

# **SCALING-UP SUCCESSFUL PRACTICES** ON SUSTAINABLE PRO-POOR SMALL RUMINANT DEVELOPMENT



## PUBLICATION INFORMATION

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# ***SCALING-UP SUCCESSFUL PRACTICES ON SUSTAINABLE PRO-POOR SMALL RUMINANT DEVELOPMENT***

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A study undertaken by the International Goat Association  
and financed by the International Fund for Agricultural Development



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## MAIN ABBREVIATIONS AND ACRONYMS

**ANOC** – National Sheep and Goat Association (Morocco)

**EMBRAPA** – Empresa Brasileira de Pesquisa Agropecuária (Brazilian Agricultural Research Organization)

**EMEPA** – Empresa Estadual de Pesquisa Agropecuária da Paraíba (Organization of Agricultural Research, Paraíba, Brazil)

**FAO** – Food and Agriculture Organization of the United Nations

**GAN Africa** – Redes de Investigación y Transferencia entre Canarias y África Occidental para la autosuficiencia ganadera

**HPI** - Heifer Project International Inc.

**IGA** - International Goat Association

**IFAD** - International Fund for Agricultural Development

**ICARDA** – International Center for Agricultural Research in the Dry Areas

**ILRI** – International Livestock Research Institute

**imGoats** – Small ruminant value chains as platforms for reducing poverty and increasing food security in dry land areas of India and Mozambique

**INRA** – French National Institute for Agricultural Research (INRA France- INRA Morocco)

**MDGs** – Millennium Development Goals

**NGO** – Non-Governmental Organization

**SWOT** – Strong and weak internal points, external opportunities or threats

Goat raising is considered by many governments, developing agencies, non-governmental organizations (NGOs) and research centers an effective pathway out of poverty for smallholder farmers in developing countries and many projects have been implemented to develop the sector. After decades of investment projects, there are now evidences that goats could be instrumental in improving the livelihood of the rural poor, mainly because goat production systems are based on the utilization of natural resources, local knowledge and require limited financial investments.

Smallholder producers, particularly women and youth, are currently facing some urgent challenges and global changes, goats can help them build a sustainable future (e.g. food security, increasing demand for high quality protein, climate change, etc.). Goat development represents a valuable low inputs solution contributing to the achievement of the Millennium Development Goals (MDG). Unfortunately, references to good practices and lessons learned in scaling up successful projects are still very scarce and many projects experienced unsuccessful results.

In this study, a comparative analysis of several significant cases worldwide has been undertaken to identify successful factors and practices leading to sustainable pro-poor small ruminant development projects, including dairy, meat and fiber commodities.

A number of case studies have been prepared by using the “Knowledge Harvesting” methodology, exchanges and interactions with sector’s experts and stakeholders involved in the several projects, the context of each case and the actors system have been described as well as the main production systems. For each case study, strong and weak internal points, external opportunities or threats (SWOT analysis) have been identified and discussed during a workshop organized in the context of the International Conference on Goats held in Las Palmas de Gran Canaria (Spain) in September 2012.

In a dedicated section of this study, a detailed description of “how to design” projects for goat development has been presented. Different scenarios have been analyzed giving specific recommendations building on good practices and lessons learnt, to respond to different social and economic situations; emphasis is given to appropriate methodologies for monitoring and evaluating the proposed models.

In order to respond to the growing demand from governments, developing agencies, NGOs, etc. to design Goat Value Chain development projects, the study includes a Goat Value Chain Toolkit which has been prepared on the basis of field experiences to support operationally the project leaders. The importance of designing business planning has been recognized and a cost–benefits analysis has been prepared for each case study from FAO Investment Center.

The authors are confident that the study provides insightful steps and tools for project designers and implementers, which will allow the design of more targeted, inclusive, gender balanced, economically viable, sustainable projects by minimizing risks of failures.

This study revealed that wherever goat production is a viable opportunity, investing in this sector could be very profitable even with minimum but targeted interventions and many rural households could realistically get out of poverty. In fact, with well-designed and monitored projects, the economic analysis has shown that an investment return of more than 40 % would not be rare.





*An Overview of the Context of the  
Study and the Socio-economic  
Importance of the Goat Sector*

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*All quoted references have been reported in “Additional resources” at the end of the report of the study.*

### **1 The development of goats and poverty reduction: Economic and political perspectives regarding general issues on the livestock sector**

#### **1.1 General world development issues for poverty reduction and the Millennium Development Goals**

The United Nations Secretary-General Ban Ki-moon has perfectly summarized the ambition and challenges of the Millennium Development Goals (MDGs) to alleviate extreme poverty by 2015. *“Eradicating extreme poverty continues to be one of the main challenges of our time, and is a major concern of the international community. Ending this scourge will require the combined efforts of all, governments, civil society organizations and the private sector, in the context of a stronger and more effective global partnership for development. The Millennium Development Goals set time bound targets, by which progress in reducing income poverty, hunger, disease, lack of adequate shelter and exclusion – while promoting gender equality, health, education and environmental sustainability – can be measured. They also embody basic human rights – the rights of each person on the planet to health, education, shelter and security. The Goals are ambitious but feasible and, together with the comprehensive United Nations development agenda, set the course for the world’s efforts to alleviate extreme poverty by 2015 “.*

Eight main MDGs have been acknowledged internationally during the Millennium Summit in September 2000 and their progresses reported during the 2010 MDGs conference:

- Eradicating extreme poverty and hunger,
- Achieving universal primary education,
- Promoting gender equality and empowering women,
- Reducing child mortality rates,
- Improving maternal health,
- Combating HIV/AIDS, malaria, and other diseases,
- Ensuring environmental sustainability
- Developing a global partnership for development

Many progresses have been achieved between 1990 and today. For example, the number of people facing extreme poverty (with less than USD 1.25/day) has decreased from 1.8 billion in 1990 to 1.5 billion in 2005. The objective to halve the 1990 number in 2015 (less than 900 million people and 15 % of the human population) is still possible to reach. The economic and financial crisis that began in North America and Europe in 2008 sparked declines in commodity prices and investment. The result is a slower growth at the world level.

As the global growth cannot be sufficient to make possible to reach nearly mechanically these objectives, other ways have to be developed through efficient and diversified local, regional and national projects. Until recently, agriculture has been neglected in the investments for development. There is today more and more awareness that small-scale farming has to be promoted both to fight extreme poverty and hunger ensuring environmental sustainability but also several other MDGs.

In a time when intensive and commercial animal production is more and more considered as a major cause of degradation of natural resources and emissions of greenhouse gases, smallholders raising small livestock could contribute significantly in protein supplies by using renewable natural resources such as forests, rangelands or sub products. The hypothesis we develop in this study is that MDGs could be achieved thanks to this small livestock and particularly goats. This hypothesis is based on the clear evidence that although the goat sector is still less important than other animal production sectors it has significantly grown more than the other animal production sectors. It is easy to show that this growth has been particularly evident in smallholder systems in developing countries, particularly the poorer.

(FAOSTAT, 2013)

		World		Difference (%)
		1990	2011	
Livestock numbers (million head)	Goats	589	924	+ 57
	Cattle	1 296	1 426	+ 10
Milk (million tons)	Goats	10	17	+ 68
	Cows	479	614	+ 28
Meat (million tons)	Goats	2.6	5.2	+ 97
	Cattle	53	62	+ 18

Our hypothesis is that goats can contribute in main MDGs such as eradicating extreme poverty and hunger (by developing the income of goat keepers), reducing child mortality (by improving hygiene), promoting gender equality and empowering women (by promoting the women’s activities with goats and marketing milk meat or fibers), ensuring environmental sustainability (with production systems based on renewable resources) and developing a global partnership for development. At a lower stage goat development can help combating HIV/AIDS and improving maternal health (thanks to the specific qualities of goat milk).

The objectives of this publication are to scale up success factors for projects involving goat raising and related activities these activities and propose tools to help the project planners and institutions in preparing their business planning to get more chances of success.

**1.2 To reinvest in agriculture: What development strategies and investment to promote?**

The FAO report on poverty underlines that *“a key challenge to the development of agriculture in areas dominated by smallholder farmers is the establishment of coordination systems involving combinations of government agencies, civil society, farmers and other professional organizations, and agribusiness firms. The prevailing policy paradigms in developing countries, where a systematic bias towards industrialization and concentration favors large- over small-scale operators is the under provision of local public goods and services, the consequences of which affect the poor disproportionately”*.

This statement suggests that a main danger of the public policies (to answer the global need for food)

would be to encourage investment on productivity that would favor more the wealthier actors than the smallholders. Besides, when market mechanisms fail to deliver private initiatives, agency and public leadership are needed, in particular to favor primary investments. In many cases, although public services are often in bad conditions, they are the only one that could really impulse development in cooperation with local agencies to secure risks and create confidence. As agriculture and animal production are highly risky activities, some pilot projects, with modest but targeted interventions, and continuous learning from the results are more likely to lead to the desired outcome of poverty eradication. Investment in extension services and collective capacity is in all cases a key factor. A good example is why many technologies to increase the nutritive value of straws for feeding ruminants, especially urea–ammonia treatment failed to be adopted by farmers. The major reasons, identified during an e-conference organized by FAO (2012) and also relevant to many of the other technologies, were weakness of extension services in developing countries, failure of scientists to involve farmers when developing new technologies and failure to demonstrate convincing benefit/cost ratios.

### 1.3 Agro-ecology and livestock for poverty reduction

More and more economists such as Tim Jackson have enhanced the limits of the global worldwide present development model of economy including agriculture (Jackson, 2009). They emphasize that new paradigms are necessary to find the way of a new prosperity in agriculture. The United Nations, with Olivier De Schutter's report on the right to food (2010), has estimated that this investment has to be made mainly through agro-ecology or ecological intensification.<sup>1</sup> Many people still think that agro-ecological agriculture cannot be competitive with the "modern" agriculture using high inputs and techniques based on a large use of chemical fertilizers, improved plants, and mechanization. But agro-ecology is not seen here as a marginal mode of agricultural development but as a real other necessary structural orientation which has proven results for fast progress in productivity as well as in the concretization of this human right for food for many vulnerable groups in various countries and environments.

In other words, agro-ecology could be fully compatible with the fight against poverty but is also an answer to the environmental problems and climate change, one of the MDGs and challenges the world has to face. And it is the most suited alternative for poor families.

Agro-ecology promotes an integrated management of nutrients with an important utilization of human labor and less external high energy inputs. Its priorities are:

- Investments in public goods
- Investment in knowledge and training
- Investment to increase productivity by valorizing labor forces
- Social cohesion by co –building of solutions rather than by "participation" only
- Making the farms more autonomous at several levels that meaning smaller family farms;
- Organize the markets.

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<sup>1</sup> Ecological intensification means that productivity/ha could be increased thanks to ecological processes and function. Agro ecology is more a whole-systems approach to agriculture and food systems development based on traditional knowledge, alternative agriculture, and local food system experiences.

All these points are clearly linked to the objective of ecological intensification based on an alternative trend to agriculture mechanization, use of fossil energy and artificial conditions of production by manufactured inputs (e.g. mineral fertilizers, feed stuffs), and use of highly productive improved breeds.

The priority is to foster families to reach more economical independency through « a sustainable management of fertility (thanks to complementarities between agriculture and animal production), more resilience to develop the capacity to resist hazards, and use of more adapted resources like legumes and by-products.

**The empowerment of local farmers is a major issue of agro-ecology, it is perfectly convergent with the objectives to fight poverty. In other words, it is the only way to fight poverty in a sustainable way. Goats (and sheep ) would be in many cases well adapted to answer these issues.**

For instance, pastoral systems are a major issue and a major complex problem for development (Sidahmed, 2011). Correctly managed, without overgrazing, pastoralism and pastures on rangelands can improve soil fertility, preserve biodiversity in forest plantation, and sink carbon in improved savannahs. But by lack of local governance, control and services, we observe often overgrazing that can favor soil erosion and compaction, and loss of nutrients. To manage these questions, public institutions and financial bodies (although often in weak situations) must become also learning spaces and exceed their routines to think strategically of ways to globally improve a situation. In other words, although it is often suggested that conditions to maintain pastoralism are too difficult, any answer has to carefully analyze the local situation. This approach can be extended to other types of systems.

We have to be aware that in many ways agro-ecological innovation and ecological intensification are a systemic and rather revolutionary way of thinking that can disturb the representations and the technical models of many actors including many scientists and technicians.<sup>2</sup> These representations which are mobilized for instance in public policies are a major constraint to develop ecologically intensified solutions.

## **2 General considerations on goat production systems and commodities for goat sectors all around the world**

### **2.1 Goat production systems are generally multipurpose systems with still few connections to the organized markets.**

The goat sector has not followed the same way of development and intensification as other livestock production sectors (such as cattle, poultry, pigs, etc.). Goat activities have been largely excluded from organized markets. To face new development issues, this reality could be an advantage.

Goat production systems were mainly multi-purposes systems oriented on milk and meat and in some special areas (as Central Western Asia or China) on meat, milk, fiber and skin (Dubeuf et al., 2004, Morand-Fehr et al., 2002).

Goat development projects generally take into account these multifunctional characteristics: multifunctionality is largely specific to small ruminant systems and make them well adapted to agro-ecological orientations. Strategic options to improve small ruminant production are not related mainly to

<sup>2</sup> The concept of "lock in" (16) has been introduced to explain why several actors keep on supporting a model although many evidence show it is no more efficient and has many negative externalities.

one commodity and must prioritize on social capital and the access to services (training or veterinary services and vaccination) (Pollott et al., 2009). The low level of specialization was seen as a weakness but it could also be seen as strength for rural development in the sense that the pro-poor rural development projects have to take into account all the global production system with a balanced integration of animal production and agriculture.

But many solutions are also related to the special constraints of each commodity (without promoting specialization as the way of development). It is the reason why it seems logical to specifically analyze the situation of each commodity. The analysis will be based on the diversity and converging points of the compared cases met all over the world. Analyzing each commodity separately does not mean we do not consider these multipurpose characteristics.

### **2.2 A still depreciated image of the goat activities by many stakeholders**

Another important characteristic is related to the representation of many stakeholders regarding goats. Although the situation is slightly changing, goat activities are still largely not seen as socially and economically valorizing the related populations.

In other words, many stakeholders still think that goat projects do not help people climb the ladder out of poverty. For breeders themselves, goats could be seen as a transitory activity before a more attractive reconversion. Even in the successful cases studied, such as Brazil, people may think that goat keepers would not choose other goats if they would have the choice and would prefer to train their children for other jobs. To change this vision is also a major issue and there are some examples in developed countries that have shown it is possible. In Provence (France), an old pastoral Mediterranean region, many goat keepers with recent college degrees have developed farmstead goat cheeses and have radically changed the perception of the activity by society.

Considering the role of goats to support poor people would not need to be simplistic. At the territory level, statistics are often scarce and indicators that are too global (as means) do not adequately describe the diversity of situations. The quoted bibliography gives clear assessments on these points:

- Goats are well adapted to arid areas. It is true that investments needed to develop goat production are lower than for cattle and could provide livelihoods in difficult environments; but goats cannot be proposed everywhere, as a way to fight poverty, when the socio-economic local conditions are not present to develop it (when there is a lack of infrastructure to market the products or because people are not used to raise goats).
- The market conditions should be considered. It is important to consider this factor to decide to implement goat projects or not but an open minded approach of the market is necessary (including local and household consumption, social and governmental acceptance, etc.).
- The objectives of the project have to be defined according to the initial situation (in terms of education, infrastructure, etc.), funding invested and returns expected but sufficient time has to be considered to get sustainable results.
- The local public services are an important factor of success but informal economy and local organization have to be taken into consideration.
- Developing technical improvement is important but not always the solution to solve the problems that could be linked more to political, administrative, cultural or economical aspects.

- It can be often relevant to focus projects simultaneously on several objectives but too many co-objectives could reduce efficiency (e.g. gender conditions, market structuring and productivity, etc.)

The present development of goat farming is more generally related on the growing demand for animal products in developing countries and to the increase of individual incomes for a larger part of the population.

There are other consequences of the negative image of authorities on goats. The public authorities have generally a very similar vision and it is very difficult to convince them to invest in goats for instance on extension services, training, etc. When the demand of small ruminant products is high (as it is the case in Turkey with sheep and goat cheeses), the public authorities generally prefer to support rather wealthy investors to develop intensive well structured production systems and cheese making units rather than investing on the organization of poor rural populations (cf. Knowledge Harvesting report on Turkey). The projects are often short-term with little sustainability or impact.

Therefore, the goat oriented projects must participate in re-qualifying professional goat production, favoring the empowerment of rural populations and producing a true long term social capital (organization of associations, training centers and extension) and supported by the development of infrastructures (e.g. water, roads, access to energy, Information and communication technologies, slaughter houses, local dairy processing units, creation of breeding centers).

### **3 Which smallholders to focus on for reducing poverty by livestock development?**

Small-scale farmers are more and more often considered as an opportunity for the problems faced by livestock activities (Hall et al., 2004). FAO and the World Bank have discussed the conditions for pro-poor livestock sector development in a recent report (Otte et al., 2012). These conditions are general and have to be discussed and applied to each sector. They underline that market-oriented livestock production could be engaged with smallholders but more easily by better-off smallholder livestock keepers – who have the minimum asset base for engaging sustainably in market-oriented livestock production, rather than focusing on marginal livestock keepers, who have insufficient assets to produce a regular surplus from their livestock.

The main issue is that increased labor productivity is essential for linking smallholder production to poverty reduction and requires minimum farm/herd sizes, some investment in mechanization, and diversification into higher-value products. However, unstable food prices with higher margins for marketing than for production encourage poor producers to prioritize staple food production for own consumption before diversifying into higher-value commodities for sale (Poulton et al., 2006). Increasing smallholder productivity involves the development of supply chains that would serve small-scale farmers and provide them with the necessary links to suppliers and consumers (Thurlow et al., 2010). The need to improve herd management is not limited to market-oriented projects. To improve household food security and local consumption would generally also require improving herd management.

The goat sector is less organized than other livestock activities and very often the herds have few heads. To reach a minimum herd size for improving herd management could be an objective for many projects (15 to 30 heads or more according to the area). But not all the households will become entrepreneurs and



the herds are not always owned by families. Considering the community level and the returns of a village herd (for instance of more than 200 heads) could be relevant

### **4 In what rural areas promote livestock and goats?**

In developing countries, goats are raised in peri-urban, "rural" and remote rural areas. We have not included in our study peri-urban cases because most of the projects regarding goats are for rural populations but these systems exist. It has been underlined that poverty incidence tends to be highest in sparsely populated remote areas. But the proven development strategies other than outright transfer are very scarce, they are often very costly and poor countries can ill afford them. Does that mean that these remote areas should be abandoned and their population condemned to emigration in already overpopulated areas? Although the pastoral systems are considered to be well adapted to harsh conditions, they are threatened by the lack of infrastructure. The pastoral systems are present in remote areas and often facing drought and climate change. The goats can be an opportunity if the projects could gather people in villages near wells to practice agriculture and near main roads to get supplies and services. Strategies regarding the future of these pastoral systems are very urgent. Policy emphasis here should be directed to reduce vulnerability, for example by protecting livestock assets. In addition, pastoral areas are less populated than rural areas surrounding urban and small town areas. Consequently, the majority of poor people live in these areas and this fact suggests that a strategy for poverty reduction should be built on urban-rural growth linkages and promoting market access incrementally, radiating outwards from urban areas into the rural areas.

### **5 Characteristics and diversity of the goat milk and cheese commodities**

Somehow, the organizations promoting goat production at local, regional, national or international levels such as NGOs have also integrated the usual image about goats. The solutions proposed are often based on positive and rather simplistic hypotheses. An analysis of the presentations and objectives of each project would let one believe that all the poor would be born - managers if they had facilities and if they would receive technical information and resources (Abhijit and Duflo, 2012); they generally surmise that they would form homogenous groups (the poor, the villagers, the goat keepers, etc.) ignoring the internal competitions, relations of power within each community or with more wealthy social groups (bigger farmers), their motivations and initial skills and the consequences of these possible tensions or weak points on the possible failures of the projects.

Consequently, the projects are often built on a global model, largely ignoring local constraints and without previous analysis of the farmers' expectations and those from other actors. Arguing on the generally low capacities of poorly educated people, the projects are not often built on a genuine shared and discussed vision. Participative approaches, now nearly always enhanced, generally ignore the differences and social situations of the beneficiaries, which can introduce bias in the debates.

Conversely, in spite of this, several decades of presence in a region (Farm Africa in Kenya, HPI in India) can give a good empirical expertise and largely make up methodological aspects.

The goat productions systems are very diverse. The typology built on 3 major types by Sidi Ahmed (2011) for IFAD (pastoral and agro-pastoral systems, mixed crop/livestock systems, intensified commercial systems) is global and will be used in the following analysis. The characteristics of goat milk, meat and fiber commodities will be analyzed successively.

## 6 Markets and value chains

According to FAOSTAT (2013), world goat milk production is significant (17'091,225 tons in 2011) and constantly growing. The interest for goat milk is steadily increasing, including in regions where until now the production is marginal (i.e. South – East Asia , Latin America, Eastern Africa) when the traditional pastoral systems are often disappearing or in way of marginalization (e.g. Middle-East, Mediterranean basin).

Nevertheless, probably less than 10% of the goat milk produced in the world is integrated in an organized sector and the volumes sold are very limited except in very specific regions of developed countries (Western Europe, France, The Netherlands, Spain) or in micro sectors (Southern Brazil, USA, Israel, some parts of Mexico, etc.) with very specialized systems. Consequently, the world goat milk market does not exist and most of the goat milk markets are niche markets. To identify and quantify the market is a priority before deciding to implement any project focused on goat milk. According to the several cases identified, we can propose the following typology of the several markets:

Market	Products	Examples
(Local (Auto-consumption Villages	Raw milk	Eastern Africa
Regional collecting	Raw and UHT milk.; often supported by public funding for social purposes	North–Eastern Brazil
National and regional market	Local specific products	Mexico (dulce de leche) Tajikistan (“khurut”, salty dried bowls of yogurts of several sizes) Venezuela (cheeses) Senegal (Acid milk) Cabo Verde, Lebanon (cheeses)
Regional products for expatriated and richer populations population	Innovation products-	- farmstead cheeses (Mexico, Senegal, North of Morocco, Vietnam)

The main threat to successful goat development projects is to quickly saturate the market. The success of a project can lead to over production if not anticipated and lead to the non-sustainability of the activity. This threat is higher for untraditional goat cheeses (for instance French acid type) as they require high technical skills and investments. Only local medium-size farmers could meet these conditions and easily capture the market with few actors, very quickly eliminating the smaller and less trained producers.

The main issues to develop dairy goat value chains are:

- Organization of village shops to market the local milk;
- Organization of milk collection (possibly with the support of dairy cow pre-existing companies)
- Technology and knowledge in milk collection and processing
- Organization of packaging and product identification associated to quality control and pasteurization

### 6 Genetics and selection issues

Most of the goat population in the world belongs to multi-purpose breeds. The number of specialized dairy breeds with a significant organization of selection is very limited. The main dairy goat breeds are Saanen, Toggenburg, Alpine, Damascus, Murciana Granadina, Malaguena, Maltese.

Due to the characteristics of the dairy markets mentioned previously, a dairy goat oriented project often has to improve the dairy productivity of the herds. This improvement can be achieved in several ways:

Within herd selection, if the existing animals already have a decent dairy productivity (for instance at least  $\geq 1.5$  L/day/animal).

Inclusion in the herd of animals with dairy potential.

Import of high yielding selected animals. This solution generally requires very high investments and has high risks. Sources of risk include: adaptation of the imported animals, nutritional management of high-yielding dairy animals, and access to high quality feed resources, and their possible competition with human resources.

Organization of breeding centers to offer local farmers selected animals. The difficulties are related to the capacity and training of local professionals and the implementation of a sustainable organization.

### 7 Goat forage systems and milk production

#### 7.1 The pastoral and agro-pastoral systems

The pastoral and agro-pastoral systems are the most frequent, especially in arid and semi-arid areas. They are based on the free management of natural resources on more or less large spaces. Transhumance is the most common way to manage these systems as the shepherds lead the herds to the present resources. Nomadic systems are the more extreme type of pastoral systems as all communities move with the herds. The pastoral herds are generally composed by different livestock species (sheep, cattle, camels and goats). Pastoralism has had a very good resilience until now and has been the origin of strong and old cultures. Thanks to these characteristics, the animals have developed abilities of resistance and adaptations to several stressors (drought, forage shortages, heat) at the expense of productivity. The pastoral systems have different outputs and the animals are milked for household consumption. But they are often not adapted to modern dairy production. The requirements of an organized improved dairy production do not mesh easily with pastoral systems. Animals have to keep enough reserves to be able to feed their kids and produce a certain amount of milk. A minimum forage quantity and quality is necessary and complementation has a direct positive effect on milk production with generally good economical added value.

Pastoral areas associated with cultivated crops and by-products could be a solution to associate goat milk improvement and pastoralism but before implementing such a strategy, the project actors and funders have to be aware they would always modify the existing systems, thus often limiting the time spent on range lands and the mobility of the herds. Elsewhere, they always lead to augment settling the herds. The consequences of these changes on the communities and their level of acceptance have to be anticipated and discussed to reach a compromise and limit the risks of failure.

### 7.2 The mixed crop-livestock systems

They are based on the use of crops and by-products associated with grazing. Such systems are generally compatible with goat milk production if the animals have suitable genetic abilities even in semi-arid areas ; there are generally developed to satisfy household consumption needs and their improvement could lead to more intensified systems. The systems are most suited to pro-poor multipurpose projects including dairy when local populations have no prevention against the consumption of milk (like in Eastern Africa).

### 7.3 Intensive commercial systems

These systems are more suited to intensified goat milk production systems with higher performance animals, improved nutrition and management. It generally requires higher investments and good professional capacities. Examples of these systems are often the models developed successfully in developed countries (France, Spain, and The Netherlands) with improved animals. Any project based on these systems has to carefully evaluate the capability of the farmers to develop them in a sustainable manner at the end of the funding phase. These intensive systems requires reliable access to input and output markets; human, organizational and technical resources; and services (e.g. training, health, vaccination, credit).

The projects based on these systems are generally consumer-funded because they require often heavy investments on genetics, nutrition, and commodities . Due to these characteristics, the final beneficiaries of projects based on intensified systems could often be middle – size breeders desiring to improve their individual market and with little impact on the global poverty level of their community. Some projects have tried to develop intensification for very small herds such as in Kenya. The validity of this approach about the prospects of such systems should be questioned.

## 8 Gender issues

Gender aspects are generally important in goat milk production as women generally take care of the animals and milk or process the milk. Training the women could be a way to implement projects (as in Eastern Africa) but each local social situation regarding women has to be studied carefully so as to not deeply affect local traditions.

## 9 Characteristics of the goat meat commodity

The world meat sector has been growing dramatically and continuously for several decades. This increasing demand has been mainly in favor of the cattle and poultry sectors. The consequences of this increase in livestock production on the environment were brought to light by a well-known FAO report called *Livestock's Long Shadow* (Jutzi and al., 2006).

Compared to beef production (more than 60 million tons), goat meat is marginal (around 5.23 million tons in 2011) but the demand is growing faster and production is probably under estimated due to the high level of household consumption. In some areas like India, Pakistan, Middle-East, Mexico and USA there is a real boom for goat meat and even in areas such as Morocco where people were preferring sheep meat, urban consumers are increasingly appreciating goat meat for its dietary qualities. The international market is still not developed (0.5 - 1%) but is growing. Australia and South Africa developed the export of goats (mainly feral goats in very extensive systems). Although the internal demand is high,

India exports more and more goat meat to the Middle-East, a trend that could endanger its food safety in the middle term.

The main characteristics and issues of the goat meat market are the following:

- Predominance of traditional marketing channels (local markets and butchers, souks in Maghreb, “dibiteries” in Western Africa),
- Importance of consumption related to religious festivals (mainly Muslim ones but not only),
- The functions of traders and other intermediaries to market the animals,
- The animals are often seen as a capital and not a product. So they are often sold when cash is needed, particularly in pastoral areas,
- Goat meat is not always well differentiated from sheep meat and is therefore sometimes considered as low quality meat,
- There is a lack of knowledge on packaging, cutting and preparing meat for urban markets.

The main equipment and infrastructure needed to improve goat meat marketing are:

- Investment in local slaughter houses (or urban ones if transport of live animals is possible),
- Investment in well identified market places for live animals,
- Processing technologies,
- Transportation facilities,
- Weighing equipment to control the weight of animals,
- Sanitary and veterinary controls.

Organization of trading by improvement of the negotiating capacity of the farmers is a major issue. One objective would be to keep most added-value to the farmers.

Certification of goat meat for instance by geographical indication (as in Morocco or Argentina) could be a way to identify and promote better goat meat products. It is not only a way to increase prices but also to better organize the sector and involve the government bodies and public services to increase their awareness of these questions.

## 10 Genetic selection and herd management

Although the census of goats has increased by 66 % in 20 years (against “only” 20% for cattle), a large majority of animals are composed of non-specialized animals and neither selected nor defined local breeds (Dubeuf and Boyazoglu, 2009).

Selection of goats is nearly limited to dairy goats in Europe and America with the exception of the case of the Boer breed with well organized selection schemes in South Africa or China. The initiatives are mainly to characterize meat goat breeds than really improving the breeds (case of Atlas goat in Morocco, Indian goat breeds, etc.). For this reason, organizing breeding centers seems to be very premature but a special effort has to be done to improve the breeding management and local selection within the herds.

Very often, and especially in mixed-sex herds, all the animals are together without separating male from female kids, thus with no control on ascendance as male kids are not castrated). One objective within development projects would be to develop extension education materials/courses on herd management. A minimum size of the herds would be necessary to properly manage selection. In addition, there is

generally little preparation before mating (e.g. flushing) and reproduction is not organized regarding the market expectations.

Furthermore, more acute than for dairy goats, the lack of veterinary services and vaccination is a high cause of low productivity and mortality.

### **11 Goat meat oriented production systems**

The herd size is generally larger than for dairy goats and it seems that the gender aspects are lower than for dairy goats. The herds are often held by men with the support of women and children, as in it has been seen in Morocco or Senegal (see the Knowledge Harvesting form about these two situations). The production systems are often pastoral and agro-pastoralism because they are well adapted to meat goat production. Pastoralism needs less input and less infrastructure is needed for goat meat.

One difficulty is that in many pastoral situations the herds are composed of cattle, sheep, camels and goats, thus increasing the level of difficulty to improve their management.

Mixed crop-livestock systems would ease the use of crop residues and by-products to complement the animals.

Innovations (e.g. mineral supplementation, complementation before mating, fattening the kids before slaughtering) will have to be shared with farmers and new techniques (pasture calendars, management practices) associated with local know-how. Extension services and grazing regulations would require the involvement of public authorities. However, intensified production systems would generally not be dedicated to meat goat production.

### **12 Characteristics of the goat mohair, cashmere and skins commodities**

#### **12.1 The mohair and cashmere markets**

The fiber goat sector consists mainly of two different products, Angora Mohair wool and Cashmere hair plus the goat skins. Information on this sector is still scarcer than for other commodities.

##### **The cashmere sector:**

During the last 10 years, the cashmere industry developed very quickly (Dubeuf et al., 2004) mainly in China (2/3 of the total production) but also in Mongolia, Central Asia Republics of the Ex-USSR. In China, Wuhai, a town has been developed to house the workers of the cashmere industry and goat farming for cashmere leads to overgrazing in the pastoral areas of Central China. The cashmere industry is considered a major contributor to climate change, drought in Central China and the always increasing sand winds in the Beijing region.

Due to the strong demand, there are development opportunities for even poor farmers but the major issue is to separate high quality fibers from medium or low quality ones to sell them at a better price. Another issue is to organize farmers' associations so that they could negotiate with international traders or intermediaries for the international markets. Here again, the functions of public authorities are key factors to succeed.

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### **The mohair sector:**

50 % of the total production of Mohair is produced in South Africa for a small number of buyers (the biggest is in the UK). The opportunities to develop mohair production are limited for small goat keepers for the international market. Some local niche markets related to the development of tourism could be explored (see the example of Argentina) where such a production has always been present.

### **Goat skin:**

The goat skin sector is not very developed but goat skin could be an interesting complementary resource when there are industries ready to invest and develop this growing market to produce generally high quality leather. In the last years in India (that is one of the major producers) goat skin production has significantly increased due to an investment policy promoted by the Government

## **12.2 Genetic selection, herd management and production systems**

The issues for goat fiber are very close to those of goat meat (and very often) fiber is sold with meat.

The main issues are:

- Pasture management to avoid over grazing (see the "Goat law" to manage the common pastures in the Knowledge Harvesting report on the Neuquen Criollo Goat, Argentina),
- Feedstuff, vitamin and mineral complementation to improve the fiber quality and productivity of the animals,
- Use of selected animals. Angora goat breeds are among the improved goat breeds with breed herd books in USA, Australia, South Africa or China. Incorporation of improved angora blood should always be considered very carefully before any crossing with local breeds (see the case of Tajikistan) and to ascertain it will not affect the other products,
- Control of reproduction to improve the planning of kidding.

*Goat development as a tool for  
poverty alleviation  
an IFAD perspective*

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**Antonio Rota, Senior Technical Adviser, Policy and Technical  
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### Goat development as a tool for poverty alleviation: an IFAD perspective

**Antonio Rota, Senior Technical Adviser, Livestock and Farming systems, IFAD, Rome, Italy**

Global human population is rapidly growing, creating a significant and increasing demand for food derived from animal protein. The livestock sub-sector accounts for 30 % of the agricultural Gross Domestic Product (GDP) in developing countries and grows faster than most other agricultural sub-sectors. It is fundamental to the livelihoods of about one billion of the world's poorest inhabitants. Small livestock in particular, is vital for the livelihood of many rural resource-poor farmers often being the only asset they possess. Sheep and goats, poultry, pigs, rabbits, etc. significantly contribute to improving human nutrition, providing food with high quality nutrients and micronutrients; generate small income and savings, especially for women, enhancing the capacity to cope with shocks and reducing economic vulnerability (e.g. for HIV/AIDS affected households), and in times of crises (i.e. droughts, floods, conflicts), play an important role as 'mobile' food asset. Finally, small livestock are often the "sacrificial" animal during religious festivals and social ceremonies.

IFAD has recognized the importance of investing in small livestock development as a tool for poverty alleviation and various development projects include components focussing on improving goat production. The main reasons for investing in the rearing of this species are:

- Goats are often the animal of the resource-poor rural households and goat keeping proved to be instrumental in achieving the Millennium Development Goals (MDG) (see above issues related to nutrition and income generation).
- The diversity of goat production: meat, milk, skin, quality fibres (e.g. mohair and cashmere) and manure, coupled with the opportunity to add value to such products at household or cottage level.
- The capacity of goats to adapt and cope with different environmental and climatic conditions. In particular, goats can be productive in arid and semi-arid areas characterized by extended dry lands or rangelands, located in deserts, savannahs, highlands or mountainous areas where other livestock species cannot survive.
- The rather significant and quick return in financial and non-financial terms of a relatively low investment per project's "beneficiary". Moreover, the practice of bartering 6-8 goats against one head of dairy cattle is quite frequent, allowing rural farmers to: (i) climb the "development ladder" in socio-economic terms and (ii) mitigate risks (e.g. insurance against crop failures) and diversify/enhance mixed crop-livestock production systems.

IFAD has several on-going projects supporting goat development characterized by two defined approaches: 1. Supporting resource-poor farmers in improving the productivity of their goat herds through "appropriate" and targeted interventions such as vaccination (e.g. against Peste des Petit Ruminants - PPR) and deworming, improved nutrition, better access to water, good quality breeding stock and better

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sheltering of animals; and 2. Value chain development projects of goat products (see above) aiming at facilitating associated small producers and “market makers” (e.g. traders) to better access services (credit, vet services, inputs, etc.) and markets. It is quite impressive to observe that despite the socio-economic and cultural differences among various countries and regions of the developing world, the key constraints (but also opportunities) for resource-poor farmers keeping goats (and livestock in general) are essentially the same:

- inadequate nutrition and feeding management,
- high mortality due to diseases (especially in young stock) and no access to veterinary services,
- low genetic potential and lack of access to quality breeding stock,
- lack of adequate sheltering and watering facilities,
- limited market outlets and processing facilities for livestock and their products, and
- lack of incentives to produce quality animals or increase off-take from overused pastures.

After decades of investments in development projects aiming at alleviating poverty by enhancing goat production systems, several “lessons learnt” and “good practices” have been documented (e.g. <http://sappjpp.org/thematicfocus/small-ruminant-rearing>). Development projects adopting such lessons learnt and good practices have demonstrated their effectiveness in securing more food and income for pastoralists and rural households. With the support of national and international institutions, IFAD felt that it was important to further document (“Knowledge Harvesting”) models and practices that “work” on goat production development and share such knowledge with decision makers and project designers. In a general situation where development aid is shrinking because of the global financial crisis, it is rather discouraging to see that some projects are still designed proposing approaches and models that have demonstrated of being ineffective and not addressing the real needs and constraints of resource-poor producers but rather transferring unsustainable “one size fits all” approaches, technologies and models that may work under different conditions. In some worst case scenarios, funding opportunities are not seized because of the lack of data, appropriate information and field-evidences of the effectiveness of goat development as a tool for poverty alleviation.

There are a number of stakeholders involved in the development of the goat sub-sector at national and/or regional levels such as government institutions, the private sector (from traders to input suppliers, from processors/butchers to financial institutions and business centres), national and international development agencies (including NGOs), etc. Unfortunately, often there is not a common sector development strategy among the main stakeholders to reach a systematic and integrated plan of investments. As a consequence, each actor pursues its own agenda with very little sharing with other relevant players in view of a collaborative effort. This leads to duplication of efforts and ultimately limited impact being achieved. If international donors wish to make a real impact on poverty reduction to contribute to achieving the MDGs, it is necessary to switch from such an unarticulated approach to a coordinated effort within a country or region leading to large investments with a broader programmatic approach and covering various aspects of goat value chain development (e.g. CGIAR’s innovative platform approach for goat development: <http://www.icrisat.org/locations/esa/esa-publications/Innovation-platform.pdf>) with an

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appropriate implementing period. Such investment programmes should be well phased, involve regular participatory monitoring and evaluation of undertaken actions by involved stakeholders, promote holistic approaches and facilitate the development of an enabling framework as follows:

- Raising awareness of decision-makers in national governments and donor agencies about the effectiveness of goat development (or more broadly, small livestock development) as a tool for poverty reduction and building their capacity to develop effective policies, incentives and development programmes,
- Developing and enforcing consistent national pro-poor policies, which are crucial to capitalise on the opportunities offered by the increasing demand for meat (and livestock products in general),
- Including smallholder livestock development in the curriculum of technical education institutions to train a new generation of advisors/researchers,
- Supporting the creation of livestock farmers institutions that can help their members to voice their needs and facilitate the provision of services and inputs to the farming communities, especially farmers' access to appropriate extension and technical support services,
- Funding participatory adaptive research to identify appropriate technologies/models that are pro-poor, sustainable, economically viable and environmentally sound (this includes sharing knowledge generated by farmers),
- Identifying market-led approaches supported by effective, accessible, qualitative services (breeding, veterinary services, credit, processing, marketing, extension, training, etc.) and infrastructure,
- Implementing effective smallholder livestock development activities with potential to generate further knowledge and data, capitalize on relevant learning generated and facilitate up-scaling of appropriate innovations in other projects,
- Supporting knowledge sharing platforms and networks through which innovative "field tested" technologies, good practices and lessons learnt are made available, and where new knowledge and mutual learning through peer-to-peer exchange are promoted.

# Objectives of the study and methodology

*All quoted references have been reported in "Additional resources" at the end of the report of the study*

## 1. General presentation: the several steps for implementing the study

The IGA/IFAD small grant agreement regarding the implementation of the "Scaling-Up Successful Practices on Sustainable Pro-Poor Small Ruminant Development Projects" study was signed in July 2011. All phases had to be realized between this date and December 31st, 2012.

During these 16 months, the following activities were carried out:

- Constitution of the steering and referee committees,
- Constitution of documentary references,
- Choice of the studied cases,
- Implementation of the Knowledge Harvesting process for each case: 6 field missions<sup>1</sup>, 2 expert consultancies<sup>2</sup>, and 2 expert reports<sup>3</sup>
- Organization of 2 steering committee meetings: the first one in Rome in June 2012, the second one in Las Palmas, Gran Canaria, Spain, September 25, 2012,
- Organization of a seminar during the XI International Conference on Goats in Las Palmas, Gran Canaria, Spain, September 25, 2012,
- Business planning and cost-benefits analysis by Dr. Dino Francescutti, FAO expert, FAO, Investment Center,
- Organization of a write shop with Heifer Project International experts to undertake a Goat Value Chain toolkit.

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1 Brazil, Turkey, Rajasthan, Senegal, Morocco, Nepal

2 Latin America and Morocco

3 For Tajikistan and Kenya

### **2. Objectives and methodology of the IFAD/IGA study: presentation of the studied cases; mapping development projects on goats and scalability of the success factors; a business planning approach based on value chain analysis and livelihood expectations**

#### **2.1. General objectives of the IGA/IFAD study**

The focus of the agreement between IGA and IFAD was directed to the following specific objectives:

- Undertaking a global Knowledge Harvesting®<sup>4</sup> on resource-poor small ruminant farming systems that were effective in reducing poverty according to MDGs criteria so that others can apply this know-how,
- Based on the harvested knowledge, develop a business-like approach to prioritize processes/strategies and sensitize national policy, decision makers and donors about the effectiveness of small ruminants' development to reduce poverty.

#### **2.2. Mapping of goat development projects and approaches and scalability of the success factors; a business planning approach based on value chain analysis and livelihood expectations**

This document has been based on the information collected in these projects. We have begun by presenting the relation between the development of goat activities and poverty reduction through the general issues of livestock. Then, general considerations on goat production systems and commodities for goat sectors worldwide have been introduced. The characteristics of the goat production systems and commodities for goat sectors worldwide have been then presented. In a last part, we have formulated proposals to build business plans for pro-poor development projects involving goats.

Many publications and reports have given an overview of the main factors to consider and the methodology to build, implement and evaluate a development project in agriculture (Dufumier, 2000). A development project in agriculture is always a set of more or less coordinated actions to reach one or several objectives.

By using the global Knowledge Harvesting on resource-poor small ruminant farming systems and the several studied cases above, the main successful strategies have been identified to sensitize the decision makers and donors on how to invest in goats to effectively reduce poverty through small ruminant development.

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<sup>4</sup> Knowledge Harvesting® is a rigorous, results-driven process for bringing out and transferring tacit and technical knowledge. With facilitated conversations between diverse participants, it captures knowledge and, through a built-in process, brokers what was learned converting the know-how into knowledge assets that can be used to dramatically improve effectiveness, efficiency and relevance of poverty reduction projects.

### 2.3 Analysis of the Initial situation; the SWOT approach

For each case studied, the initial situation has been analyzed by answering the following questions:

- Who is at the origin of the initiative? In general, a collective development project is initiated more or less formally by the governmental or regional bodies or municipalities but also by private donors, foundations, cooperation agencies or NGO's. What will be the consequences of this identification?
- What is the initial economic, social situation and what are the possible alternatives?
- What is the problem and what are the objectives to be reached? Without too many details, the problems have nevertheless to be clearly identified.
- What is the diversity within the area? Mean values are not sufficient to evaluate a situation
- Will the project be integrated in a regional or national policy or not and how? Is the activity integrated in the local economy and at what extent?

For each case, a SWOT analysis has been implemented to formalize the initial situations. It has enabled the specification of the internal strong and weak points and the external opportunities and threats.

This first step allowed the characterization of each key element and particularly the main constraints of power or culture as the relationship between stake holders.

### 2.4 The value chain analysis and livelihood approach

Poverty alleviation and development are generally linked with the practice of micro and small enterprises (MSE) development. It is particularly the case for goat activities. Market systems and organization are generally extremely weak and focusing on value chain development is highly challenging. Goat activities have often little access to markets, whether at the local, regional, national, or international levels. It means that goat keepers and enterprises require access to quality input supplies, technology, finance, and market information. We defined a value chain as one or several products (milk, meat, fibers, manure), reaching the end users (the farmer himself – if auto consumption - the villagers, the local markets, international markets, etc.). The question is “how to identify which value chain, what combined inputs provide the best market opportunity for the largest number of MSE's”.

To identify competitive and successful value chains, the following elements were considered:

- Access to resources,
- End market opportunities,
- National, regional, global environment,

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- Inter actors cooperation,
- Infrastructures (transportation, storage, slaughtering, power, processing, etc.),
- Access to farm upgrading: technical and market information and technology.

In most cases as seen in the several significant situations studied, the goat farm performances are constrained by:

- Limited resources (feed, genetics, skills and capital) and high production risks,
- High transaction costs,
- Little access to technological or market information and isolation.

The value chain analysis must be combined with a livelihood approach, also considering:

- What are the household expectations (food security, wealth accumulation, risk avoidance, food sales, etc.)?
- Which technology the households choose (traditional versus modern), is it available, suitable and does it work?
- What are the technical versus economic issues?

### 2.5 Presentation of the studied cases

For each case, we used the same approach to implement the Knowledge Harvesting process:

- General social and economic elements of each local situation
- Presentation of the goat sector in the region and/or the country
- The pro-poor projects on goats in the area
- The main actors and stakeholders involved and the actors' system
- A SWOT analysis on goat projects in the studied areas and main issues.

Each case was documented by local experts involved in each project, by written documentation and improved by interviews, field visits and collective meetings when possible. The discussion within the steering committee was a part of the Knowledge Harvesting process.

The several cases were located in the following countries:

- Argentina – Neuquen Province (presented by Luis Iniguez, ex- ICARDA and ex FAO expert),
- Brazil – North Eastern projects (presented by Vinicius Pereira Guimaraes, EMBRAPA with Jean-Paul Dubeuf, INRA for the comparative analysis during a field visit),
- India – Rajasthan (imGoats projects presented by Ramkumar Bendapudi, ILRI, with Jean-Paul

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Dubeuf, INRA for the comparative analysis during a field visit; HPI projects presented by Dilip Bhandari and Abhinav Gaurav, HPI),

- Kenya – Meru Central and South Districts (FARM Africa projects presented by Christie Peacock, SIDAI and ex- Farm Africa),
- Mexico – Comarca Lagunera (presented by Luis Iniguez, ex- ICARDA and ex FAO expert),
- Nepal – HPI projects in Nepal; goat value chain in Nepal,
- Morocco – Argane tree area Essaouira Agadir (a study by Abdelilah Arraba, Abdelaali El Hadi - IAV Hassan II Morocco, Nicolas Lacombe, Jean-Paul Dubeuf ,INRA France),
- Senegal - Gan Africa and Tragsa NW project (presented by Juan Capote, ICIA, project coordinator , and Jean-Paul Dubeuf, INRA, ),
- Tajikistan - Sugd, and Gorno-Badakhshan, projects (presented by Barbara Richkowsky, ICARDA ),
- Turkey –Turkey Kilis and Sarikeçili nomadic tribe projects (presented by Irfan Daskiran, Ministry of Agriculture and Nazan Koluman, Professor, University of Adana,
- Venezuela – Lara and Falcon areas (presented by Luis Iniguez, ex- ICARDA and ex FAO expert).

Some other cases were considered on specific points analyzed through bibliography (Cabo Verde and Java, Indonesia) or as parts of more general projects (Jarkhland in India and Mozambique imGoats projects). The several studied projects and cases give a large and significant range of the existing situations.

The general localization of the studied cases is presented on the map below:

Map 1 – localization of the several cases





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### I. The development of goats and poverty reduction: Economic and political perspectives regarding general issues on livestock sector

#### a. What small holders to focus on for reducing poverty by livestock development?

The small scale farmers are more and more often considered as an opportunity for the problems faced by livestock activities (18). FAO and World Bank have discussed the conditions for pro-poor livestock sector development in a recent report (5). These conditions are general and have to be discussed and applied for each sector. They underline that market oriented livestock production could be engaged with small holders but more easily by “upper” smallholder livestock keepers – who have the minimum asset base for engaging sustainably in market oriented livestock production, rather than focusing on marginal livestock keepers, who have insufficient assets to produce a regular surplus from their livestock.

The main issue is that increased labor productivity is essential for linking smallholder production to poverty reduction and requires minimum farm/herd sizes, some investment in mechanization, and diversification into higher-value products. But instable food prices with higher margins for marketing than for production encourage poor producers to prioritize staple food production for own consumption before diversifying into higher-value commodities for sale (22). Increasing smallholder productivity involves the development of supply chains that would serve small-scale farmers and provide them with the necessary links to suppliers and consumers (23). The need to organize better the herd management is not limited to market oriented project but also to improve self sufficiency and local consumption.

The goat sector is less structured than other livestock activities and very often the herds have few heads. The herd size will se reports suggest to define a minimum herd size before implementing a project (between 20 to 50 according to the area). In the case of communities where the collective approach is strong, it could be defined at the village level (for instance village herds of more than 200 heads).

#### b. In what rural areas promote livestock and goats?

The rural areas can be categorized as “peri-urban”, “middle countryside” and “remote”. We have not studied peri-urban cases because goats are not really adapted to these situations. It has been underlined that poverty incidence tends to be highest in sparsely populated remote areas. But the proven development strategies other than outright transfers are very scarce, they are often very costly what poor countries can ill afford. Does it mean that these remote areas must be abandoned and their population condemned to emigration in already overpopulated areas? The pastoral systems are generally present in these remote areas facing often drought and climate changing where the goats can be an opportunity if the projects could gather people in sustainably acceptable villages near the main roads. The questions about the resilience of these pastoral systems keep very pregnant. Policy emphasis here should be directed to reducing vulnerability, for example by protecting livestock assets.

The majority of the rural poor people live in the middle countryside where the numbers of poor people are usually much higher and not very far from urban areas/small towns. This evidence suggests that a strategy for poverty reduction should be built on urban-rural growth linkages and promoting market access incrementally, radiating outwards from urban areas into the middle countryside.

- c. What development strategies and investment to promote?

To reinvest in agriculture

The FAO report on poverty underlines that “a key challenge to the development of agriculture in areas dominated by smallholder farmers is the establishment of coordination systems involving combinations of government agencies, civil society, farmers’ and other professional organizations, and agribusiness firms. The prevailing policy paradigms in developing countries, where a systematic bias towards industrialization and concentration favors large- over small-scale operators; and the under provision of local public goods and services, the consequences of which affect the poor disproportionately.”

These comments suggest that a main danger of the public policies (to answer the global need of food) would be to encourage investment on productivity that would favor more the more wealthy actors than the small holders. Besides when market mechanisms fail to deliver private initiatives, agency and public leadership are needed, in particular to favor priming investments. In many cases although public services are often in bad conditions, they are the only one that could really impulse development in cooperation with local agencies to secure risks and create confidence. As agriculture and animal production are highly risky activities, some experimental projects, with modest but targeted interventions, and continuous learning from the results are more likely to lead to the desired outcome of poverty eradication. Investment in extension services and collective capacity is in all cases a key factor. A good example is why many technologies to increase the nutritive value of straws for feeding ruminants, especially urea-ammonia treatment failed to be adopted by farmers. The major reasons, identified during an @-Conference organized by FAO (19) and also relevant to many of the other technologies were weakness of extension services in developing countries, failure of scientists to involve farmers when developing new technologies and failure to demonstrate convincing benefit/cost ratios.

### Agro-ecology and livestock for poverty reduction

More and more economists such as Tim Jackson have enhanced the limits of the global world wide present development model of economy including Agriculture (14). They emphasize that new paradigms are necessary to find the way of a new prosperity in Agriculture. United Nations through the “Olivier de Schutter Special report on the right to food” (13) has estimated that this investment has to be made mainly through agro – ecology and ecological intensification. Many people still think that agro ecological agriculture cannot be competitive with the “modern” agriculture using high inputs and techniques based on a large use of chemical fertilizers, selected plants, development of mechanization<sup>5</sup>. But agro ecology is not seen here as a marginal mode of agricultural development but a real other necessary structural orientation which has proven results for fast progress in productivity as well as in the concretization of this human right for food for many vulnerable groups in various countries and environments.

In other words agro ecology is not only fully compatible with the fight against poverty but is also an answer to the environmental problems and climate changing one of the main MDG goals and challenges the world has to face. And it is the most adapted for poor families.

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5 With the well known successes during the “Green Revolution” but also with many negative social and environmental externalities

## OBJECTIVES AND METHODOLOGY

Agro ecology promotes an integrated management of nutrients with an important utilization of human labor and less external high energy inputs. Its priorities are:

- 1- Investments in public goods
- 2- Investment in knowledge and training
- 3- Investment to increase productivity by valorizing labor forces
- 4- Social cohesion by co –building of solution rather than by only “participation”
- 5- Make the farms more autonomous at several levels what means smaller family farms,
- 6- Organizing the markets.

All these points are clearly linked to the objective of ecological intensification based on a trend alternative to agriculture based on mechanization, use of fossil energy and artificial conditions of production by manufactured inputs (mineral fertilizers, feed stuffs), and use of highly productive selected breeds

The priority is to foster families to reach more economical independency through « a sustainable management of fertility (thanks to complementarities between agriculture and animal production), more resilience to develop the capacity to resist hazards, and use of more adapted resources like legumes and by-products.

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The empowerment of local farmers is a major issue of agro-ecology and that it is perfectly convergent with the objectives to fight poverty. In other words, it is the only way to fight poverty in a sustainable way. Goats and small ruminants would be in many cases well adapted to answer these issues.

For instance, pastoral systems are a major issue and a major complex problem for development (12). Correctly managed, without overgrazing, pastoralism and pastures on rangelands can improve soil fertility, preserve biodiversity in forest plantation, sink carbon in improved savannahs. But by lack of local governance, control and services, we observe often overgrazing that could favor soil erosion compacting and loss of nutrients. To manage these questions, the public institutions, financial bodies (although often in weak situations) must become also learning spaces and exceed their routines to think strategically the way to improve globally a situation. In other words, although it is often suggested that conditions to maintain pastoralism are too difficult, any answer has to analyze carefully the local situation. This approach can be extended to other types of systems.

We have to be aware that in many ways agro-ecological innovation and ecological Intensification are a systemic and rather revolutionary way of thinking that can disturb the representations and the technical models of many actors including many scientists and technicians<sup>6</sup>.

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6 The concept of “lock in” (16) has been introduced to explain why several actors keep on supporting a model although many evidence show it is no more efficient and has many negative externalities.

### II. General considerations on goat production systems and commodities for goat sectors all around the world

- a. Goat production systems are generally multipurpose systems with still few connections to the organized markets.

The goat sectors have not followed the same ways of development and specialization than the other animal productions (like cattle, poultry, pig, etc...). Goat activities have been largely excluded until now from organized markets. To face new development issues, this reality could be an advantage.

Goat production systems were mainly multi-purposes systems oriented on milk and meat and in some special areas (as Central Western Asia or China) on meat, milk, fiber and skin (India) (10, 11.).

The goat development projects take in account generally these multifunctional characteristics; multi-functionality is largely specific to SR systems and make them well adapted to agro-ecological orientations. Strategic options to improve small ruminant are mainly not related to one commodity and must prioritize on social capital and the access to services (training or Veterinary Services and vaccination) (15). The low level of specialization was seen as a weakness but it could be also as strength for rural development in the sense that the pro-poor rural development projects have to take in account all the global production system with a balanced integration of animal production and agriculture.

But many solutions are also related to the special constraints of each commodity (without promoting specialization as the way of development). It is the reason why it seems logical to analyze the situation of each commodity specifically. The analysis will be based on the diversity and converging points of the compared cases met all over the world. To analyze separately each commodity is not opposite to keeping these multipurpose characteristics.

- b. A still depreciated image of the goat activities by the several stake holders

One other important characteristic is related to the representation of the several stake – holders regarding goats. Although the situation is slightly changing, goat activities are still largely not seen as socially and economically valorizing the related populations.

In other words, there is still a threat that the goat projects would keep people in their lower social situation due to this image. For the breeders themselves, goats could be seen as a transitory activity before a more attractive reconversion. Even in the successful case studied, as in Brazil, people met think that the goat keepers would choose another activity if they would have the choice and would prefer to train their children on other activities. To change this vision is also a major issue and there are some examples in developed countries that have shown it is possible. In Provence in France, an old pastoral Mediterranean region, many graduated new goat keepers have developed farm made goat cheeses and have radically changed the perception of the activity by the Society.

The role of goats to support poor people would need to avoid any simplification or pre-defined idea. At the territorial levels, statistics are often scarce and too global values for indicators (means) do not give an exact view of the diversity of situations. For instance, bibliography gives clear assessments on these points :

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- a. Yes, goats are well adapted in arid areas; the investment to develop goat production is lower than cattle but the social, economical local conditions are not always filled to develop it and make it a way to fight poverty
- b. Yes, the market conditions are an important factor to decide implementing goat projects or not but an open minded approach of the market is necessary (including auto-consumption, social governmental distribution, etc.)
- c. Yes, the objectives of the project have to be defined according to the initial situation (in terms of education, infrastructure,...), funding invested and returns expected but time is always needed to get sustainable results.
- d. Yes, the public services in the area are an important factor of success but informal economy and local organization have a role to play
- e. Yes, developing technical improvement is important but not always the solution to solve the problems that could be linked more to political, administrative, cultural or economical aspects.
- f. Yes, projects can focus simultaneously on several objectives and it can be relevant but too many co-objectives could be not efficient (for instance, gender conditions and market structuring and productivity...)

The present development of goat farming is related more generally on the growing demand for animal products in emerging countries and to the increase of individual incomes for a larger part of the population.

There are other consequences of these representations. The public authorities are generally on a very similar position and it is very difficult to convince them to invest on goats for instance on extension services, training, etc... When the demand on SR products is high (as it is the case in Turkey with sheep and goat cheeses), the public authorities prefer generally to support rather wealthy investors to develop intensive well structured production systems and cheese making units rather than on the organization of poor rural populations. The projects could be so often short terms ones with few sustainability or impact.

Therefore, the goat oriented projects must participate in re qualify professionally goat production, favor the empowerment of rural populations and produce a true long term Social Capital (organization of Associations, training Centers and extension) supporting and supported by the development of infrastructures (water infrastructures, roads, access to energy, Information and Communication Technologies, slaughter houses, local dairy processing units, creation of breeding Centers) as sum up in the following table.