

Key issues and Lessons from learned experiences:
How to develop strategic investments in sustainable pro-poor small ruminant development for securing sustainable livelihoods

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Introduction

The all study has been based on a comparative analysis of operation projects and experiences. The diversity and complementarities of these cases have given a significant overview of the key issues to take in account before planning a development project for securing sustainable livelihoods and bases on goat activities.

The major key issues to answer are:

- To define project objectives

- To identify main expected outputs

- What are the indicators of success

- What main investments to be planned according to objectives and commodities

Key issues on project objectives

For the goal of securing sustainable livelihoods through enhancing the capacity of vulnerable and small-holder farmers (especially women) in goat raising the project should bring holistic changes in the communities in five aspects:

- increasing income and assets,

- improving food security,

- improving the environment,

- increasing women's empowerment

- building social capital

The first three physical aspects are coupled with building social capital and empowering women to create a multiplier effect which will deepen the project impact.

The true focus of the project should be people's development. Once the community's capacity is developed, they can take leadership in increasing goat productivity using the technical knowledge and skills provided by the project.

From our experience, we observed that these general objectives are rather well identified. But they have to be more specific and more quantified.

How to define quantified objectives

The following objectives are proposed for pro-poor development through goat-raising. These objectives are applicable ranging from a community to a regional level with potential of scalability to a larger scale covering multiple countries and also for all types of goats (meat, dairy and fiber). The objectives have to be associated also with quantified outputs. The types of quantified indicators are presented below:

1 By year xxxx, strengthen social capital through organizing # of goat farmers in farmer institutions (self-help groups-SHGs^[1] and cooperatives/associations) with enhanced management capacity, selecting # women to represent a family.

Outputs:

- 1.1 # of SHGs consisting # of goat farmers formed and engaged in goat value chains
- 1.2 # of goat farmers organized in to # cooperatives which are linked to goat value market chains.
- 1.3 # of women farmers engaged in goat farming and managing cooperatives

2 By year xxxx, increase goat productivity by at least x % through adoption of improved goat management technologies to contribute to increased family income and assets

Outputs:

- 2.1 # of does and bucks provided to goat farmers for expanding goat production enterprises
- 2.2 Goat farmers engaged in skills of improved goat farming practices for % increasing production resulting in increased income and assets.
- 2.3 Goat productivity is increased through genetic improvement

3 By year xxxx, diversify income sources of the families through goat and other farm production for food security and nutrition.

Outputs:

- 3.1 Food consumption is improved in terms of quality, quantity and diversity of ingredients because of increased income
- 3.2 Year-round food is available for the goat farmers through goat farming and other farm production

4 By year xxxx, # of SHGs and their associations will form alliance with other stakeholders along the goat value chain and develop marketing enterprises.

Outputs:

- 4.1 # of goat producer cooperatives/associations establish and manage distribution and transport of goats and work closely with other stakeholders
- 4.2 # of goat collection centers/market hubs are in place and are coordinated with relevant stakeholders for their operation and regulation
- 4.3 Standard marketing practices are followed and transparent pricing systems for goats are established

¹ [1] A self-help group (SHG) is a registered or unregistered group of persons having a more or less homogenous social and economic background. The members voluntarily come together to save small amounts of money on a regular basis. They mutually agree to contribute to a common fund to meet their emergency needs on the basis of mutual help. (several references on Development and Microfinance).

5 By year xxxx , participating goat farmers have implemented # of **environmental improvement** practices for sustainable goat production.

Outputs:

- 5.1 # of trainings on compost making and agro ecological practices to the goat farmers
- 5.2 Sufficient fodder trees and forage planted by the goat farmers in their land for feeding goats and maintaining the greenery
- 5.3 # of education campaigns on environmental protection and climate change conducted

Proposed activities and indicators of success according to objectives

The objectives and indicators described in the above pages are applicable in all cases and all types of goats whatever is the main commodity (meat, milk/cheese or fibers).

Major Objectives	Indicators of success
1. Increase income and assets	
<ul style="list-style-type: none"> • Distribution of goats, vegetable seeds and saplings, • Trainings on goat management and fodder production, • Training on kitchen gardening, savings and credits, and enterprise development • Quarterly • Quarterly participatory self-review and planning PSRP¹ of SHGs • Goat health camps 	<ul style="list-style-type: none"> • Increased capital mobilized through savings and credit schemes of Self-Help Groups (SHGs) • Increased access to financial institutions • Diversified sources of income • Reduced migration to cities
2. Food security and Nutrition	
<ul style="list-style-type: none"> • Improved goat production • Training on homestead food production • Support fund for homestead garden • Training on family nutrition 	<ul style="list-style-type: none"> • Increased production of goat on # of smallholder families • Increased year-round food security of participating families • Increased diversity in food consumption of participating families • Hygienic food preparation and storage techniques adopted • Improved and equitable household food distribution
3. Environment	
<ul style="list-style-type: none"> • Trainings on Fodder development and agro forestry • Trainings on environment, composting/ organic fertilizers • Introduction and leveraging of improved technologies: rainwater harvesting system, improved cooking stoves • Trainings and mobilization for improved sanitation 	<ul style="list-style-type: none"> • Integration of agro-forestry and efficient usage of arable agricultural lands • Application of improved goat management techniques (manure usage, stall feeding) • Proper usage of land and water resources • Presence of improved sanitation facilities and rain water harvesting system • Community led environment improvement activities

<p>4. Women Empowerment</p> <ul style="list-style-type: none"> • Self-Help Groups (SHGs) are formed with women as the representatives of their family • Training and Women's leadership and capacity development. • Gender training for men and women. 	<ul style="list-style-type: none"> • Equitable sharing of resources and workload among male and female members of the family • Equitable treatment of girls and boys (especially related to nutrition and education) • Number of women increased leadership capacity and entrepreneurial skills • Number of SHGs instituted and fully led/managed by women
<p>5. Social capital</p> <ul style="list-style-type: none"> • Organize, create, and strengthen SHGs • Values enhancement and PSRP training for both men and women • Leadership development training • Social mobilization & institution development 	<ul style="list-style-type: none"> • SHGs developed short and long-term plans • Clarity in roles and procedures of SHGs • Reduced incidence of social discrimination and domestic violence • Observation of intra- and inter-family cohesion • Linkages and coordination with concerned agencies • Collective actions for community development

Main types of projects and investments

The main existing goat production systems in the world and the characteristics of the main commodities have been described above in the report "An overview on the context of the study and the socioeconomic importance of the goat sectors".

The development projects are related to each productions systems, to the main commodity to develop their geographical extension and localization.

The process to define the type of projects and requested investments

The following process is proposed to define what type of projects is required and with what investments:

Description of the existing production system

Defining the appropriate value chain and mapping of the actors (see the value chain tool kit)

Main existing infrastructures and investments to plan

Livestock play a critical role in supporting families but large animals are very difficult for them to raise due to lack of financial and forage resources. In arid or semi-arid areas of Africa (Western Africa in Mali, Ghana, Niger, Guinea or Senegal, in East Africa in Kenya, Tanzania, Malawi, Rwanda, Ethiopia, Mozambique, Rwanda), India, in South –Eastern Asia (Indonesia, Philippines) more humid countries, or in Middle –East Central Asia, goats are playing role to improve the lives of farmers and pastoralists.

The cultural attitudes regarding goats in these areas are very different from a country to another and the first factor to consider is the local acceptance of goats and goat products. For instance, goat milk is highly regarded and accepted in East Africa, Middle East and Central Asia, which is not the case in Western Africa, where Fulani spastoralists have mixed herds in which goats are mainly used for meat in religious feasts or as financial support provider through immediate sale when needed.

Smallholder Production systems: The production systems are generally not specialized and multipurpose and integrated with crops. Mixed crop livestock systems are often common for the smallholders having less than one hectare of land. One important challenge is generally to improve the production of the crops, to save some byproducts for goats as well as fodder and forages for goats and sheep in lands not suitable for crop production and goat manures are used for fertilizing the kitchen garden or the forage and fodders.

Pastoral systems are common among the smallholders in many areas and a traditional practice. Climate change and droughts have put these smallholders vulnerable. Several projects which were part of this study including India, Mozambique, Indonesia, or Kenya were focused on improving the economic status of the smallholders and pastoralists. Improvement of performances of the herds thereby increasing food auto sufficiency in meat, milk and manure and get small income for basic cash through small ruminants were the objectives of these projects. These projects were of small in size and mainly implemented through local organizations.

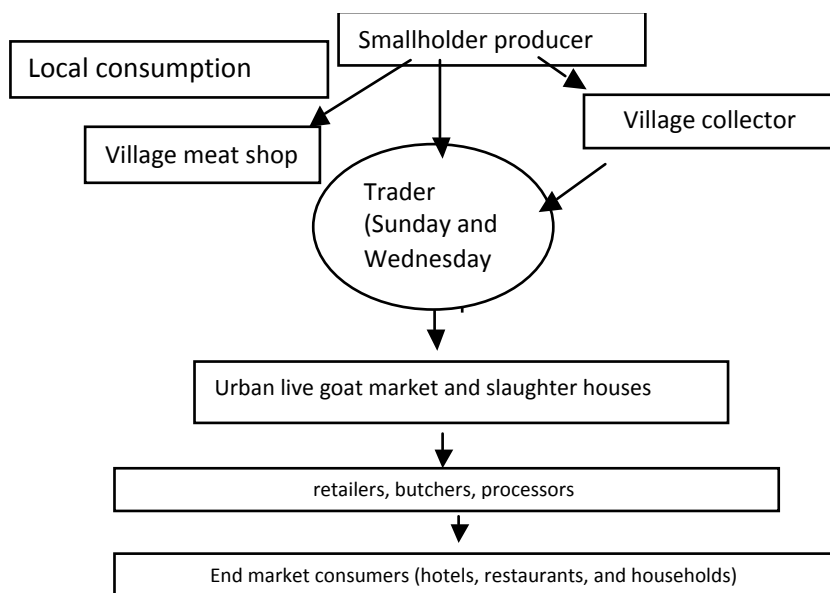
Case 1: Smallholder goat production at community levels for food security and emergency

How we can improve the smallholder production system?

This type of production system is very small, requires minimal investments and external resources to improve the productivity and is often integrated with other agricultural practices. The projects are generally implemented at a community/village scale (or few villages). Investments for such projects are done mainly through small local livestock development organizations, but can work as a stepping stone for larger integrating regional or national level projects.

Such projects should be formulated in partnership with local NGOs or associations. For instance, some NGOs like HPI or Farm Africa have followed this process to develop successful community based actions for more than 60 years in several countries. Objectives of such interventions are to improve food security and immediate cash resources for resource-poor farmers to meet their urgent needs.

Value chain: The value chain corresponding to this type of situation is simple as seen in like the framework below



Mapping the actors:

Major actors are the smallholder farmers mostly women, local retailers, extension agents, veterinarians and community animal health workers (paravets). Some traders for supplies and selling the products in district markets could be also involved in this mapping.

This type of project would involve less number of families from covering a small community to a larger villages (100 to 1000 families) in selected clusters (1 to 3 generally no more). Majority of the goats produced in such cases will go for local consumption (milk meat, manure) and local traders and village collectors for urban markets.

Mapping core processes, actors and flow of products

Input supply (non to basic health service, feed, water)

Management (breeding and feeding; basic housing, stall feeding to some communal pastures)

Goat keepers

Production (multipurpose: milk, meat; manure)

Goat keeper

Retailing (local consumption, village shops; nearby urban markets)

Goat keepers, women, traders

Major specific constraints on this case with recommended interventions

The animals: An important cause for the limitation of animal production in the communities is often the herd size and the quality of animals. It is linked to the lack of investment capacity of the goat keepers. The gift or loan of 2 to 4 to goats in each family has been the established practice in many successful projects which has added tremendous value in increasing the economy of limited resource smallholder goat keepers. Such types of small projects with the practice of “passing on the gift” have helped many families through the difficulties and also have built their social capital as in case of Heifer International in India. When goats are used from within the area, not imported the production potentialities are limited unless the animals are selected purposefully.

Selected crossed animals could be efficient but it is generally advised not to import high value animals of exotic breeds and origin.

The adaptation of imported animals is often problematic and they often disturb the local production system (problems to breed together local animals)

Animal health and reproduction: Low fertility of goats and low fecundity, small size, low body conditions and mortality rate of the kids, low milk yield are the main reasons of low productivity.

The absence of systematic vaccinations (for instance for Peste des Petits Ruminants -PPR) and deworming by local veterinarians or paravets could explain many animal health problems. Regular supply of appropriate vaccines (e.g. PPR, enterotoxaemia,) and anthelmintic drugs through CAHWs; training to farmers on basic health and husbandry will address this issue.

Goat feeding and forage resources: Forage resources and water availability are the main limiting factors for reproductive performances, live weight gain and milk production.

This leads to suggest the following basic actions to precise in each local condition:

- Planting of locally available fodder trees and forage well adapted to local environment in the available land not used for crop cultivation. Leguminous forages are also introduced to increase soil fertility.
- Providing training on nutrition and good feeding practices to the smallholder through extension agents or through the paravet having basic knowledge on nutrition

Capacity building of farmers and marketing: This type of project should also include basic courses on practice and hygiene of milking and milk handling and milk conservation, organization of local small shops with women, participatory meetings with local traders to organize the sales of the supplying products to urban and niche markets.

Financing small projects: The investments are minimal and smallholder can increase their income by certain amount but it may not bring families to resiliency. Such projects cannot cover larger areas of critical mass and generally last for 2-3 years. The project funding is mainly for the purpose of-

- Purchasing of goats
- Purchasing vaccines and dewormers and their use.
- Purchasing seeds and saplings of forage/fodder for nutrition supply.
- Providing basic training to paravets.
- Creating basic infrastructures like water wells or small slaughter areas.
- Organizing courses and train the farmers (retribution of local field guides).

Main returns, risks and prospect: This type of project is a foundation for smallholder goat farming groups. It could give short terms significant outputs. The returns are generally very good if they are designed well respecting local goat raising practices and cultures.

The main risk and lack of sustainability of such a project is the absence of support for multiple stakeholders

Table 1: Example of Cost Benefits Analysis in Rajasthan

(simplified table from Dino Francescutti, FAO²):

Total investment (Does + bucks + Infrastructure + services): USD 4 700 000 (+ annual reserve : USD 139 000)

	Initial situation	Final Situation	Return
Goat /family	5	8	+3
Milk/goat /day (l)	0.4 /day (120 days)	0.6 (130 days)	+0.2
Number of kids sold or consumed/year	2	3	+1
Live weight of kids	6 kg	10kg	+4 kg
Annual dairy production	180	806	626

2 Dino Francescutti, Business assessment and Cost –Benefits analysis for Pro-Poor Small Ruminant Development, FAO? &"P+annex (document enclosed in the IFAD study; 13 pp. + annexes

Goat meat (kg)	12	30	+18
Income/family	144	269	+125 (+117 after reserve)
Impact for 2990 families	430560	803535	+372975 (+350825 after reserve)
Total Income day/family (USD)	0.40 \$/day/family	0.74y	+0.34

Case 2: Improving Goat Production for smallholders at Regional Levels

This type of project aims to increase the productivity and economic returns of small holder goat farmer at a regional level covering critical mass of the families bringing out of poverty through goat production and business skills through various means

These projects always engage higher investments and multiple stakeholders. Several successfully implemented local projects outlined in case-1 could lead to implement these regional projects and aggregate local initiatives

The Development agencies seeking the financial support in such instances has to be well established and legitimate nationally by the report of previous successful results whether public governmental organizations in Brazil) or International or National Development organizations (e.g. Farm Africa in Kenya, Heifer International in India). The participation of National or International Research Institutes is generally required (ILRI, ICARDA, National Institutes as Embrapa in Brazil).

A detail feasibility study including value chain study would be useful before beginning the project to confirm:

- community expectations³; project should match their needs and expectations
- basic minimum requirements for improving goat production at a profitable scale
- Resource, skills and technologies needed for increasing herd size of the goats.

Production systems and commodities: There are no predefined production systems to implement this type of investment. But starting with smallholder and increasing their capacity to increase herd size, introduction of improved breeds, technologies, will bring success if they are carefully and systematically designed. This system may not work well for the nomadic pastoral communities due to the high cost to build infrastructures in nomadic pastoral low density areas.

Although all the production systems are always multipurpose the project will generally focus on one or two commodities only (milk in Kenya, Brazil, Mexico, cheese in Venezuela, meat in India, meat and fibers in Argentina, or Tadjikistan).

³ Cf the success and failure factors in the case described in Java : Budisatria, G.S. Udo H.M.J. Goats based aid program in Central Java: an essential resource for the poor and vulnerable? *Small Ruminant Research*, Volume 109, Issues 2–3, January 2013, Pages 76-831.

Entrepreneurial perspectives

In these projects, most of the beneficiaries will spend their improved incomes either for their personal expenses, either to increase slightly the size of their herds and it is difficult to anticipate their individual behavior. Many of them have little additive labor available and could not extend their herd without affecting all their production system. But some of them have a more entrepreneurial attitude. In this case they plan to increase their herd for instance from 4 to 28 goats in few years by re-investing all their additional income in the herd as seen in Nepal by Heifer Project. A sample budget has been prepared to support these entrepreneurship initiatives by Heifer Project International (Table 2).

Table 2: An example of Cost Benefits Analysis for a Regional project in Nepal
(simplified table from Dino Francescutti, FAO⁴):

	Initial situation	Final Situation	Return
Number of family flocks	138000	138000	
Self help groups	0	690	
Goat /family	3	8	+5
Kids alive	2	5	+3
Number of kids sold or consumed/year	1	3	+2
Annual mortality rate	40%	20%	-20%
Net Income excluding labor cost (USD/flock)	134	342/	208
Total Net income before labor cost (USD)	18 492 000	47 196 000	28 704 000
Net Income after labor cost (USD/flock)	48	256	+ 208
Total Net income after labor cost	6 624 000	\$ 35 328 000	\$ 28 704 000
Annual net income considering annual reserve and labor costs (USD/flock)	3 425 522	\$ 31 467 122	+\$28 041 600
<u>Annual Employment generated</u>			
Person/day/unit	46	46	
Person/day Annual Labor	6 2956 250	6 2956 250	

		Per flock (USD)	Total for the project(USD)
Project investment			33 608 997
Goats (2 goats distributed by flock)	+276000	103	28 428 000
Technical Assistance (month)	36 months/ group	208	5180997
Family additional investment (Invested Capital)			
Goats (X2)	+414000	103	42642000
Bucks (5 years expected useful life)	+34500	164.85	5687325

4 Dino Francescutti, Business assessment and Cost –Benefits analysis for Pro-Poor Small Ruminant Development, FAO? &"P+annex (document enclosed in the IFAD study; 13 pp. + annexes

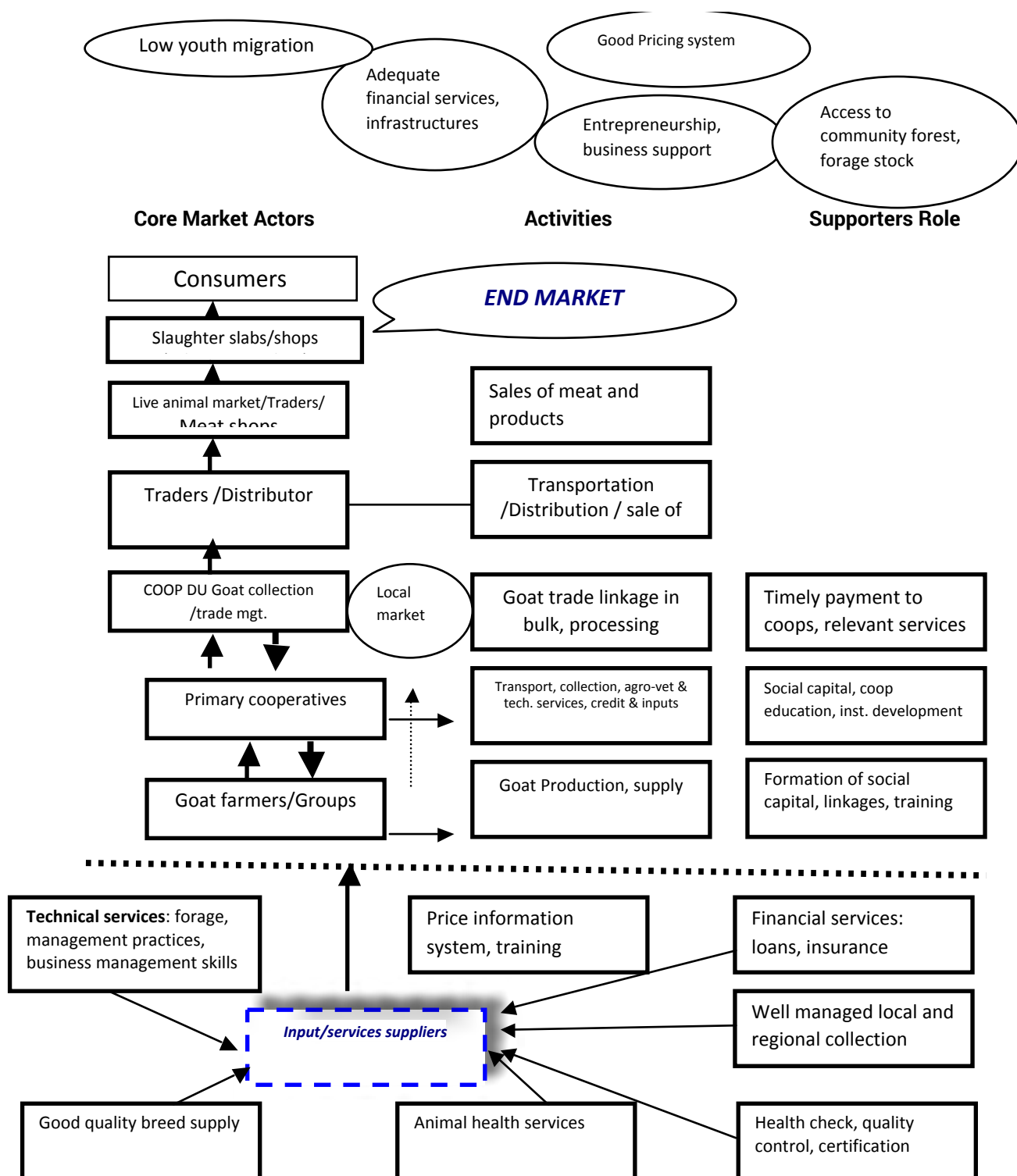
KEY ISSUES AND LESSONS FROM EXPERIENCES

Approximate Internal Rate of Return (IRR) and Net Present Value (NPV)

The investment would be covered after 4 years (all amounts in USD)

Year	-	1	2	3	4
Start-up curve		25%	50%	75%	100%
Incremental Annual Flows	81 936 597	7 188 075	14 376 150	21 564 225	28 752 300
Residual value					
Net Flows	81 936 597	7 188 075	14 376 150	21 564 225	28 752 300
IRR	24%				
Aggregate NPV	59 923 764				
NPV per family	434				

Value chain: The core process and actors mapping of the value chain have many interactions and involve a large set of actors. Below is an example of a meat goat value chain framework conducted by a group of experts in Nepal working for HPI showing multiple stakeholders.



Funding and implementation of regional goat projects: Such project funding ranges from 15- 50 M US\$ mainly through large institutional donors and the projects are implemented for the duration of more than five years. The focus of project are mainly on capacity building, technology transfer, creating infrastructure, supporting all stakeholders of the value chain.

Capacity building and technology transfer:

- access to services (vaccination, quality and hygiene, access to basic supplies)
- appropriate technology transfers (training and contracting with local field technicians, extension services
- Business and entrepreneurship training
- Breeding centers
- Research projects, references and diffusion

Social capital:

- Formation of self-help groups, cooperatives, women/farmer associations

Market value chain:

- Organizing information on markets,

After the end of the project, a transition period is planned with a minimal financial support by the donor institution and these are the investment in personnel and operational costs.

Main risks:

- Lack of opportunities for the products (to be careful with the milk market).
- Problems of governance, planning and coordination of the project
- Lack of infrastructures for processing (to be solved by other types of investments, case 3)
- Lack of motivation of the households These risks can be addressed through appropriate interventions and are part of the project planning)

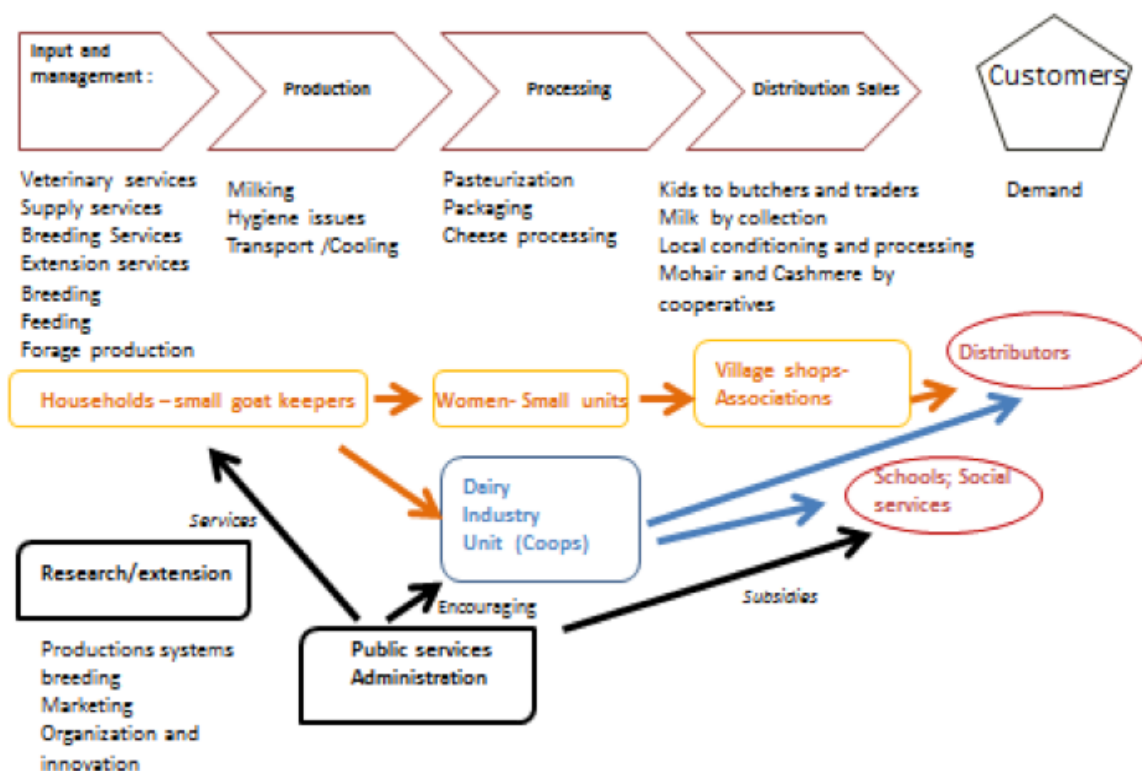
Case 3: Large scale goat development at regional and national level to organize a complete goat value chain

The success of projects to develop production by smallholders at local and then regional levels could lead very quickly to problems to market the products. The investments to organize the value chain and marketing are interconnected with the improvement of goat production and quality but are generally complex and specific.

Case 3.1: Dairy Goats Production

Although more than 90 % of the produced goat milk is consumed locally and not marketed outside, there is a renewed interest for goat milk products in many places (liquid milk, soft cheese, hard cheeses, and specialties)(Dubeuf et al., 2007). Unlike cow milk market there is no global goat milk markets and to some extents goat milk markets are often “Niche markets”. Niche markets will keep dominant for goat milk and cheese because of the production capacity and the fact that no all people like goat milk and cheese. Experiences have shown that investing on the goat milk market is relevant when there is identified demand.

Value chain and actors mapping



Investment: The identified investment for dairy production is the equipment to process, package and sell good quality milk the investments for such cases may vary. Two examples are cited below from different countries.

Table 3: An example of Cost Benefits Analysis for a regional project to organize the goat milk value chain in Meru region in Kenya (Simplified table from Dino Francescutti, FAO⁵):

Main issues and beneficiaries	120 000 poor families /720 000 people 10 years-6 NGOs		
Main objectives	Development of goat milk markets at a regional level		
Initial situation	Low yield – successful presence of NGOs and nucleus of improved farms.		
Main investment	Creation of 600 breeding stations for 200 farms each with import of Toggenburg goats for crossing Cooling stations		
	Initial situation	Final situation	Return
Goat /family	4	4	=
Adult mortality (%)	10	5	-5
Milk/goat /day (l) (lactation lenght, days)	0.2 (70)	1.8 (200)	+1.6
Total mik (l/farm)	42	1080	+1384
Kid mortality (%)	17	8	-9
Number of kids sold or consumed (6 kg Lw)	3	4	+1
Outputs(USD/farm)	150	705	+555
Milk (USD 0.5/l)	21	540	
Kids (USD/kid -/kg)	54 -3	90 - 3,76	
Adult goats	75	75	
Inputs (USD /farm)		126	126
Concentrates (kg/day/doe- total)	-	(1.2-) 100	
Veterinary (USD/doe)	-	18	
Breeding Centre fee	-	8	
Labor (USD /farm)	95	117	+22
Income/family (USD)			
Without labor	150	579	+429
With labor	55	479	+424
Total regional income (i labor)	6 600 000	57 480 000	+ 880 50 000
<i>Minus reserve</i>	1861000	2 390000	
Annual net income	4 788 600	55 090 000	+50 301 400
Total investment (USD) and IRR	51631800	68114400	+ 16482600 (54%)

5 idem

Investment: The investment for dairy production is the equipment to process, package and sell good quality milk the investments for such cases may vary. Two examples are cited below from different countries.

The second case is about artisanal cheese making . The studied cases are in Capo Verde or in Venezuela.

Table 4: An example of Cost Benefits Analysis for a regional project to organize a small scale cheese production in semi arid areas in Venezuela (Lara and Falcon state)

(Simplified table from Dino Francescutti, FAO⁶):

Main issues and beneficiaries	4000 households		
Main objectives	Development of goat milk intensification through irrigation and improving market aspects		
Initial situation	Low yield – lack of water Artisanal white cheese ricotta, milk jam, yogurt and fresh milk		
Main investment	Flock and processing facilities, irrigation systems facilities		
	Initial Situation	Final situation	Return
Goat /family	45 (37 milked goats)	45 (37 milked goats)	=
Adult mortality(%)	8	8	=
Milk/goat /day (l) (lactation length, days)	0.66 (210)	1.86 (210)	+1.2
Total milk (l/farm)	5128.2	14452.2	+9324
Kid mortality (%)	36	18	-18
Number of kids sold or consumed (6 kg Lw)	20	30	+10
Outputs(USD/farm - small scale unit)	7994	30112	+22118
Condensed milk jam (USD 0.93/100g)	2242	25274	+23032
Cheese (USD 8.14/kg)	4770	3661	-1109
Kids fattened and sold (USD 3.25/kg)	390	585	+195
Adult goats (USD 2.35/kg)	592	592	=
Inputs (USD/farm)	4443	19294	+14851
Concentrates+minerals+sub products	2432	7348	4916
Veterinary	73	73	=
Forage	774	2731	1957
Products for processing milk	1164	9142	7978
Labor (USD 9.3/person/day)	2936	6730	+3794
For production (person/day) - USD /farm	(144.7)1346	(241.8) 2249	
For processing (person/day) - USD /farm	(170.9)1590	(481.7) 4481	
Income/family (USD)			
Without labor	3551	10818	+7267
With labor	615	4088	+3473

KEY ISSUES AND LESSONS FROM EXPERIENCES

Total regional income (i labor) USD	2 460 000	16 352 000	+ 50 880 000
<i>Minus reserve USD</i>	5 364 000	15 140 000	
Annual net income USD	(2904)	1 212 000	+ 50 301 400
Total investment (USD) and IRR (%)			+ 96696000 (12%)

Markets issues:

- Social market guaranteed by the government (Brazil)
- Goat product market opportunities by Industry (Mexico)
- Small scale cheese market with quality issues (Venezuela and Capo verde)
- Local market organization (Kenya)

Main risks:

The main risks of such investments are:

- The low supply of milk (due to the failure of production conditions and projects) or lack of confidence of the goat keepers in the organization of sales
- The possible technological gap for the goat keeper to control the changes
- A market lower than expected due to the low acceptance of goat milk or goat milk products, the competition with cow milk or imported skim powder (Senegal)
- The low quality of the products (quality improvement having to be part of the project)
- Main markets

Case 3.2: Meat Goat Production

Goat meat production is less specialized than other meat sectors. We remind here that: Most of the goat production systems are multipurpose and in meat production,

Meat production can be developed in all conditions including pastoral nomadic ones.. Goats are mixed with animals like cattle and sheep and used as capital when cash is needed.

Such projects or investment will cover at least between 2500 and 10 000 households in which each goat keeper may have initially a small herd (around 10 to 50 goats) according to the local situations and their capacity. Often the project helps to identify the optimum number of goats for each family should maintain to run the business profitably at their level.

It is often relevant to develop this type of regional projects because since the last couple of decades, the demand for goat has increased dramatically and new value chain are developing. Besides, goat meat markets are still often for local consumption and often informal.

The challenges for goat meat production systems are:

- To increase fertility and fecundity and weight gain with better nutrition management (fodder/forage supply)
- To decrease morbidity and mortality by health management and vaccination and increase weight gain by deworming
- To improve breeding and reproduction management within the herds for better carcass conformation (by separating the young males from the herd)
- To manage the kids to sell them in better body conditions

Mapping Value Chain and actors mapping: The critical points and solutions for the goat meat value chain are:

To improve the standardization of the slaughtered animals

To build the capacity the farmers for better production and pricing

To engage all stakeholders of the meat value chain

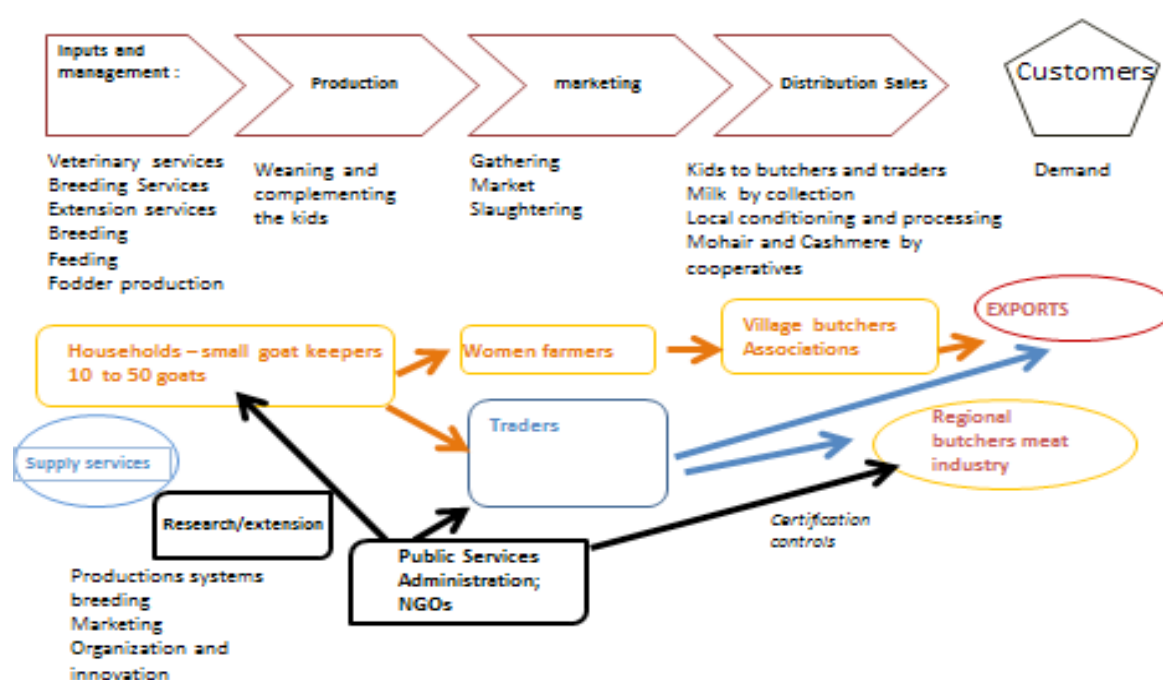
To improve slaughtering (local hygienic slaughterhouses)

To build market infrastructures

To identify goat meat by certification and organization of breeders associations,

To promote goat meat at regional levels by fairs, cooking festivals, etc...

KEY ISSUES AND LESSONS FROM EXPERIENCES



These several issues have been implemented in very diverse situations. Some examples of these practices have been observed as following:

- Certification - Argentina, Morocco
- Festivals - Brazil, Morocco
- Slaughterhouses market places -Morocco, India(Rajasthan)
- Negotiation with the traders - Western Africa, India (Rajasthan)

The flows involved to develop the goat meat markets are at least the district or the region level.

Once the technical interventions are done well and have addressed the production related constraints (on herd management, on breeding, on vaccination and health, as described for case 1 and 2) If the initial productivity is basically low (high mortality rate, low fertility and fecundity, low growth rate of the kids, no real in herd selection and breeding), technical and organizational improvement can lead to important improvement and the income could improve easily from 15 to 30% or even more at the end of the project.

To give an idea of the issues of the goat meat market oriented projects, the following example is based on the Moroccan case of the Project of development and certification of the Argan Kid meat.

The project has invested on slaughter houses, hygienic conditions of local markets (souks), water tanks, refrigerated trucks, engineering for Geographical certification and technical assistance for 1144 breeders.

The main risks are the operational capacity of the slaughter house and marketing to achieve the objectives to access a larger market. This example based on 1444 families at the first step could be generalized at a larger level, the final target of the Kid valorization project being 22700 beneficiaries.

Table 5: An example of Cost Benefits Analysis for a Regional project in Morocco(Simplified table from Dino Francescutti, FAO⁷ and the PMTVA project):

	Initial Situation	Final Situation	Return
Number of expected beneficiaries	1444	1444	
Number of goats	300000	300000	
Average flock size	50	55	+5
Kids alive	49	54	+3
Number of kids sold or consumed/year	34	45	+11
Number of adult goats sold or consumed	3	3	
Annual mortality rate (%)	20	5	-15
Carcass weight to slaughter (kg)	8	8	=
Outputs/flock (USD)	2748	3747	+999
Kid meat price (USD/kg)	8.06	8.86	+10%
Kids fattened and sold (kg)- USD	(272) - 2192	(360) - 3191	+999
Adult goat sold (8.06USD/kg) (kg)- USD	(69)556	(69)556	=
Inputs (USD)	367	600	+233
Barley for kids (0.46 USD/kg)	102	134	
Alig+Zegmouna (0.35 USD/kg)	76	101	
Feed stuffs for does (0,46)	138	167	
Vaccination and health	52	57	
Slaughtering fees (0.39/kg carcass)	-	141	
Income before labor costs (USD/flock)	2381	3147	+766
Labor costs (USD)	276	276	
Net income/flock after labor cost	2104	2871	+36%
Total Net income after labor cost	3 039 748	4 147 011	
Goat slaughter house facilities		66 081	
Annual reserve	86 667	107 171	+1086759
Total Net income (USD)	2 953 081	4 105922	+1 152 841
Total investment (in slaughtering certification and assistance)		1 600 000	
Number of jobs generated (person/day)		8979	
IRR and NPV per family (% , USD)		37 , 2066	

Case 3.3: Cashmere and Mohair Production

The demand for high quality fibers has increased significantly from western consumers.

Central Asian countries like Iran, Tajikistan or Kirghizstan have a long time tradition in Angora Mohair breeds or cashmere animals and population (among them the women) has a high motivation for this type of production and projects could be easily implemented in such areas. It is necessary to insist that

⁷ Dino Francescutti, Business assessment and Cost –Benefits analysis for Pro-Poor Small Ruminant Development, FAO? &"P+annex (document enclosed in the IFAD study; 13 pp. + annexes

to organize the production and management of the herds (of sheep and goats) local (case 1) or regional (case 2) investments in technical improvement (breeding, veterinary assistance, food management) is also often required.

The investments on fiber markets require a previous analysis of the market potential and the identification of the local skills of the households. The dangers of overproduction with quick effect on the prices are very high and quality segmentation is a main challenge for a market generally dedicated more towards luxury sectors.

The main objectives of such investments on market value chain are simultaneously

- to improve the average fiber quality
- to develop de hairing, scouring, carding and kitting to sell a part of the production to the US international market
- to organize farmer's cooperatives to negotiate with the traders and reach the international markets

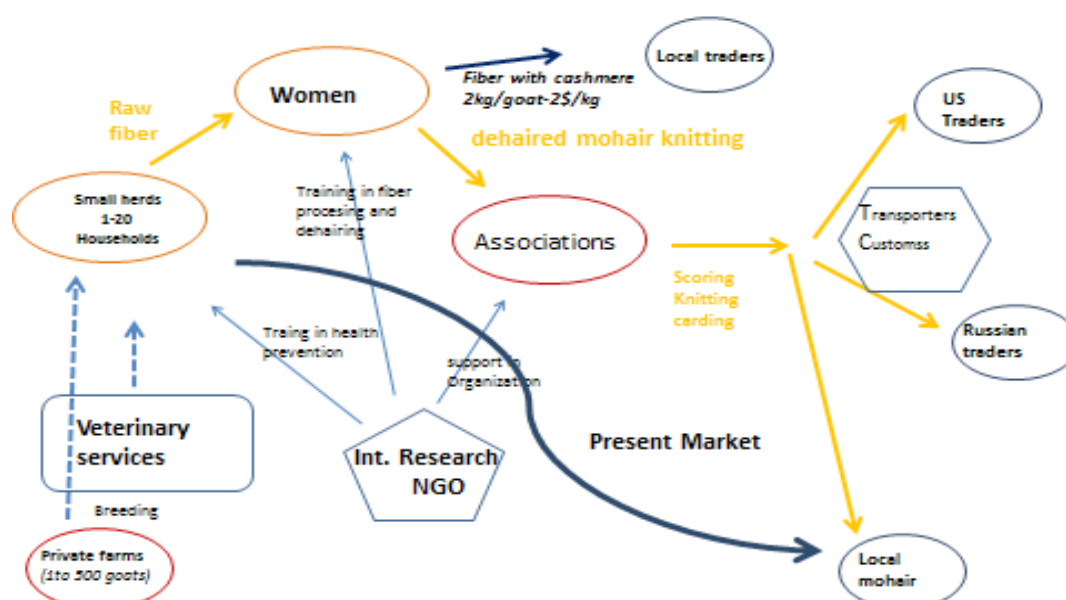
The objective of the investments described here is to improve the access to final markets.

Value chain and actors mapping: The cashmere market is dominated by the Western industry organizing one's supply in China and Mongolia where cashmere industry has developed during the last decades. Some niche markets could be developed in other areas such as Central Asia but most opportunity could come from Mohair wool for which the demand is also high although unsteady. South Africa, Australia and the USA are presently the biggest producers but Central Asia (including Turkey) is the area of origin of the Angora goat.

The initial value chain is local with few collective organizations. Until the collapse of the Soviet Union in 1991, Central Asia had access to a sector-wide support system including extension, breeding and marketing services such as Australia, South Africa or America where mohair industry is developed. These services do not exist anymore and farmers receive few support.

Although the level of organization is very different from a region to another the farmers are generally isolated and have difficulties to sell quality products and reach markets.

Source: Richowsky



In the initial situations, the farmers have simple value chain and are very dependent from traders (selling low medium quality mohair on the Russian market or rather raw cashmere fleece on the Chinese or Turkish markets).

The objective of such projects will be to develop the product value by more dehairing combing carding scouring and knitting by the family women. They could be developed at a district level (1,000 to 10,000 households).

Mapping the actors: International research institutes and NGOs will work on the organization of Associations to help them to negotiate with traders and the final markets (for instance in the US) and organizing the marketing of significant volumes.

Number of actors and volumes of products, economic model: Two economic models are proposed for Cashmere and mohair production. These models are based on cases in Tajikistan but could be adapted to any situation where a market has been identified for fibers. The model is based on one household with 11 goats (average size of local households in Tajikistan as described in the Tajik knowledge harvesting report)

Table 5: Cost Benefits Analysis for a regional project to improve mohair production in Tajikistan (simplified table from Dino Francescutti, FAO⁸):

	Initial situation	Final situation	Return
Supplying families	334	334	
Female goat /family	10	10	=
Adult mortality	10%	10%	=
Milk/goat /day (l) (Lactation length – days)	1.14 (70 days)	1.14 (70 days)	=
Total milk (l/farm)	480	480	=
Total mohair production (kg/farm)	16.5	16.5	=
Number of kids sold or consumed (6 kg Lw)	3	3	=
Outputs (USD/farm)	204	204	=
Mohair (16,5 kg/farm)	139	445	=
Milk (USD 0.05/kg)	24	24	=
Kids fattened and sold (USD 12/kid)	36	36	=
Adult goats (USD 2.4/goat)	5	5	=
Total mohair marketed production (kg)	5511	3968	
Output (at the community level) USD	46292	148585	102295
For local trade (kg) – USD	(5511) 46292	(1543.1) 12962	
Yarn for Russian market (kg) – USD	-	(1543.1) 20996	
Fine fiber for US (kg) – USD		(881.8) 114629	

KEY ISSUES AND LESSONS FROM EXPERIENCES

Production Inputs (USD/farm) Concentrates + Veterinary + Forage	107	107	=
Processing input (USD) <i>(at the community level)</i>		49882	
Dehairing (USD UE/US)	-	11737	
Scouring Dehairing (USD UE/US- other)	-	978+1712	
Carding Dehairing (USD UE/US- other)	-	978+1712	
Spinning Dehairing (USD UE/US- other)	-	22496+10270	
Total community income USD	28902	84675	+ 55773
Total output USD	(USD 86/farm)	(USD 253/farm)	
Total input (USD with labor)	68136	170295	+102159
Annual reserve USD	35738	85620	+30118
Total net income	1512	1752	
	27390	+82928	
Total investment (USD) and IRR			+11458 (48%)

The data presented above have been prepared by Barbara Richowsky, ICARDA, as her contribution in the IGA /IFAD small grant agreement "Improving Livelihoods of Small Farmers and Rural Women through Value-Added Processing and Export of Cashmere, Wool and Mohair" - IFAD Grant 1107 – ICARDA. The total founding of the project covering Kirghizstan, Tajikistan, Iran and involving technical investments were USD 2 million.

The main investments are in:

- Capacity building : training in business entrepreneurship and quality management
- Social capital of Association (of goat farmers, of women, of sales association)
- Market – value chain : investment in organizing marketing and infrastructure to contact the buyers

By considering, the days to impact the households and the markets a five year project would be necessary to implement. It includes:

- Involvement of research,
- Recruitment of technicians to support the Associations,
- Organization of meetings, travels, etc...

Main risks:

- Market risks and difficulties with traders
- Financial irregularities along the value chain
- Lack of acceptance by the households
- Elasticity offer demand and effects on prices

Proceedings of the seminar of the study

“Scaling-up Successful practices on sustainable pro-poor small ruminant development projects”

Organized by:



Funded by:



**“Investments on goats as means to fight poverty:
A winning card if initial conditions are satisfied and with an appropriate business plan-
ning”**

Held during the XI International Conference on Goats in Las Palmas de Gran Canaria (Spain)
8:00- 13:00, September 25th, 2012

1. Objectives, rationale, introduction and participation

1.1. The seminar, an activity included in the rationale of a larger project

This seminar was one of the main activities planned during the implementation of the project and study entitled “Scaling up successful practices on sustainable Pro-poor Small Ruminant Development”, undertaken with the International Goat Association during 2011/2012 and funded by the International Fund for Agricultural Development (IFAD).

The main objective of this seminar was to discuss findings and main key factors developed during the project to explore and share synergies and collaboration for the way forward which will be included in the final publication “Scaling-up successful practices on sustainable pro-poor small ruminant development”.

The primary and general goal of the study is to demonstrate that small ruminant production (mainly goat) is an effective tool for poverty reduction in resource-poor regions. The specific objectives are to prioritize processes/strategies and sensitize national policy, decision makers and donors on relevant development projects to reduce poverty. Based on the harvested knowledge, the final publication includes tools to help project planners in preparing their projects.

Full methodology and rationale are presented separately in the final publication of the project. They are based mainly on Knowledge Harvesting process as defined below. These discussions and debates were an integral part of this process. During a first meeting in Rome in July 2012, the main case studies had been discussed within the study steering committee to develop a common approach in the identification of these successful practices.

1.2. Definition of Knowledge Harvesting

“Knowledge Harvesting is a process to convert top-performer expertise into knowledge assets that improve organizational performance. It is a registered Trade Mark since 1996. A knowledge harvesting project follows a staged process of: focus, find, elicit, organize, package, share, apply, and evaluate and adapt. The ultimate purpose of knowledge harvesting is to capture enough details from an expert so that the target learners can understand and actualize the process and achieve good results.”

2. Introduction

Fifty-seven participants attended the seminar from 27 countries. Many of them are scientists and experts in extension, development projects from diverse origins. Several NGOs’ representatives attended the seminar. Twelve are members of the International Goat Association (IGA) and 11 were involved in the IGA/IFAD project and study at several levels (Steering Committee, Referee Committee, Information providers, etc.).

After a formal opening by the President of IGA and co-organizer of the International Conference on goats where the seminar was held, the meeting opened by general and synthetic presentations on the main issues in goat development to identify the main success factors in pro-poor goat projects. After this first stage, most time was dedicated to debates and proposals on the most accurate way to support the projects founders of pro – poor goat projects and how to prepare the business planning in such projects.

3. Plenary presentations

To introduce the discussions and round tables, the seminar began by some introductory presentations. The full text of these presentations is included in the final report, “Scaling-up successful practices on sustainable pro-poor small ruminant development” and can be consulted in this document.

3.1. Why IFAD needs more elements about pro-poor goat projects; Introduction on the objective of the seminar for “Scaling-up successful practices on sustainable pro-poor small ruminant development”? by Antonio ROTA, Senior Technical Adviser, Livestock and Farming Systems, IFAD, Rome, Italy

Antonio Rota considered that small livestock could offer many poor people the possibility to improve child nutrition and health, generate employment, contribute to the empowerment of women, and ensure environmental sustainability. It means that most of the MDGs could be achieved thanks to small livestock and particularly goats. But he enhanced that many International and national institutions policy and decision makers are still reluctant to support the small livestock sector. But to achieve the MDGs and express their potentialities, the small livestock sector needs effective and consistent national pro-poor policies, livestock farmer’s institutions, participatory and adaptive research, relevant extension programs and training market-led approaches. To achieve the desired results, the above needs to be based on harvested knowledge, developing a business-like approach to prioritize processes/strategies and sensible national policy, decision makers and donors about the effectiveness of small ruminants development to reduce poverty.

3.2. Investments on pro-poor Development projects on goats: Ensuring Success for improved Livelihoods, by Dr. Canagasaby Devendra, Consulting Tropical Animal Production Systems Specialist, 130A Jalan Awan Jawa, 58200 Kuala Lumpur, Malaysia

The elements developed by Dr. Devendra during his conference have been published in the Asian-Australasian Journal of Animal Science (Vol. 26, No. 1: 1-18, January 2013). He introduced the main issues regarding the success of investments on pro-poor goat projects. He described why goats are significant in providing socio-economic, managerial and biological advantages to face the exploding food crisis and increasing animal product demand. He defined precisely the key elements of successful and failure projects and gave some guidance on imperatives in project designs (by understanding key issues, defining and managing prerequisites and focusing on rain-fed areas with clear development strategies).

3.3. The implementation of the IGA/IFAD study and knowledge harvesting: what has to been done, by Jean-Paul Dubeuf

The objectives and methodology of the IGA/IFAD study were presented. Development projects on goats were mapped and characterized and the scalability of the success factors were defined. The business planning approach was based on value chain analysis and livelihood expectations. The several studied cases were presented.

3.4. Development of a goat production simulation model by Vinícius Guimarães. EMBRAPA Goats and Sheep, Sobral, Ceara, Brazil

The contribution of simulation models and scenarios was suggested to analyze productive prospects for small farmers and goat keepers and to monitor the pro-poor projects involving goats. For this task, it

was proposed to use a Systems Thinking approach adapted to solve complex problems caused by the inter-relationship between variables.

The following elements to consider for developing such models are: key variables on production (labor, facilities, animal, feeding, handling, etc.) and extra production (government policies, climate change, economic crisis, marketing variations...), time horizon (5 to 20 years or any other timeframe desired), a dynamic definition of the problem, initial hypothesis, mapping, etc. The model has to reproduce the behavior of the problem according to his purpose, it must behave realistically when subjected to extreme conditions and unexpected events.

For decision makers this approach is very important operationally because it will enable them to anticipate the possible differences in achievements compared to their objectives. Regarding very risky environments, it will lower the dangers of failure in the projects by enhancing their success factors.

A first didactic model was built to show how goat production could increase the average income of smallholders. This first model took into consideration how projects could support the activity. The governmental policies, environmental problems and the time to approve new projects are also considered as variables. Such a model could help experimenting the decision rules, strategies and structures to be implemented in a prospective way. The model will be built on real local examples. Such simulation models would be useful to monitor the implementation of projects and build collectively realistic scenarios. Such an approach could be developed in a further study as an extension of the present one.

4. Report of the plenary discussions

Several key factors were identified from case studies as developed in the presentation “The steps for preparing a project: What are the necessary steps that should be taken in planning and preparing proposals for scaling up successful practices?” These proposed factors were initial suggestions to be debated and possibly modified.

4.1. Key factor 1: “To develop goat production, it is necessary that smallholder producers are interested and keen or allowed to participate at all stage of project design”

All agree that goats are often seen as easy to raise animals and they are well adapted to poor people with few capacities. Such an assessment is not so simple. There are many chances that any project would be a failure if people have no initial know-how in managing a goat herd and do not express clearly their interest for goat raising.

To invest in goat keeping is more generally to invest in animal production. It means to support people in selecting, breeding, feeding, managing goats and valorizing their products. On this point, we can agree that there is no basic difference between goats and other livestock with the exception that getting goats is less expensive and risky than getting cattle for instance; goats are more selective than other species of livestock and therefore can select diets of high quality. This factor is particularly important if the first objective of a project is to develop value chains and to valorize production. Training communities (and especially women among these communities) with little tradition in goat raising can be very risky. The participation and agreement of the targeted communities need to be tested very carefully.

Many past failures have shown that such innovations cannot be implemented if proposed innovations and changes are too far removed from the initial production systems. Several clear examples have shown difficulties to develop goat milk commodities with selected dairy breeds for pastoral populations who are more accustomed to local meat-oriented pastoral goats. In addition, the available funds brought by a project could lead to opportunistic enthusiastic initial attitudes which do not demonstrate the real interest of the local populations.

During the discussion, the following opinions were expressed by participants:

- It is better to focus on the improvement of cooperative organizations.
- There is not a minimum size for goat herds but the projects have to take in account the local production system.
- Nevertheless, the most important factor is to identify the purpose of the future project and if necessary how to organize the market.
- Each market and farmer is different; there is no sense in generalization.
- In actuality, projects cannot be proposed as a magic formula, successfully applicable everywhere. Designing a project requires a deep preliminary analysis and diagnosis of the local situation. Several methodologies (surveys, focus groups, etc.) exist to realize this type of analyses that are integral parts of business planning. A coherent approach and flexible implementation that would be generically applicable is needed.

Several participants believe that we sometime forget that often farmers could be interested in goats for many reasons, for instance for manure, an important resource that embrace ecological objectives. So, two goats for very small land tenants could be enough to provide them sufficient manure. For every project, it is very important to identify these motivations.

The conclusion of the discussion on this first factor seems trivial. It is well known that every situation is different, every farmer has his own aspirations, and a top-down predefined scale would not have any real sense. This assessment is even the basic of development cooperation. All agree that we take into consideration what people need. But the experience in Central Java, for example, has shown that very often, these questions are underestimated as they are always complex and sometimes contradictory or ambiguous. Generally, project proponents have great determination and dynamism. This quality could lead them to not sufficiently consider the aspirations of the possible beneficiaries and could apply only one approach. We should not forget that in many cases the SWOT analysis has shown that goat activities are still depreciated and not considered socially rewarding. The project objectives could be too ambitious but in many cases, it is often easy and possible to generate at least US\$ 2/day and per person to rise out of poverty.

4.2. Key factor 2: “Intensified systems based on high inputs are not recommended for pro-poor projects”

This second proposal had to be specified too. The problem is not intensification for itself but the possible dependence of goat keepers on external inputs what would make them highly technologically dependent, especially from commercial feed. Intensification based on human labor and local know-how, and a good valorization of human resources would be often a good way to produce major income increases.

Selected exotic specialized breeds are definitely not recommended, especially at the beginning of a project, due to the farmer’s dependence of feed suppliers and their initial technical or other capabilities to raise these animals.

In that sense, “agro-ecology” is a concept to be introduced. It is not only fully compatible with the fight against poverty but it can be an operational answer to environmental problems and climate changes, which are one of the main MDGs. For those reasons, agro-ecological solutions should be investigated and proposed for pro-poor goat projects. Local know-how, breeds, and local resources have to be enhanced in the projects rather than exotic models.

4.3. Key factors 3: “There are some imperative key factors: (i) minimum goat keeping activities identification, (ii) minimum public general infrastructures, (iii) a form of political will is identified, minimum research and development institutions and local existing organization (NGOs)”.

All attendants agreed that implementing a project in an area with no initial goat activities and no production system has few chances to be successful. In all cases, a cost-benefit analysis of the real impacts of the projects is necessary.

It was agreed that to develop goat activities, a minimum infrastructure would be necessary (for instance, wells for water, roads to market the products and get supplies, veterinary services to vaccinate the animals or deworm them, schools or extension services to train people and build the goat keepers capacities. When these conditions do not exist, the main investments would need to focus on these infrastructures. In addition, a form of real political will has to be identified at the local, regional, or national levels (whatever by local NGOs or regional administrations).

4.4. Key point 4: “The design of a pro-poor development project must consider targeted and measurable social and economic returns”.

This is probably the most important factor to be able to build and implement a project. All participants of the seminar involved in any type of projects have insisted on this point. What returns can be expected from a project? We are talking of poverty alleviation, people in transition from subsistence to marketing.

These outputs and returns have to be defined through two aspects:

- Commodity aspect: What products people will be able to develop considering their situation, (meat, milk and cheese or fiber)?
- The priorities to focus on: capacity building, social capital, policies, market value chain, management of the local resources and the environment.

Methods to approach these outputs have been proposed: livelihoods analysis for investments in human and social capital, and broadening the scope of our language on benefit analysis, and to not only focus on the financial aspect; value chain analysis to better understand the relations between the actors, the flow of products and the market.

There was also a global agreement to say that goats are not adapted to any geographical and social condition. For example, attention was given on emergency projects to develop activity and food security. The idea was to develop goats (for instance Indonesia after an earthquake with goats in place where some people have no tradition and no interest in goat raising. Other projects introducing dairy goats, simply because investment are low, in areas without present or previous market experience or local know-how very often failed. Consequently, donors are reluctant to finance new projects on goats when the problems are not goats but the context. A real involvement of farmers and their participation have been enhanced several times as a real critical point.

Most of the projects failed because local conditions were not taken into account and activities were not adapted. The first step before building the proper project is always to identify the real expectations of the farmers. Developing research in social sciences (sociology, economics, psychology, gender issues or anthropology) and particularly research on innovation and then crossing these approaches with more bio-technical results would be particularly relevant.

Other important comments have insisted that a major and clever inclusion of women at any step of a project is a priority. Projects which do not take into account women expectations and situations lose at least half of the human potential resources of each family. Extension services should include women in training. Furthermore, women are nearly always responsible for children education and could transfer to them good practices and know-how.

Another important point is to consider that project timeline and goat keepers' time do not necessarily match. In other words, more time than the duration of a project (generally 2 to 5 years) is necessary to get sustainable results. Realistic intermediary objectives have to be planned as well as other financial resources to keep on implementing the general framework of the projects.

4.5. Key point 5: "Smallholders can benefit from current market opportunities", an introduction to working groups

The presentation by commodities generates some important comments, all included in the concluding remarks of the seminar:

- Better than market approach, in goat based development projects, the key factors which make the difference are the distance between consumers' areas (urban areas) and production areas. For instance, a project that aims to improve milk production for market purposes will be in a completely different perspectives if in a peri-urban area or in an isolated pastoral area far away from any concentration of population.
- Although goat activities are often multi purposes, development projects have to define what commodities and market to focus on. Quite often, development projects have forgotten the importance of markets. In addition, the present interest in goats as a tool to raise people out of poverty is due to the increasing demand for goat meat in developing countries. In most projects, how to improve market access is a key objective but the characteristics and constraints of each commodity market have to be clearly identified.

5. Report of the discussions in each focus group

The audience was divided into three working groups, one for each market commodity.

The common question for each commodity was: "How poor families can benefit from actual market opportunities"? The conclusions of each group are as follows:

5.1. Working group A: dairy commodities

Animated and reported by Jean-Paul Dubeuf

The following opinions were developed during the discussion:

- For any project, a clear definition of the objectives is needed to target and draw the path to achieve them.
- The greatest contribution of goat milk is for food and nutritional security: family and household nutrition, especially the children, pregnant mothers and elders. Ninety percent of goat milk production is for family consumption or very local consumption, situated in areas far away from cities. These realities are very important for improving food safety. Ten percent of goat milk is produced by farms with a main dairy purpose but other products are as well important (production of kids, leather). Projects that aim to improve milk production under a market approach have to identify from the beginning where the market is located and how to access it. Many projects failed because they increase productivity without taking into account market access. The dairy markets are generally emerging and niche markets, particularly for cheeses.
- In dairy projects, breed improvement is a main issue and the path usually undertaken for improvement is through crossbreeding. Crossing the local goats has been a usual way to increase the genetic potential for dairy production. The issue at hand is to keep the multipurpose aptitude and the rusticity of the local animals. Crossing by absorption could lead to new genotypes which could be more dependent on expensive feedstuffs and not able to valorize the local fodders. Several projects failed because the local goat keepers could not manage their herds as in the past and because the market for additional milk was not clearly defined. This threat was observed in Senegal where training the women in Canary goat management required time and a high degree of change in their production system. It is important to thoroughly analyze the situation to be sure that improving goat milk production by crossbreeding could be successful. This point is related to the necessity of thinking of projects according to the proximity of services and population and is depending on the presence of roads and transport infrastructure. Very often, improving goat milk production could be more easily achieved in or close to peri-urban areas. The markets would be closer and the breeders could more easily get the supplies these animals would need to express their potentialities.
- Projects usually do not last more than three years, which is not long enough to get sustainable and demonstrate longtime impacts.
- Furthermore, the success of projects to develop dairy commodities demands high levels of organization and management. Farmers have to be aware of these issues with clear objectives and the will to reach them.
- Once more, in this working group, everybody has insisted that there is no standard approach. Even in one country, situations can be different from a region to another. Within a local population, a target public has to be identified.

5.2. Working group B: fiber market

Animated and reported by Luis Iñiguez, former ICARDA Scientist and Consultant on Small Ruminants Development.

A common point about fiber production is that it is located in arid and semi-arid areas with specific goat breeds with mohair or cashmere aptitudes. The group identified some problems and some actions that can be implemented to help producers. The main problems of fiber production are:

- Poor quality (management of purchasing without de-hairing, scouring and carding),

- Lack of marketing (all fiber is sold together at a low price without pricing on quality),
- Production constraints (nutrition, diseases, predators),
- Lack of associative actions.

Some actions to improve the situation of fiber producers are:

- To improve marketing through associative actions. Once again, there is no general model and specific situations can be crucial for the success of a project: in ex-republics of the Soviet Union, due to their recent history, farmers are very reluctant to participate in cooperatives or even in associations; they always link with the Soviet communist experience. So a major issue is to promote the relations and the organization between stakeholders.
- To improve quantity and quality through community-based breeding. Training, trials and demonstrations are necessary as well as experiences and exchanges with other communities.
- To improve knowledge in harvesting and post-harvesting.
- To establish women's groups or women-led small businesses with fully developed capacity for fiber processing and export of value-added fiber and products by knitting and crafting.
- To explore the organic production for which there is a niche market.
- To consider other associated outputs such as meat, skin, and milk.

Some experiences to be considered are:

- Central Asia (ICARDA projects mainly in Tajikistan),
- Argentina (community-based breeding projects and quality of harvesting).

Some very developed sectors to be mobilized are:

- Israel (cooperatives),
- South Africa (wool production),
- Australia (experiences on marketing and quality).

It is underlined that these issues could be applied perfectly to other ruminant livestock such as llamas and alpacas. Antonio Rota has commented that IFAD has just approved a project in Central Asia with women groups to further develop mohair goat production initiated with ICARDA into a full value chain.

5.3. Working group C: meat market

Animated and reported by Vinicius Pereira Guimarães, Scientist at EMBRAPA Goats and Sheep.

- Meat goat production has great opportunities all over the world as we observed that goat meat has developed more than other types of meat in the world. There are also niche markets.
- There are some countries with a traditional consumption of goat meat and where opportunities of market are growing (Brazil, Mexico, Venezuela, etc.). But at the same time they are importing goat meat. So, farmers could benefit from these opportunities.
- Productivity is low, prices are not differentiated according to the live weight or quality of kids and farmers market their products without meeting the market demands (the carcass qualities are very diverse and do not always meet the consumers' expectations, the image of goat meat is often very negative, the dietetic quality of goat milk is not well valorized, there has been little interest from the meat industry until recently).
- The farmers are often very dependent on traders, with little ability to negotiate and their margins are lower than those of traders, butchers and other intermediaries. But even though there is a generalized low opinion of traders, very often they are essential when farmers cannot have a direct access to markets. So although the balance between the goat keepers and the traders has to be improved, the

traders have also to be beneficiaries of any goat meat-oriented projects.

- The associative action for marketing meat production is poor, as well as the link between the production and the market chain.
- Technologies to improve productivity are available; nevertheless, the adoption is still limited, even though there are encouraging precedents.
- Problem identification should be done at the grass root level and plan with them.

After this diagnosis, some actions to improve market accesses were proposed:

- Capacity building (technical and non-technical),
- Creating farmers' institutions, cooperatives (To bring people together),
- Training that include women and men,
- Developing research, trials and references involving all stakeholders including farmers,
- Studying markets and goat meat value chain (bottle neck – engage farmers),
- Developing access to market information for producers, and market infrastructure,
- Shortening the chain from producers to consumer if it is possible,
- Developing meat quality (homogeneity) and safety (vaccination, deworming),
- Encouraging proactive public policies (incentives for smallholders, adapted regulations and laws to favor goat keepers and pastoralists) and developing public services,
- Access to services (veterinary services, food supply in case of drought to avoid overgrazing),
- Management of production (fertility and mortality control, encouraging improvement of local breeds),
- Avoiding top down planning for instance by considering the multi-activity of farmers with a holistic approach,
- Considering also sub-products such as skins and manure.

Concluding remarks: final output and communication for the stakeholders

The conclusions of the seminar have clarified which final output will be developed from observations and knowledge harvested during the study.

The starting point acknowledged by each participant was that the several studied cases and identified key factors have given key information on how to prepare and implement a pro-poor project on goats.

Antonio Rota insisted on the necessity to formalize all this information. Output must be operational to support potential donors and projects leaders, and to design and implement more effective, efficient and relevant business planning.

6.1. Value Chain Approach

Access to market has been confirmed as a major factor for the contribution of goat raising in the fight against poverty. Although goat activities are nearly always multipurpose, value chain analysis must generally consider each commodity separately. The elements harvested during the discussions of each focus group good starting point for any further value chain analysis.

The identified positive experiences described through the several case studies have given elements on how to facilitate small-scale farmers' access to markets. To do it, a value chain analysis is needed and could be a first stage by:

- Mapping the actors,

- Identifying the number of actors and volumes of products,
- Mapping the core processes and flow of products.

This value chain analysis will also identify the main investments to plan for pro-poor goat projects. This approach could be completed by elements of livelihood analysis and all these elements would help to identify constraints and opportunities on goat based projects.

6.2. Structure and realization of the final output

The final output of the study must provide a real operational tool kit for potential investors (foundations, NGOs, International Institutions).

6.2.1. Step 1 – Investments typology

The main types of investments have to be identified to introduce the value chain analysis. For instance, the following investments to introduce the subject were quoted:

- To invest in food safety,
- To invest in regional capacities,
- To invest in access to markets (meat, milk or fiber),
- To invest in environmental stewardship.

For each type of investment, the prerequisites as well as the main elements of the value chain (actors system, main actions and objectives) will be identified.

6.2.2. Step 2 – Compiling the elements of value chain analysis

A general framework will be written by Jean-Paul Dubeuf and Dilip Bhandari to prepare the structure of the final tool kit. This framework will be based on the several cases harvested during the period of the study

6.2.3. Step 3 – Organizing a collective write shop to prepare the tool kit

The tool kit will have to be adapted to the targeted audience (international Institutions, foundations, international NGOs). To achieve this objective, it is proposed to organize a write shop with Heifer Project officials under the coordination of Dilip Bhandari with Jean-Paul Dubeuf.

This write shop will be realized in a location where several important goat projects take place. The test of the tool kit will be based on this field case. It was suggested to organize the write shop in Nepal.

6.2.4. Step 4 – Cost-benefit analysis

Compiling data on the studied productions systems would give references to the minimum acceptable cost–benefit ratio to build a goat oriented pro-poor project. The mobilization of a FAO economist as a consultant to complete the analysis has also been suggested. Interacting with Dino Francescutti to prepare such an agreement was finally approved.

6.2.5. Step 5 – Possible further extension with a possible future simulation model

The idea to develop a simulation model was developed by Vinicius Guimarães from EMBRAPA and a first example of the method was presented (in “Development of a goat production simulation model”) during the seminar. Such a methodology could be developed later in a further extension of the present study.

The final conclusion was from Albert Einstein quoted by C. Devendra to not forget that “Beyond our diagrams and equations we have to remember the face of the hungry man”.

These proceedings were reported by Jean-Paul Dubeuf and Remedios Carrasco in collaboration with Lucia Sepe and Fernando García-Dory.

7. Annex 1 – Program of the Seminar

“Scaling-up Successful practices on sustainable pro-poor small ruminant development”

September 25th, 9.00-14.00; Hotel Cristina, Las Palmas de Gran Canaria

7.1. Introduction

Goats, once of little economic and social interest, are now of high importance for the challenges the world is presently facing: climate change, water shortages, use of marginal lands, environmental degradation. Goats are on the forefront of all these issues but overall they are seen as a way to fight poverty and hunger.

The International Goat Association aims to raise awareness of these challenges and help find joint solutions. It is with this approach in mind that the International Fund for Agriculture Development has proposed IGA an expertise to increase the interest of using goats in the fight against poverty. Precisely, the IGA network has identified projects involving goats and key success factors. These factors have been mobilized to develop a business planning approach. Based on several examples from real situations, this approach aims to support decision in implementing successful projects using targeted tools and procedures and realistic operational analyses.

This seminar was organized during the XIth International Conference on Goats held in Las Palmas de Gran Canaria (Spain) in September 2012. Its goals were to share results and to put forward the debate concerning the use of goats in the fight against poverty and the pre-requisites that those types of initiatives need to reach a guaranteed level of success.

7.2. Program

- 9:00- 9:10 Opening session, by Juan Capote
- 9:10-9:20 Why IFAD needs more elements about pro-poor goat projects, by Antonio Rota
- 9:20-9:50 Diversity of goat production systems, markets and commodities for goat sectors around the world; Perspectives for building business plans on pro-poor development projects involving goats and success factors?
- 9:50-10:20 Debate
- 10:20-12:00 How can poor families benefit from actual market opportunities?

This last point is debated in working groups. The audience is divided into three groups (world coffee method). Each group stays 20 minutes in each commodity table and then move to another table. At the end, all participants will have attended the three following commodity tables:

- The goat meat market is growing nearly everywhere. Can small poor goat keepers benefit? How?
- The fiber market demands a high quality product. How could smallholders improve fiber quality? What is the return?
- Goat milk is often seen as an opportunity with a growing demand in several emerging countries. Where? What are the investments to promote? How to organize production for smallholders?

- 12:00 – 12:30 Coffee break
- 12:30–13:00 Common Restitution introduced by C. Devendra “A picture of goat farming future from the experience of the last decades”
- 13:00- 13:30 Common debate
- 13:30-13:45 Conclusions and closing session: Final outputs and communication for stakeholders?

7.3. Reserved to the steering committee

- 16 :00 – 18 :00 Last meeting of the steering committee
 - o Deadlines and organization of the final publications
 - o Projects still to implement and factors to expand
 - o Possible further developments on business planning for goats.

8 . Annex 2 - List of Participants

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DEVELOPMENT OF A GOAT PRODUCTION SIMULATION MODEL

A proposal presented by Vinicius Guimaraes, EMBRAPA Ovinos Caprinos, Sobral, Ce, Brazil.

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1. Introduction

During the meeting of the project “Scaling-up Successful Practices on Sustainable Pro-poor Small Ruminant Development” held in Canary Islands-Spain from 24 to 27 September 2012, the importance of simulation models and scenarios to analyze productive prospects for smallholders in particular those related to goats has been enhanced.

2. Systems Thinking concept

The essence of Systems Thinking is the idea that elements interact and form clusters for achieving goals, allowing the user to visualize dynamic interrelationships and not only static ones. This approach is increasingly being used by people working for local institutions, including the animal production industry. It raises the possibility of joint assessment of system components, aids the understanding of its operation and could solve complex problems caused by the inter-relationships between the component variables.

The Systems Thinking explains that the very obvious solutions may not work, or only improve problems in the short-term. Nevertheless, well targeted efforts can produce meaningful and lasting improvements, when implemented within the correct framework. This idea is fundamental to make the analysis of a production system or more broadly of a value chain, because it is often hard to know with certainty what or where the bottleneck activities are. That is why it is common to have immediate attitudes that can solve the problem momentarily, instead of considering a longer-term approach.

Systems Thinking can make a general assessment of the production system and the vision of the crucial points for their operation, allowing the producers, technicians and stakeholders to make decisions for improving them in the long term.

For this assessment, is important to create a model aiming at making predictions and identifying behaviors. The purpose of the models, according to Pidd (1996), is to assist in decision making and control through a simplified representation of reality. The construction of a model (modeling) is a systematic process of trial and error, adapting the known (Ford, 1999), and following the premise of increasing complexity. That is why models are used to illustrate a situation or object, or simply practice the act of modeling.

3. Rules for design and evaluation

- Specifying the scenario: which environment will emerge?
- Decision rules: Which decision rules, strategies and structures will be experienced in the real world? How can they represent the real world?
- Analysis “what if”: What are the effects of policies and measures taken?

- Sensitivity analysis: how robust are the rules and measures of recommendations given under different scenarios and uncertainties?

For decision makers this approach is very important operationally because it will enable them to anticipate the possible differences in achievements compared to their objectives. Regarding very risky environments, it will lower the dangers of failure in the projects by enhancing their success factors.

For these models System Dynamics (SD) will be used. It consists of a network of variables with feedback relationships that generates responses dynamically based on the interaction of variables. The SD takes a view of the entire problem by focusing on the behavior of projects and their relationships with management strategies (Sonawane, 2004). This methodology is appropriate where the problems are dynamically complex due to feedback processes and solutions that require a long-term approach. However, from the point of view of organizational learning, the SD has been used in such a way that the main objective is not the accurate simulation of the behavior of organizational systems, but rather the possibility of assessing the patterns of behavior of the system as a whole, their inter-relationships and influences, to improve the understanding of responsible decision making (Richardson, 1994).

4. Model implementation steps (4.1 to 4.5)

4.1. Articulation of the problem

4.1.1. Selection of the matter

The production of small ruminants worldwide is growing and must be inserted in a context of social development. It is an alternative to food security and poverty reduction in several regions of the world, but must seek to understand their importance in complex production systems and the prospect for the coming years of activity.

4.1.2. Key Variables

The variables that comprise the productive systems (hand labor, facilities, animals, feeding, handling, etc.) and external to the production systems such as government policies, climate change, economic crisis, marketing variations, etc., will be considered.

4.1.3. Time Horizon

Five to 20 years or any other desired

4.1.4. Dynamic definition of the problem

Goat production is an activity that creates food security and income for a large number of small producers around the world. Understand the rationale for this productive activity for the coming years will direct investments into this sector.

4.1.5. Creation of the initial hypothesis

A goat can be an alternative for social and productive inclusion of small producers.

4.1.6. Mapping

Maps should be developed based on initial assumptions, key variables, modes and other reference data available to define the structure of causes using tools such as:

- Model diagram,
- Diagram subsystem,
- Diagram of causality,
- Flow maps and inventories,
- Diagram of structural rules or measures.

4.2. Development of a simulation model:

- Specification of the structure, rule-making,
- Estimation of parameters, behavioral relations and initial conditions,
- Test for consistency with purpose and limits.

4.3. Test

- Comparison with reference methods: the model reproduces the behavior of the problem according to his purpose?
- Robustness under extreme conditions: the model behaves realistically when subjected to extreme conditions?
- Sensitivity: how the model behaves with the uncertainty of parameters, initial conditions, limits and aggregation model?

4.4. Production systems

If we refer to production systems (of any sort and including all the value chains), the generic concept of these systems should consider an agricultural and social reality. The definition of the inputs of the system corresponds to the direct or indirect interactions of the environment with the system under study. These inputs are grouped into categories such as physical-chemical conditions (light, temperature, humidity, etc.); Physical resources (materials, facilities, money, etc.); People and knowledge, information, technology and methods.

The definition of products or outputs of the system corresponds to the direct and indirect interrelationships that the system has with the surrounding environment, the products and services, social welfare, ecological concerns, economic wealth, knowledge and information. The use of this methodology will identify and analyze structures that can cause amplification and fluctuations in production and distribution of productive chains, and creating rules to improve decision-making and analysis of policies and measures adopted involving simulation models in which change coefficients to evaluate different system responses.

The first model was developed to show how goat production could increase the average income of smallholders. This first model as presented below (Figure 1) took into consideration the help of projects to sustain the activity, government policies and environment problems and the time to approve new projects to keep fostering the goat production activity.

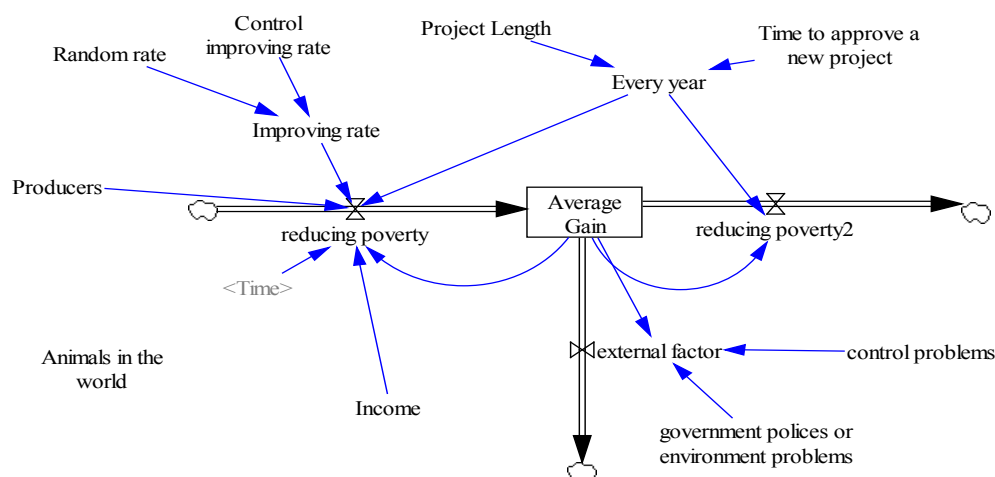


Figure 1. Example of a model that simulate scenarios for goat production systems

4.5. Realization of the model

To implement and apply the general simulation model, we proposed to build the model on real characteristic operational examples. Some field interviews have to be planned to define the main parameters during which the main public policy and particularities will be identified. The variables to be included in a scenario simulation will be discussed with the committee project leaders. Variables like government policies, environment and climate changes and social particularities will vary from each site and must be considered in the model. Such a model could be very easily used as a complementary tool kit to improve the decision ability of donors to invest in pro-poor goat projects and monitor them. Such simulation models could be developed in future projects.

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1. Documents

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2. Some important websites

Bill & Melinda Gates Foundation

<http://www.gatesfoundation.org/>

Farm Africa

<http://www.farmafrica.org/>

Food and Agriculture Organization of the United Nations, FAO

<http://www.fao.org>

Heifer Project International

<http://www.heifer.org/>

imGoats, “Small ruminant value chains as platforms for reducing poverty and increasing food security in dry-land areas of India and Mozambique”

<http://www.imgoats.org>

International Center for Agricultural Research in the Dry Areas, ICARDA

<http://www.icarda.org>

International Fund for Agricultural Development, IFAD

<http://www.ifad.org>

International Goat Association, IGA

<http://www.iga-goatworld.com/>

International Livestock Research Institute, ILRI

<http://www.ilri.org>

Knowledge Harvesting®

<http://www.knowledgeharvesting.com/>

Value Chain Analysis

MEDA, <http://www.meda.org/publications-ml/331-program-design-for-value-chain-initiatives-market-development-toolkit>

OUTLINED BASIC QUESTIONNAIRE

1. **Diagnosis**

- What is the origin of the project? Who are its promoters?
- Are local people interested in goat raising? What is their initial know-how, technical and educational capacities?
- What is the initial general situation of goats in the area previous to the project?
- What are the production systems? What are the main commodities for goats?
- Is there a market for goats and goat products?
- What technical feasible, viable and sustainable improvements can be boosted?
- What are the main local forage resources?
- What is the role of women in the existing system?
- Are there initially extension (in nutrition, forage production, herd management, hygiene, and marketing) or veterinary services and supplies facilities?
- What are the infrastructures of the area?
- Are there significant data and statistics on local goat activities (number of breeders, of goats, volumes, etc.)?
- Who are the main stake holders and how they are involved? What is the local political and social situation?
- What are the other activities of the area?

2. **Project implementation**

- Which beneficiaries to focus on?
- How much to invest?
- What goat breeds to use for developing goats in the area?
- What forage are available and how to improve their production?
- What are the main risks of the project?

3. **Project governance**

- What are the main problems faced during the implementation? How were they solved?
- What is the involvement of the beneficiaries? Is it consistent with the objectives of the project?
- Do I have to reorient some actions and in what directions?
- What is the continuation of this project (other project, reshaping and continuation, failure, etc.)?
- What was the impact of the project? How has it been evaluated?

Annex 2:

REFERENCES ADDITIONAL DOCUMENTS

Several documents likely to interest readers of this study have been included in this final report to be consulted. They are either methodological documents, information on near approaches in other sectors or additive documents on the studied cases. Some of them are quoted in the Additional Resources.

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