed capital by at least US\$ 20,000 through forestation;
- Improve people's health by changing preventive health habits of the population and facilitate their relation with the national health services;
- Significant reduction in incidence of serious health problems such as bronco-pulmonary and intestinal infections, anemia, and malnutrition;
- Significant reduction in child mortality;
- Support farmers' education in agricultural and preventive healthcare practices together with greater cohesion among community members;
- Strengthen the capacity of the local authorities to promote economic development of their population;
- Increase the sustainable farm production and farmers' abilities
- Achieve considerable economic, social and environmental development of the district;
- Eliminate undesirable migration of inhabitants.

Outputs

Concrete project results:

- 1) Higher level of standard of living of small-scale farmers and their families due to their strengthened capacity and better access to information;
 - 2) Achieving four MDGs (number 1, 4, 5 and 7);
 - 3) Sustainable rural development of the indigenous communities in the Ccapi district with regard to their traditional way of life;
 - 4) Hunger alleviation and self-reliance of the farmers and their families;
 - 5) The adoption of sustainable agro-ecological practices as well as the improved farming skills and techniques in rural families;
 - 6) More than 400 families will apply sustainable productive and environmental practices, achieving income levels equivalent to the legal minimum wage or more;
 - 7) More than 200 families will raise guinea pigs on a commercial scale (guinea pig stables with more than 300 guinea pigs);
 - 8) Over 150 families will harvest, dry and sell edible mushrooms, improving their incomes;
 - 9) More than 20 families will raise trout to improve their diet and income;
 - 10) Families and communities will have planted over 800 hectares of trees of different species, including pine, tara, eucalyptus and others, which is over 1000 trees per participating family;
 - 11) 11 communities will participate actively in their economic development;
 - 12) More than 11 organizations will market produce from family farms in an organized manner;
 - 13) More than 400 families will apply to package of preventive health measures promoted by the project;
 - 14) The Municipal Government of Ccapi is strengthened and incorporates our methodology in its local economic development program.
-

Main activities

The project will be implemented using the peer learning methodology that proved to be capable to generate the results as indicated above. Expert farmers spread the awareness of local farmers who promote the responsible action in the entire community. Participating families, guided and supervised by expert farmers, will:

1. Plant trees and reclaim degraded areas;
2. Construct guinea pig sheds;
3. Implement and improve vegetable gardens to improve their diet;
4. Construct trout farms;
5. Improve production of fodder by sowing grass and improve range land management;
6. Improve housing, and take other relevant preventive health measures;
7. Improve communal organization.

All these initiatives are aimed at enhancing local development opportunities in the Ccapi district.

Participating Families

The district of Ccapi has about 3861 inhabitants (669 families). The details of the population per community are indicated in the table below.

Community	Number of families	Population	%
Ccapi	151	862	22
Huatta	24	137	4
Tucuyachi	32	182	5
Percca	67	389	10
Chocho	18	104	3
Uyllullo	28	162	4
Ccoyabamba	95	551	14
Cajapucara	74	429	11
Quehuayllo	34	197	5
Incakona	70	406	11
Callancha	76	441	11
Total	669	3861	100

Project description

Background

The Rotary Club Inka Cusco successfully implemented two Matching Grants (³) to eradicate poverty from all communities of the district of Ccarhuayo. The essence of the “model” used in this district, was mobilizing the population to improve their income and health, within the duration of the project through peer learning and enhancing motivation. As for improving income: about 60% of all families acquired at least the equivalent of the legal minimum income within three years, by starting viable businesses while moving away from marginal economic activities.

A long term strategy through forestation complements the economic recovery: on average, every family planted 1000 trees per year, which is one hectare, or 2.5 acre. Planting so many trees converts extensive areas of unproductive land into valuable timberland. Forestation increases people’s fixed capital significantly as the Net Present Value of 1 hectare of recently planted trees is about US\$ 20,000. Most of the forestation was done with pine trees. These trees grow in symbiosis with a fungus which produces edible and valuable mushrooms. These mushrooms are sold to improve family incomes even further.

The “model” to improve people’s health introduced a number of preventive healthcare measures, to overcome the most prevalent diseases (bronco-pulmonary and intestinal), to improve people’s diet and to facilitate access to governmental healthcare services.

The model also includes strengthening the local government to ensure that it can and will continue improving people’s health and the financial and fixed capital of the inhabitants of its district.

The district of Ccapi is similar in many ways to the district of Ccarhuayo. It is also among the 3% poorest districts of Peru. According to INEI’s (Instituto Nacional de Estadística e Informática) map of poverty from 2009, percentage of poverty in the district is 87.7 % from which 54.3 % of population is extremely poor. The Rotary Club Inka Cusco plans to use the same model for Ccapi that proved to be capable of eradicating poverty from the district of Ccarhuayo within only three years.

The main causes of health and income problems in the District Ccapi are:

- Lack of food;
- Lack of access to basic services;
- Lack of preventive health care (hygiene);
- Illiteracy;
- Alcoholism , which also generates family violence, poor job performance or job losses;
- Lack of accessible roads to communities;
- Lack of health personnel;
- Extensive barren areas in need of reforestation;
- Lack of livestock and crop production;
- Lack of irrigation management.

³ Matching Grants #74786 during 2011-2012 and Matching Grant #76958 during 2012-2013.

The two Matching Grants from Rotary for the district of Ccarhuayo complemented the investments made by two private individuals: Carl Greer from the USA and Piet Romein (through the Peer Learning Foundation) from the Netherlands. With this very positive experience, we hope that Rotary will be the main sponsor for the district of Ccapi.

Pachamama Raymi Methodology

The project proposal has been introduced in order to eradicate the poverty in this area. The effective way how to fight the increasing poverty and environmental degradation is to adopt a very effective methodology of 'peer learning'. This broader effort of Pachamama Raymi methodology has proven successful by the years of experiences in other regions and countries.

Several of the Ccapi communities have vast barren areas in need to plant with trees. The project would begin reforestation, which could augment family incomes within 4 to 5 years.

The Pachamama Raymi methodology motivates farmers to learn from each other. Peer (farmer-to-farmer) learning is set in an environment of encouragement among farmer families and farmer villages. Experience has demonstrated that a large majority of families and villages quickly adopt and apply many innovations in their daily practice, often even improving on them. Each 'learning cycle' lasts about six months.

The main 'peer learning' elements are:

Regional and interregional study trips, in which farmers 'that do not know yet' visit colleagues that have already implemented the necessary innovations into their daily practice. The farmers who participate in the study-trips are encouraged to apply the newly obtained knowledge and know-how into their own situation. Through 'learning by doing', they disseminate the new knowledge and know-how to other families of their village. Families and villages that show most progress are recognized. Earlier projects clearly show that horizontal exchange of know-how in combination with recognition is a very effective way to rapidly disseminate a great number of necessary changes on a large scale.

Hiring expert-farmers who train farmers 'that do not know yet' on how to implement more complicated innovations such as pruning of fruit trees, selecting cattle and better irrigation techniques, that enable a much more effective use of water, an often scarce resource.

Practical training courses for farmers.

Study materials, like brochures and DVD's that explain how to build a latrine, how to improve the cooking stoves, how to turn animal manure into much better organic fertilizers like humus and compost, etc.

Experience in Peru and other Latin American countries has shown that peer learning:

- Effectively motivates farmer families to become creative, generating their own innovations, finding solutions for their own situations in agriculture, animal husbandry, natural resources management, as well as housing and preventive health care.

- Results in over 50% of the farmers adopting the many innovations within three years.

Interested parties and their involvement in preparing the proposal:

The Municipal government of Ccapi knows our project from our work in other districts in Cusco and is excited about the possibility that we will come to Ccapi. It has indicated to want to contribute with implementing tree nurseries, material, supplies and staff. Also, representatives of the communities have expressed their interest and great wish to participate and contribute, particularly in learning to implement the different family businesses that are included in the project.

Describe how the benefiting community will maintain this project after grant funding has been fully expended.

Experience with other projects using the proposed methodology has shown that innovations spread like wildfire among the target population. Already during the first year, over 60% of the total population adopts many of the required innovations. However, changing habits is not easy, especially not in poor rural areas making it necessary to continue the project over a period of three years.

The Local Government is expected to adopt some activities and methodology proposed for this project, particularly the production of saplings and the promotion of forestation, the attention to promoting family rural business and preventive healthcare measures. Our projects in other districts show that these issues can be expected to be included by the local government.

Describe specific activities of the host and international partners in implementing the project. What will the Rotarians who are members of the partner clubs do during the project? Please note that financial support is not considered active involvement. (See the Matching Grant application instructions for suggestions.)

Rotary Club Inka Cusco (Host Partner) would:

Activity 1 - Document the impact of similar peer learning projects presently carried out by the NGO Pachamama Raymi in the Cusco Department and share the findings with its International Partner.

Activity 2 - Visit the working area of the project, contacting representatives of the target population and Municipality.

Activity 3 - Through its International Service and Community Service Committee, monitor the progress of the project through periodic visits of the working area. Maintain regular contact with Pachamama Raymi. Establish cooperative relationships with the community council boards and the local government.

Activity 4 - Manage the project's resources. Closely monitor the budget, producing a financial report every 3 months.

Activity 5 - Keep its International Partner fully informed of project progress.

Activity 6 - Publicize the project and its benefits.

Activity 7 - Attend project award ceremonies.

Activity 8 - Participate in making key, strategic decisions throughout the Project, in coordination with the International Partner.

Activity 9 - Form a committee with the implementing organization to discuss progress and challenges of the project at bimonthly meetings.

Activity 11 - Facilitate educational and informational visits by members of the International partner clubs and others.

Activity 12 - Document progress and organize special events to share progress with the International partners.

In the future the International partner would:

Activity 1 – Visit the project area to monitor the implementation of the project and talk with participants and

representatives of government agencies.

Activity 2 - Report on the success of this project to other Rotary Clubs and to the public through presentations, publications, and a variety of media.

Activity 3 - Form a committee that would maintain close communication with the Inka Cusco Rotary Club throughout the life of the project.

AUTHORIZATIONS

Explanation: Authorizations ensure that both partners are aware of, and interested in, pursuing the described project. By signing below, the current club presidents for club-sponsored projects and current district grants subcommittee chairs for district-sponsored projects, as well as the committee members, agree to the criteria listed and affirm their support of the project.

All Rotary clubs, districts, and Rotarians involved in this project are responsible to The Rotary Foundation (TRF) for the conduct of the project and its subsequent reporting. The signatures of all involved parties confirm that they understand and accept responsibility for the project. Parties may either sign this page or submit a separate letter of commitment.

By signing below, we agree to the following:

All information contained in this application is, to the best of our knowledge, true and accurate, and we intend to implement the project as presented in this application.

The club and/or district agrees to undertake this project as an activity of the club and/or district.

We ensure all cash contributions (as detailed in Project Financing) will be forwarded to TRF or directly to the project account after Trustee approval of the grant.

RI and TRF may use information contained in this application to promote the project by various means such as *The Rotarian*, the RI international convention, *Rotary Video Magazine*, etc.

The partners agree to share information on best practices when asked, and TRF may provide partners' contact information to other Rotarians who may wish advice on implementing similar projects.

The entire responsibility of TRF is expressly limited to the dollar amounts approved based on the application's budget. Additional costs due to changes in budget items, airfares, currency devaluations, etc., are the responsibility of sponsors or outside sources.

To the best of my knowledge and belief, except as disclosed herewith, neither I nor any person with whom I have or had a personal or business relationship is engaged, or intends to engage, in benefiting from TRF grant funds or has any interest that may represent a potential competing or conflicting interest. A conflict of interest is defined as a situation in which a Rotarian, in relationship to an outside organization, is in a position to influence the spending of TRF grant funds, or influence decisions in ways that could lead directly or indirectly to financial gain for the Rotarian, a business colleague, or his or her family, or give improper advantage to others to the detriment of TRF. (NOTE: Any and all exceptions must be explained in an attached statement.)

Host Partner		International Partner	
<input type="checkbox"/> Club president (club-sponsored)*		<input type="checkbox"/> Club president (club-sponsored)	
<input type="checkbox"/> District grants subcommittee chair (district-sponsored)*		<input type="checkbox"/> District grants subcommittee chair (district-sponsored)	
Name	Willem H.M. van Immerzeel	Name	Gene Thurston
Title	President	Title	President
Rotary Club	Rotary Inka Cusco	Rotary Club	Boise Sunrise
District #	4300	District #	5400
Signature		Signature	
Date		Date	

Primary Contact		Primary Contact	
Name	Willem H.M. van Immerzeel	Name	Robert P. Rainville
Signature		Signature	
Date		Date	
Project Contact #2		Project Contact #2	
Name	Berner Rabindranath Caballero	Name	Jim Hansen
Signature		Signature	

Date		Date	
Project Contact #3		Project Contact #3	
Name	Martin Coda Bindels	Name	Jan Welch
Signature		Signature	
Date		Date	

- * If international travel is included as part of the budget, please check the box at the left to indicate that the host club or district has extended a travel invitation, fully supports and approves Rotarian travelers, and verifies that international travel to the club and/or district is needed to implement the project.

COOPERATING ORGANIZATION

Explanation: A *cooperating organization* is an entity directly involved in the implementation of a grant project, offering technical expertise and/or project coordination. A *benefiting entity* is the recipient of goods or services and is not considered a cooperating organization. A cooperating organization is considered to be a Rotarian cooperating organization when one-third or more of its Board of Directors and/or governing body is comprised of Rotarians and/or senior management who are also Rotarians directly involved with the grant project

If this project involves a cooperating organization (neither a Rotary club nor the beneficiary of the project), provide the following:

Name of organization **NGO Pachamana Raymi**

Street Address **Calle Pavitos 567**

City, State/Province **Cusco**

Postal code

Country **Peru**

Office phone **511-84-236540**

Fax

E-mail

Web address **www.pachamamaraymi**

In addition to the above, the following must be attached:

A letter of endorsement signed by the host club president confirming that the cooperating organization is reputable and acts within the laws of the project country

A signed letter of participation from the cooperating organization that specifically states:

- Its responsibilities and how it will interact with Rotarians to implement the grant project
- The organization's agreement to cooperate in any financial review of the project
- The names of Rotarians on its Board of Directors and/or organizational governing body in addition to any senior management who are also Rotarians and are directly involved with the grant project, if applicable

FINAL REPORT

Explanation: Although both partners are responsible for completing progress and final reports, the Trustees require that one partner take primary responsibility for submitting the final report to TRF. It is recommended that the club or district receiving the funds should take primary responsibility.

"By signing below, our club or district accepts primary reporting responsibility."

Print name

Signature

Rotary club **Inka Cusco**

District **4300**

DISTRICT GRANTS SUBCOMMITTEE CHAIR CERTIFICATION

Explanation: The Trustees require that the district grants subcommittee chair (DGSC) from either the host or international sponsor district certifies the application as complete. If the application is not complete or eligible, it will not be processed and the partners will be notified accordingly.

"On behalf of the committee, I hereby certify that to the best of my knowledge and ability this grant application is complete, meets all TRF guidelines, and is eligible for funding."

Print name of DGSC **Scott Hansen**

Signature

COMPLETION CHECKLIST

Before submitting your Matching Grant application, please take a moment to review this checklist. If you have any questions or concerns, please contact the Humanitarian Grant Coordinator for the project location.

- Does the project meet **all** grant policies and guidelines (see *The Guide to Matching Grants* [144-EN] or the RI website at www.rotary.org)?
- Does the project description clearly state how the project will assist those in need?
- Are the activities of the host and international partners clearly explained? Will the Rotarians be actively involved in the project?
- Have both the host and international partners created committees to oversee the project? Are these individuals correctly listed on the application with their complete contact information?
- Is a detailed, itemized budget included in the application?
- Are pro-forma invoices attached for budget items over US\$10,000?
- Are all partner contributions listed in the application, noting which contributions will be cash and which will be DDF?
- Have the DRFC chair and the district governor provided their signatures authorizing the use of District Designated Funds?
- Have the club presidents or district grants subcommittee chairs from the host and international partner provided their authorizing signatures?
- Have all six committee members provided their authorizing signatures?
- If a cooperating organization is involved, are the following letters included with the application:
 - A signed letter of endorsement from the host partner confirming that the cooperating organization is reputable and acts within the laws of the project country
 - A signed letter from the organization specifically stating its responsibilities, how it will interact with Rotarians, its agreement to cooperate in any financial review of the project, and if applicable, the names of Rotarians on its Board of Directors and/or organizational governing body in addition to any senior management who are also Rotarians directly involved with the grant project
- If the project involves a revolving loan or microcredit, is the Revolving Loan Fund Supplement and Credit Group Plan included?
- If the grant request is US\$25,001 or more, is a community needs assessment attached?
- Has the district grants subcommittee chair from either the host or international partner certified the application as complete and eligible?
- Is there a minimum of nine authorizing signatures included in the application?
- Have the partners made copies of all documents for their files prior to submitting them to TRF?



Complete applications should be sent to:

Humanitarian
The
One
1560
Evanston,
Fax:
E-mail: contact.center@rotary.org

IL

Grants
Rotary
Rotary
Sherman

60201-3698

Program
Foundation
Center
Avenue
USA
847-556-2151

C. Rules and Regulations of the Contests

1. Home and Health	Max. Grade
Home	
Inside and outside of the home is plastered	10
In and outside of the home is painted with traditional designs	10
Drawing of the present and the future	10
Separate rooms for boys and girls	10
Room for visitors	10
The house built so that the floods will not affect it	10
Cleanliness of the house	10
Construction of solid waste pit	10
Construction of smoke-free kitchen (with chimney)	10
Maintenance of roof (straw, corrugated iron sheets, etc.)	10
Tool shed (Order, cleanliness, maintenance)	10
Storage of food quantity (enough for the whole family)	10
Protection of stored food against rats, insects, fungus and thieves	10
Construction and maintenance of cupboards and shelves	10
Fences to prevent entry of animals into the living quarters	10
Maintenance of the latrine or toilet (its size and height should be sufficient and comfortable) (Bathrooms using water flushing must NOT LEAK DIRTY WATER, if it does, you will be disqualified)	10
Health	
Quantity and variety of food used and produced by the family (vegetable, milk, eggs, meat, fish, fruits, etc.)	10
Raising small livestock to improve the family diet (chicken, fish, guinea pigs)	10
Availability and hygiene of drinking water in the home	10

All family members have and use a musquitonet	10
Control of parasites in domestic animals (dogs, cats, pigs, etc..)	10
Parasite control in children and adults every 3 months with tradition and non-traditional means	10
Control health passport of weight and height of children is up to date. The weight and size is ok	10
Control health Passport of pre-post natal care OR family planning card is up to date	10
Affiliation of the family to the national health insurance and services	10
Family emergency box (radio, flashlight, batteries, candles, matches)	10
Family first aid kit	10
Family does not have and does not consume alcohol	10
Identity cards of all family members is up to date	10
Maximum possible Grade	240
2. Irrigation + Crops + Pastures	Max. Grade
Vegetable garden	10
Crops are kept clean from weeds	10
Production and use of biol (organic leaf fertilizer)	10
Production and use of humus (dung from worms)	10
Production and use of biocides (to control plagues and fungus)	10
Selection and storage of seeds	10
Management and maintenance of irrigation	10
Sprinkler irrigation for cultivated grass	10
Organization and order of grazing	
Grazing plan (drawing and table with dates)	10
Animals are tied down, graze in xxx (quality of demarcations, or correct herding discipline)	10
Sowing of grass (native and exotic) on bare areas	10

Sowing clover in humid areas	10
Reclamation of grass on bare areas and fallow fields	10
Harvest of native grass seed	10
Areas kept as reserves for grazing during hard times	10
Maximum possible Grade	150
3. Forestry	Max. Grade
Planning by month of all forestry activities	10
Forestry Plan (Drawing) indicating where you will be planting which kind of trees	10
Installation of the tree nursery in a safe place	10
Preparation of the substrate for the nursery	10
Distance between the plants in the nursery	10
Management of the family nursery (number of plants, installation and condition of plants) Very good is over 3000 trees, regular is less than 1000.	10
Variety of the species planted. Very good is over 6 different species of trees, Regular is less than 3 species	10
Free root planting to avoid the use of plastic bags	10
Free root planting in the nursery and required tools (straight spade)	10
Replanting of dead saplings in the nursery	10
Participation in communal work in forestry issues	10
Management and health of trees planted out in the field	10
Number of trees recently planted Very good is over 3000; Regular is less than 1000 trees	10
Protection of trees	10
Use of organic fertilizer and control of pests and plagues	10
Registration of the production of the tree nursery	10

Timely irrigation of the nursery	10
Care for trees planted in the field	10
Correct spacing between the trees planted in the field	10
Maximum possible Grade	200
4. Production of Guinea Pigs	Max. Grade
Quality and maintenance of housing of the guinea pigs	10
Adequate lighting and ventilation	10
Control of humidity in and around the cages.	10
Sufficient space to move and work with the guinea pigs (and use a wheelbarrow)	10
Quality of maintenance of the guinea pigs cages	10
Cleanliness and disinfection of the cages	10
Quality and maintenance of feeders	10
Quality and maintenance of water bottles	10
Timely separation of the babies	10
Control and registration of reproduction	10
Elimination of animals that should not or cannot reproduce	10
Selection and marking of reproductive animals	10
Registry booklet (health problems and preventive health measures, weight, etc.)	10
Equipment and veterinarian box with medicines	10
External parasite control	10
Measures to keep out all other animals	10
Shoe/boot disinfection box and mat at the entrance	10
Balanced feed quality	10
Number of guinea pigs per cage (Not more than xx)	10
Genetic improvement of the animals	10
Control of rodents (rats, mice) and control of flies and other animals in	10

and around the installations and feed deposits	
Isolation and treatment of sick animals	10
Numbering and identification tags of the cages	10
Sufficient animal feed during the year	10
Production of sufficient fodder during the whole year	10
Storage and use of guinea pigs dung	10
Registry of sales	10
Participation in a guinea pigs farmer association	10
Maximum possible Grade	300

Source: Pachamama Raymi, 2013

D. Before and After the Project Implementation in the Ccarhuayo District

The first picture demonstrates initial situation when people had just a few guinea pigs in their disorderly kitchen. The second picture shows how they turned it into a profitable business with large stables with on average of 500 guinea pigs.

Pic. 11 Before the project initiation



Pic. 12 After the project completion



Source of both pictures: Pachamama Raymi, 2013

E. Project Implementation in the Ccapi District

Pic. 13 Study tour to Granja Porcón in Cajamarca



Source: Pachamama Raymi, 2014

Pic. 14 Study tour to Ocongate – Trout Farm



Source: Pachamama Raymi, 2015

Pic. 15 Study tour to Ocongate Guinea Pigs Shed



Source: Pachamama Raymi, 2015

Pic. 16 Study tour to fruit plantations (Avocado)



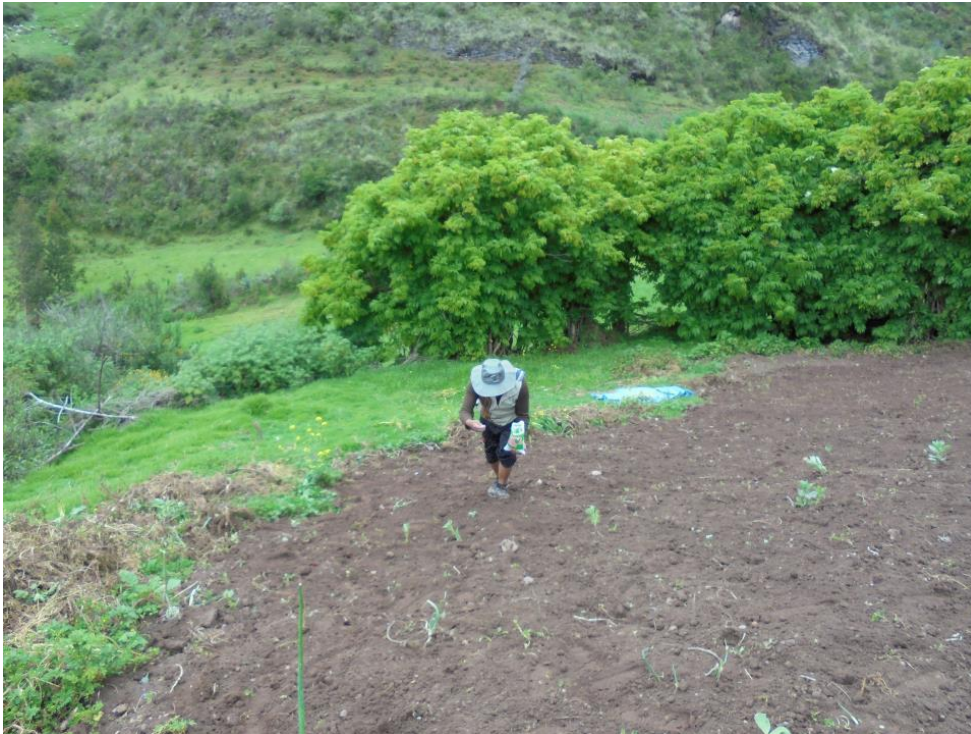
Source: Pachamama Raymi, 2015

Pic. 17 and 18 Preparation for tree nurseries in Ccapi



Source: Pachamama Raymi, 2015

Pic. 19 Sowing fodder



Source: Pachamama Raymi, 2015

Pic. 20 Cedrela Lilloi seedlings



Source: Pachamama Raymi, 2015