Sustainable Agriculture Enterprise:
Framing Strategies to Support
Smallholder Inclusive Value Chains for
Rural Poverty Alleviation

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Abstract

This research explores the determinants of sustainable agriculture value chains in the context of international development cooperation. It focuses on the hypothesis that smallholder participation in agricultural value chains can provide a meaningful approach to poverty reduction and rural development. In such a context of agri-business chains, smallholders can contribute by implementing sustainable farming practices and, through organized collective action, also take part in the post-harvest agri-business activities downstream. In particular, the research analyzes the institutional conditions, business models and governance mechanisms with which small scale farmers can be facilitated in performing as agents in a system that fully recognizes the multi-functional role of agriculture: by adopting sustainable agricultural practices, smallholders join in an agriculture enterprise that responds simultaneously to poverty reduction, agri-food market and ecosystem services agendas. After briefly framing the principles of a sustainable agriculture paradigm and contextualizing it within the emerging field of sustainability science (section 2), a brief literature review focuses on some of the main issues and challenges faced in agricultural development that is both inclusive of smallholders and attentive to natural resource management (section 3). An analysis of value chain business models and governance mechanisms from case study reviews follows as a core part of the paper (section 4). A conceptual framework inspired by a post-positivist science paradigm, grounded in a multi-dimensional analytical approach is introduced and leads to a classification of the chain governance arrangements that emerges from empirical evidence. A synthesis is proposed highlighting the salient features of the business models and associated governance arrangements, as well as the risk dynamics and constraints of market linkages for small farmers and their organizations. The conclusions (section 5) point to the opportunities to mediate among contrasting objectives for a growth cum equity outcome and to the policy strategies that the engaged stakeholders (donors, national governments, private sector) could use in order to reconcile the multiple dimensions of sustainable agriculture.

Keywords: sustainable agriculture, agricultural policy, smallholder farming, agri-business value chains, social entrepreneurship

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Daniele Guidi was a Giorgio Ruffolo Mid Career Fellow in Sustainability Science in 2010-2011. His research explores the determinants of successful sustainable agriculture value chains and develops case studies of promising models of smallholder owned agro-enterprise, drawing from previous field experience in Brazil and new investigations in Africa and in India. Recent research interests include the linkages between sustainability and social investment, pro-poor finance, and the role of renewable energies in rural income generating activities. In 2000, he founded his own environment and development consulting firm, Ecosolutions. As a development consultant and researcher, he has served institutional donor/lenders (EC, FAO, IFAD, ILO, SIDA) and the private sector, mainly focusing on agriculture and rural development, microfinance, renewable energy technologies, micro-enterprise support, and climate change. In 2004, he began collaborating with LaGuardia Foundation, an international development non-profit, and participated in the experimentation of an innovative sustainability approach, based on stimulating sustainable agriculture practices, tapping into indigenous human and natural resources and blending them with exogenous business management, scientific and technological know-how in poverty reduction frameworks.

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EXECUTIVE SUMMARY

This paper argues that sustainability in agriculture, in the context of developing country economies, could be permeated by a driving principle of the Multi-functional Role of Agriculture: the recognition that farming systems do carry the potential for delivering environmental and socio-cultural benefits, including ecosystem service and rural livelihood enhancement, in addition to providing the base of food and other primary commodities production. The research hypothesis is that intervention in support of smallholder participation in agricultural value chains can simultaneously provide a meaningful approach to poverty reduction, environmental stewardship and efficient primary production. In such a chain context, smallholders can contribute by implementing sustainable farming practices and, through collective action, take part in the post-harvest agri-business activities downstream. In particular, the research analyzes the institutional conditions, business models and governance mechanisms with which small scale farmers and their organizations can be facilitated in performing as agents along the chain.

Framing a Sustainable Agriculture Paradigm

As a multifunctional agriculture perspective is embraced, the theme of looking at the institutional arrangements that enable smallholders to link to markets becomes more pregnant of public policy value due to two elements: a) the joint production notion includes an implicit recognition that their activity will influence other sectors (environmental, cultural social fabric, health, etc.); and b) both agriculture and the other interactive sectors are characterized by public goods and/or by the presence of externalities that need to be managed. With the multi-functionality paradigm, farming is conceived as a component of a larger primary production system, inter-linked with complex human-environment systems, and capable of delivering on the different pillars of sustainability. Smallholder farmers, in many instances, testify to their ability to be naturally inclined agents of multi-functionality. Obviously, such ability is largely reduced in all instances in which small farmers are severely constrained by poverty challenges. Under the threat of their livelihood, small farmers are faced with no other option but adopting coping strategies: natural shock such as extreme weather events, uncertainty of property rights of their land, land scarcity that leads to deforestation, or lack of access to inputs and capital which could translate into overexploitation of local natural resources are all examples of factors that are adverse to a symbiotic relation between smallholder farming and the local agro-ecosystem. The question is what type of poverty reduction intervention can promote and sustain a healthy agriculture and rural development that would allow smallholders to secure a rural livelihood while maintaining the local social fabric and their contribution to natural resources balance. Attempting to answer such a question is a challenge that requires the adoption of a pluralistic approach to the issues at stake, one that goes beyond the positivist science paradigm (Pretty, 1995). Recent donor attention has been placed on value chain approaches to rural development. As a consequence, the unit of analysis is no longer the farming activity per se, but rather the system of dynamics of the whole production and commercialization chains. This paradigmatic shift in analytical frameworks is accompanied by a tendency to enlarge the scope of agricultural development intervention from supply driven approaches, to also include demand pull approaches. These changes seem conducive to identify opportunities for improving the environmental and equity profile and competitiveness beyond the farm gates, at a systemic level. At the same time, given that market demand becomes an increasingly important driver, there is an opportunity for enhancing the capability of the policy-maker to anticipate

\[1\] While some scholars identify value chain approaches with interventions linking farmers specifically to high value markets for export or quality urban outlets, the term is used here in its broadest definition of creating any kind of sustained outlet for the agricultural output of small farmers, beyond the one time, “spot market” transaction that can take place when a trader shows up at the farm gate. Value chain is thus a systemic conceptual framework which identifies a network of diverse institutions, including market actors, civic society and public bodies, with functional relationships and incentive mechanisms geared to cooperating for the delivery of goods and services (market goods but also public goods).
the market trends, interpret their implications on the coupled human-environment systems, and promote institutional frameworks and strategies that reconcile the various multi-functionality objectives and reduce potential trade-offs among them.

**Issues and Myths of Smallholder Participation in Market Value Chains**

A conventional definition of smallholders as farmers with less than 2 hectare plots allows the estimation of the phenomenon of small farms at over 525 million (IFPRI, 2005) globally, hosting approximately 2 billion people (Hazell, 2011). Smallholder farming is a phenomenon characterized by a wide spectrum of conditions across the rural developing world. Beyond the differing farm sizes, the heterogeneity is also apparent in a) farming attitude (subsistence, commercial), b) existing land tenure regime, and c) the presence or absence of other non-agricultural income and employment sources for the smallholder family members. In addition, all these factors of diversity are dynamic, making smallholder farming a landscape in continuous evolution. At any point in time, across the continuum, small farms can be commercially oriented and run as a small business which provides the primary (if not the sole) household income, or partially cultivated as a secondary source of family income, or for most poor rural people, the only source of subsistence and food security. Smallholders have an ample spectrum of potential market targets: they can be the local staple outlets, or traditional cash crops markets, or non traditional high value crops for domestic or export market channels. The globalization and liberalization of food trade produced a shift towards consumer-driven markets. This trend imposes the challenge of adaptation to new production standards, grades, quality and food safety regulations to smallholders trying to link to higher value markets. This section of the paper investigates some of the agriculture development issues and myths which are particularly relevant to the question of the participation of smallholders to market value chains, as follows:

**Land Tenure Uncertainty Issues**

The weakness of land tenure regimes can be singled out as one of the main causes of inefficient land use and environmental distress in rural agricultural areas of the developing world. Weak land tenure regimes discourage farmers from committing to investments in market-oriented agricultural systems. Uncertainties of land rights are reported to hinder a long term use perspective by farmers, thus inducing smallholders to both a) refrain from farming investments (labour and physical infrastructure) and b) contribute significantly to the overexploitation of the land and its natural resources (IFAD, 2010).

**Deficits in Rural Infrastructure**

The infrastructure deficits most relevant for agricultural development that typically hinder the participation of smallholder farmers in markets include the network of rural roads, rural energy provision, communication infrastructure (which in turns hinders access to market information), rural finance and insurance services, rural health and education services. In Sub-Saharan Africa, all of these infrastructural deficits are substantially widespread and are among the main factors of the scarce participation of smallholders to commercial agriculture.

**Productivity of Smallholder Farming**

There is ample scholarly debate on the relationship between agricultural productivity and farm size (Brower, 2004; van Der Meer, 2006). Some argue that smallholder farms are in a weak position to compete in modern markets due to their limitations in acquiring the necessary technology, finance and farm management capability to obtain the quality outputs required by commoditized markets. A historical trend of farm land consolidation reinforces this view. However, this trend is not disjointed from a) historical and political distortions due to coercive private or public initiatives of land use, for instance during the colonial era (Lipton, 2005) and b) the presence of significant public subsidy programmes in support of large commercial farms (World Bank, 2009). Others argue that empirical evidence shows an unequivocal inverse ratio between farm size and productivity when sustainable technologies and techniques are adopted (Cornia, 1985). Moreover, this debate is much less salient within a poverty
reduction perspective: smallholder farming has proved to maintain an advantage over agro-industrial approaches with large scale farms on a set of broader grounds (Hazell et al., 2010). Not only do small farms employ poor households as they tend to apply labour-intensive techniques, but their expenditure patterns are also more favourable in promoting demand for goods and services produced in the rural non-farm economy (World Bank, 2009).

**Ecosystem Services of Agricultural Systems**

Agricultural practices can reduce the capacity of agro-ecosystems to supply ecosystems services through several pathways of inefficient natural resources use and the overuse of polluting external inputs. Many current incentive frameworks favour increased agricultural yields at the expense of ecosystems services (Tilman et al., 2002). The challenge lies in identifying and implementing sustainable agriculture practices that are capable of not compromising ecosystems services, while maintaining the productivity required for adequate primary production supply. In any case, there is wider consensus on the fact that soil health and fertility should be considered a major production factor in agriculture, a missing link overlooked in much of the intensive cereal mono-crop farming experience to date. In the rural developing world, small farmers can be drivers or victims of environmental impact, as well as stewards of careful natural resource management. The resource-poor farmers pose the threats of deforestation and desertification of land by implementing farming practices (i.e., slash and burn) that are the result of traditional coping strategies under conditions of high vulnerability. Rural poverty and the land tenure uncertainty issues exacerbate such trends. In many circumstances smallholders must also meet the challenge of adopting farming systems that improve their resilience in the face of climate change events. Some of the small farmers traditional knowledge systems already include such “coping knowledge”, and modernization of farming systems risks to erode it (FSPG, 2008).

**Specialization in Crop Production and Price Fluctuations**

One of the implications of the liberalization of agricultural markets for small farmer access to market linkages is the necessity to adapt to the dynamics of consumer demand driven markets. This implies the necessity of a progressive acquisition of knowledge, information and inputs geared at a specializing in farming certain crops, of a certain grade, and a certain quality. For the smallholders that, independently or with the support of a collective organization, manage to increase their farming specialization to include a few cash crops, providing them with the potential of new skills development and value addition on-farm but at the same time expose themselves to new risks in terms of a) fluctuating agricultural commodity prices and b) production risk, in terms of yield fluctuations, and c) for export crops, increasing exposure to international trade competition and unstable prices.

**R&D in Agriculture, Indigenous Knowledge and Innovation Systems**

Following the structural adjustment policy period, with trade liberalization and the progressive dismantling of state-led agricultural extension and market promotion mechanisms, a dramatic reduction in public R&D and extension services has taken place. Meanwhile, the private sector has expanded its role in leading the industrial agriculture model of intensive farming focused on a few agricultural commodities (mainly cereals and traditional export crops), with R&D geared mainly towards crop yield increase, dependency on the use of agri-chemical inputs, associated with a positivist knowledge system in which farmers are only recipients. Such a standardized production model (and the associated R&D agendas often technology-driven) incorporate the risk of being short of the sophistication required to address the multi-functionality paradigm. It tends to overlook the diversity of the needs of the different agro-ecological systems, as well as the broader consequences in terms of social and distributive goals and environmental impact (FSPG, 2008). Scientific and practitioner consensus is growing on the fact that a more systemic approach needs to be adopted if agriculture R&D is to be genuinely recognized as a development aid tool that addresses the needs of small farmers and their rural communities (IAASTD, 2009). The partnership experience with the NEw RICe for Africa (NERICA) constitutes an emblematic example of participatory R&D and locally driven innovation in the staple food sector (see Text Box 2).
case of local innovation simply rooted in empirically developed know how is the System for Rice Intensification (SRI). The results of an evaluation of SRI methods implemented by over 16,000 small farmers in eight Asian countries indicate that on average small farmers could achieve a 68 % increase in their income, due to the combined effect of yield increases and production cost reductions (Africare, Oxfam America, WWF-ICRISAT, 2010).

The Market Concentration and Value Addition Process
Many countries, especially in Sub-Saharan Africa have to face the reality of an incomplete transition from largely ineffective state-led agricultural development policy frameworks, away from “supply push” models and towards “demand pull” approaches that recognize the new driver of consumer demand, as mediated by the large scale downstream buyers and retailers. The processes of organizational and institutional restructuring needed to accompany this transition constitute a significant challenge for policy makers and market operators (Henson, Cranfield, 2009). There is the emergence of a phenomenon of market concentration, in the input supply industry, in agro-processing and in the retail industry segments. Four firms (Dupont, Monsanto, Syngenta and Limagrain), are reported to control over 50 % of the global seed industry sales (Meijerink et al., 2009). There is also the risk of supermarket chains progressively “crowding out” the informal agricultural markets that needs to be acknowledged and mitigated. If the agri-food market becomes controlled by an oligopoly of players, concerns are raised about the distribution of rents along value chain and the scope of small farmers to increase their share of value added through upgrading strategies. For an efficient value chain dynamic, the distribution of rents has to be correlated with the role played by each actor in the value addition process. Further, for a balanced and equitable value addition process attention must be paid to harnessing the potential for it to happen upstream, at the farming and local processing stages. Here the public sector has the opportunity to take a proactive role in guiding these processes. National governments need to set regulatory frameworks that can enhance agricultural investments, while safeguarding a pluralistic market growth as well as distributional objectives, according to a growth cum equity approach.

The Analysis of Business Models and Governance Arrangements
This core section attempts to elicit a few general characteristics of agri-enterprise value chain models that generally seem to be drivers of good performance in some or all aspects of sustainability. The analysis identifies the boundaries within which such features can be generally viewed as determinants of success or failure in performing a sustainable agriculture business.

Conceptual Framework for the Multi-faceted Analysis
Starting from the underlying multi-functionality of agriculture principle, the conceptual framework for case study analysis draws upon insights of welfare and institutional economics, business management and organization theory. In particular, a poverty reduction dimension is inspired by Sen’s theory of poverty as capabilities deprivation, and the resulting attention given to qualitative aspects of poverty and the multiple dimensions of capital asset endowment in rural livelihoods frameworks. Regarding the economic dimension, the theory of transaction cost economics is valuable to analyze farmer participation behaviour. As small farmers participate in value chains, increasingly conceiving their activity as a business venture, a risk management perspective can be adopted. The notion of transaction costs is thus useful in explaining their decision making options and constraints, in addition to the business decisions of the downstream intermediaries, buyers and retailers. The theory of business management offers valuable insights through two concepts: a) the notion of entrepreneurship of farmers, which has been empirically tested as a relevant factor contributing to rural development and poverty alleviation (Berkes et Al, 2006); b) the notion of competitive advantage both within and outside the value chain, which offers insights into the dynamics of power, value creation, value addition, and information asymmetries in value chain relations. From organization theory, the conceptual framework borrows the notion of organizational fit (Korten, 1980), for which a good systemic performance is dependent on synergies derived from a good blending of
roles, tasks and organizational variables among the collaborating actors. In a rural development context, the corollary of such a notion is that “fit” has to be reached through a learning process, which thus moves away from blueprint planning approaches and adopts a more dynamic, adaptive and error-embracing approach.

A Classification of Sustainable Agriculture Value Chain Approaches
The cases selected for the analysis are inevitably a heterogeneous portfolio of place-based and context specific experiences, reflecting the variety of natural resource endowment, crop, market, technological, cultural and policy conditions in which each experience has taken place. However, they have been selected for their inclination to contribute to the poverty reduction and environmental attributes of the agri-business system, and this allows for a narrowing down process to their institutional and business organization attributes. A classification of cases according to their institutional set up and governance model characteristics aims at identifying common value chain dynamics and the typical constraints that seem to be faced by smallholders, hindering participation and performance, the different degree of such constraints in different food markets, and examples of institutional innovations that shed light on strategies for overcoming such constraints or accepting them as boundaries for a more appropriate positioning in the value chain approach. The emerging features of governance are also functional to investigating possible targeted policy measures in support of virtuous approaches or policy measures which can create disincentives to unsustainable practices and approaches.

Corporate Driven Value Chains
They all exhibit a predominant role of the downstream corporate buyers in shaping the organization of the smallholders market linkage, or in excluding the participation of smallholders in favour of large farms and plantations. Typically the main driver is the paramount need of the buyer to assure a certain volume and quality of supply for either processing or the final consumer markets. In this context, the norms and standards related to quality, volume, consistency and timing of supply become the most important objectives pursued. The adoption of sustainable agriculture practices can be present or absent depending on the farming and crop context, as the environmental profile of the value chain is typically not one of the main drivers, unless the business model explicitly incorporates social corporate responsibility goals and/or intends to supply organic certified retail markets. Two variants worth distinguishing are as follows.

a) Direct Buyer Models. The chain’s anchor actor is typically a large agro-industry, such as a processing corporation or a large specialized supplier of an agricultural commodity. The common institutional arrangements include a network of owned and operated storage facilities, or some kind of advanced logistic systems, local processing or packaging plants, and formalized contract farming agreements.

b) Retailer driven Models. The global retail industry have been redefining the quality, safety and logistical standards that are pre-requisites to establish and consolidate market linkages with suppliers and ultimately with producers. In such a context, the perish-ability of the produce, the fito-sanitary standards, the demand for homogeneity and aesthetic features, together with timely production schedules and tightly planned delivery schedules become crucial requirements, and thus potential entry barriers for small farmers unable to collectively adapt to such new and demanding conditions. In these value chains, small farmers possibilities are dependent on the capacity of their collective organizations to metabolize the technical and management skills needed to meet such standards. Weak farmer organization management and lack of pro-poor intermediation can favour less equitable terms of trade.

Intermediary Driven Models
They are led by heterogeneous public or private sector actors, and accordingly the institutional arrangements can vary. Public agencies and NGOs stimulate value chain approaches for development goals. Private sector intermediaries (i.e., input suppliers, traders, wholesalers) are motivated to supply commercial services. Where it does not exist yet, the public agency or the NGO contributes to the
organization of a collective farmers’ institution. The common denominator, in all intermediary driven models deemed to be sustained, is that the institution facilitating the downstream and upstream linkages performs its function in a way that reduces transaction costs for all value chain participants. The case of NorminCorp in the Philippines (Text Box 3) is exemplary of an intermediation platform that obtained quite a good balance between the needs of professional business and chain management and the developmental goals of small farmers inclusion (with a 25-35 % increase in their profit margin), within a context open to employ sustainable farming practices.

Producer Driven Models
In general, they are such that smallholders are linked to markets through a bottom-up empowerment process which aims at establishing and/or consolidating their collective organization. This can be done more or less formally. A leader farmer, for instance, could take the entrepreneurial responsibility to organize and collect the produce of neighbouring small farmers. In other cases, formal institutions are created to manage the smallholders’ community as a single market operator, such as through the formation of an association of producers or the establishment of an agricultural cooperative. These organizations result in the sharing of fixed costs, economies of scale in the purchase of inputs, and in marketing (Torero, 2011). Exogenous agents (public extension programs or NGOs) can act as facilitators, but eventually have to trigger an endogenous willingness to bring about a sustainable business venture. The case of Kallari cooperative (see Case5, Appendix 1) is emblematic of the importance of such a local entrepreneurial vision and leadership, as well as the Oromia Coffee Farmers Cooperative Union experience (see Text Box 4).

Hybrid network Models
A new way to conceive business development is emerging that essentially focuses on the convergence between a) the natural profit motive of the private sector enterprise and b) the goals and needs of the wider societal and environmental context in which the business will grow and mature. The underpinning idea is that embracing a vision of “shared value” creation by the private sector firm (Kramer, Porter, 2011), in a rural developing world context, can align poverty alleviation and rural welfare enhancement with solid business growth. These new business models, opening to a modality of multi-stakeholder network formation, find an added value formula in forging partnerships between private firms, government agencies, and civil society (Wilson et al., 2009). This collaborative network behavioural choice can stimulate innovation as well as mutually reinforcing feedbacks, therefore supporting sustainable returns on natural, economic and social capital. More balanced combinations of shared objectives in terms of coordination and cooperation in the governance of the value chain allow the participants to create a platform for a) genuine negotiation of the different priorities at stake, b) genuine effort to address the trade-offs and c) proper business acumen to leverage the synergy potentials. Some cases describe value chains clearly initiated by a social entrepreneur, but often times there seems to be either an immediate or progressive dynamic of alliance building, with shared responsibilities and roles, where the “mixed network” of agents can be seen as a whole. It is often the case that some sort of co-ownership arrangement allows small farmers to truly “upgrade” in value chain management and control: one such mechanism is that farmers’ cooperatives become shareholders of local or international marketing or processing corporations. This is the case of the cooperative’s majority shareholders in AgroFair company (see Case 1, Appendix 1) or the full cocoa growers ownership in the Kallari case.

Unpacking the Salient Features of the Business Models
The analysis of cases is geared at unpacking the features of the business models and of their governance mechanism most salient for the management of truly sustainable agricultural value chains. To such aim, the risk and transaction costs dynamics faced by smallholders is considered. Participation in market value chains carries business risks and responsibilities for small farmers. For instance, if the existing economic infrastructure is characterized by a weak rural transport system, this generates a risk of crop quality
deterioration and post-harvest losses, which in turn define a barrier for remote farmers to reach high value urban markets. If they engage in a value chain, they (and the buyers) also face the transaction costs of compliance to contractual terms, as well as the costs of searching for secondary market outlet options. In such a situation, the likelihood of small farmers linking to value chains is quite low, as local spot market transactions allow them to sell crops at the farm gates at no risk, even if the price is less rewarding.

The classification of cases helps to map the strengths and weaknesses of different models with regards to two of the main features of value chains: the chain Cooperation is the attribute that puts emphasis on social and developmental goals and on equitable distribution of value along the chain; Coordination is a notion that prioritizes the entrepreneurial capacity of chain actors in conducting a competitive business activity, without necessarily factoring in distributional issues. The attention is thus shifted to efficient business practice and careful specification of transaction terms. This bi-dimensional synthesis of governance features helps to visualize the plausible strengths and weaknesses of the business models identified in the case studies (see Figure 4).

As smallholders move away from spot transactions with local traders along the vertical axis of Cooperation, a process of transaction repetition with the buyers builds trust and strengthens social capital. Moving along this axis, the marketing related transaction costs of smallholders tend to be mitigated by the formation collective farmer organizations. On the upstream market linkages side, the organization of collective farmer institutions reduces the transaction costs related to inputs, technology and know-how procurement; on the downstream side, it reduces those of post-harvest and commercialization activities, through economies of scale. The established trading relations decrease the transaction costs related to searching and screening market partners and those related to contract enforcement. The Coordination imperative (horizontal axis) is to focus on a professionally conducted vertical coordination of the whole value chain function with the ultimate goal of reaching or maintaining a competitive advantage on the agricultural/food markets. Moving along the coordination axis many transaction costs for the downstream
actors tend to be reduced through contractual arrangements. As for smallholder farmers, their business risk in terms of price volatility is reduced through contracts and as a consequence transaction costs related to market monitoring and contract negotiation, for instance, tend to decrease.

While the harmonization of coordination and cooperation features would bring about a process of development along the diagonal axis of progressive “value chain management”, according to a growth cum equity principle, the body of case study empirical evidence shows a dynamic of divergence from this balance of virtuous sustainable agriculture value chain partnership. Most often governance approaches tend to emphasize either the vertical coordination (captive models in the figure) or the more collaborative and development oriented approaches (relational models in the figure). In Captive models, increasing transaction specification may not necessarily be accompanied by an increase in farmers’ proactive participation, chain wide cooperation and rewards redistribution. In Relational models, emphasis on trust-building and on local development, may not be accompanied by the adoption of increasingly efficient coordination and chain management capacity, thus limiting access to the most competitive and high value market outlets. Accordingly, the different business models end up positioning themselves in Figure 4 in different parts of the cooperation-coordination quadrant. Instances pertaining to the class of corporate-driven models often achieve high coordination results at the expense of chain wide cooperation and rural livelihood objectives. Cases pertaining to the class of producer-driven models can often achieve high cooperation, social capital and developmental results, but their further growth may be impaired by inefficiencies in vertical coordination and insufficient entrepreneurial capacity. Empirical evidence suggests that in the evolution of an intervention, a certain governance model adopted as appropriate at a certain point in time and at a certain scale of the intervention, could become obsolete and thus need to evolve and change. There is no panacea or single form of superior approach, but rather different circumstances may suggest the appropriateness of a certain business model versus others at a certain point in the social and economic rural development timeline.

In all instances in which there is a need to promote sustainable agriculture as a vehicle of multi-functionality and rural poverty reduction, than the preference for moving towards value chain partnership is less contestable. In such frameworks, multiple market and non-market stakeholders commit to play a role and find synergies, with a clear scope of improving value chain performance on both the coordination and cooperation sides (moving towards the upper right corner of Figure 4). The challenge for policy makers and for the chain actors is to identify and agree on a) incentives to reconcile the tension that exists between these two key features of value chain governance, aiming at higher overall performance over the long term and b) activities which improve the capacities of chain actors to respond to the new and “sustainability-oriented” incentives.

**Concluding Remarks and Policy Recommendations**

Policies crafted to support virtuous value chain partnerships must improve both the cooperation and vertical coordination of chain governance. This calls for institutional innovation that can assist in aligning the goals of different actors and aim for a genuinely sustainable agriculture, through adaptive management and participatory approaches, and with the commitment of stakeholders to the necessary process of mutual understanding, co-learning, transparency, goal-sharing, and risk-sharing. In sum, this requires working towards partnerships that include smallholder farming contribution, natural resource management principles, as well as the corporate ability to coordinate production and marketing in a competitive manner. The “hybrid network” business model cases, often blended with social entrepreneurship drivers, emerge in this analysis as a potential disruptive element capable of creating shared value and true partnership.
The urgency of sustainable rural development and poverty reduction calls for a concerted public and private sector collaborative effort. In order to improve the durability of these value chain approaches, their replicability or scalability, there is a need for a more systemic and structural set of interventions to “regovern markets”, stimulate new (and sustainable) business models, and create the appropriate policy and regulatory frameworks. In such a context, there are many reasons to affirm the legitimacy of public intervention in “regoverning” agricultural markets. As recently well stated: “No country has developed its agriculture on a model of pure private sector development. Up until now public intervention in agriculture has been of paramount importance in OECD countries. If we set aside the paraphernalia of subsidies, there are many economically rational and socially valuable market interventions that governments can implement. Public policies favoring inclusion can at the same time be very pro-poor and very pro-market” (Berdegue’ et Al., 2008, p.35).The conclusions of the paper draw attention to some of the policy strategies to be implemented by the various stakeholders in order to move towards more hybrid, science-driven, policy-supported value chain partnerships.

The Delicate Role of Intermediaries
Intermediary institutions can play a key role in promoting sustainable agriculture value chains by facilitating harmonized chain governance structures. They can help move away from “captive business” models, which fulfill the efficient supply of commodities at the expense of the smallholder farms agroecology, or can support more inclusive “relational” approaches (i.e., NGO or producer-driven) in strengthening their business management profile and organizational capacity, without compromising the attention to social welfare and environmental quality. The virtuous dynamics of cooperation are rarely spontaneous and the presence of facilitating agents, which take the responsibility of creating and maintaining convergence of shared goals, equitable outcomes and strategic alliances, reveals critical. The cases analyzed show that this delicate role can be played by agents exogenous to the value chain, such as local/international NGOs, donors, and local government agencies, or private sector actors of the chain, such as input suppliers, traders, wholesalers or farmer organizations themselves. All these intermediary institutions require capacity development and strong leadership when they commit to promoting sustainable agriculture enterprise. Empirical evidence seems to point to the pattern that some of these intermediaries slowly become “doubly-specialized development motivated and business-oriented” agents (Berdegue’ et al., 2008; Vorley et al., 2009).The NGO Africa Now in the Honey Care Africa case (see Case 2, Appendix 1) illustrates how an NGO can “upgrade” to such chain actor status, while at the same time safeguarding the pro-poor market mission of the intervention. In becoming doubly-specialized intermediaries, they have to acquire the skills to balance their service provision function with the progressive transfer of capabilities to smallholder organizations. The case of Normin Veggies, an association of fresh vegetable producers in the Philippines that set up NorminCorp as its independent corporate marketing arm, illustrates this point very well (see Text Box 3). Private sector intermediaries may also become “doubly specialized” and practitioners have reported several instances of traders working closely with farmers, where a mutual understanding of both market and developmental priorities can be found at the basis of their business relationship (Sheperd, 2007). The case of Cuatro Pinos (see Case 4, Appendix 1) illustrates how the successful participation of a specialized wholesaler in a chain partnership is justified by their contribution to value addition and to the competitive advantage of the overall chain.

Donor Strategies
Some donor and lending institutions began experimenting with inclusive value chain approaches in a context of general renewed interest in funding agricultural intervention. These two trends need to be more keenly harmonized. Donors are in the position to take leadership in the adoption of systems thinking frameworks when tackling sustainable rural development challenges. This leadership can, in turn, positively influence the national and decentralized decision making levels that are engaged in rural
development planning. This should lead to including substantial environmental management and poverty reduction elements in the production function of agriculture rather than just limiting sustainability to the realm of complementary elements, as in the case of compensatory interventions. Much of the success in sustainable agriculture ventures is attributable to the ability of actors to experiment with institutional innovation, entrepreneurship, and management adapted to the local context requirements. A critical prerogative of Donors committed to sustainable development is that they can take risks and experiment with interventions that test new institutional and business model innovations. Together with financial resources, they have a chance to supply technical expertise for the formulation and testing on novel legal forms of farmers organizations, for instance, geared to overcome the typical weak governance management and undercapitalization issues of traditional collective organizations. Additional Donor strategies discussed include, the articulation of a wider basket of flexible finance tools, as required for implementing small agri-business incubation and for leveraging local finance; the definition of financial conditionality mechanisms, particularly important for funding directed at farmers organizations, or “doubly specialized” intermediaries, (once they have developed the skills to independently manage their role in the value chain); the use of “patient capital” investments (case study evidence suggests that lenders and private foundations that, have adopted longer term strategic planning of patient capital have made profound impact in the field); and finally taking leadership in the provision of an essential but rarely supplied public good: sound systems for M&E of value chain sustainability.

National Government Policy Strategies

National governments continue to play a dominating role in agricultural development for several political, strategic and economic reasons and thus have a significant opportunity to influence the drivers towards sustainable agriculture value chains. Given that agriculture has cross-sectoral implications, national agencies need to form coordinated policy platforms. In Sub-Saharan Africa, in order to develop credible and coherent national agricultural development strategies, there is scope for improving the participation of major economic Ministries (Ministry of Planning or Finance) together with Ministries of Agriculture and the capacity of farmer organizations and civil society to contribute with their “voice”. This section describes a number of policy strategies that form a hierarchy of “enabling conditions” for the competitiveness and functioning of smallholder inclusive agro-business. The most “essential enablers” discussed include the reform of trade and fiscal regimes, the development of rural infrastructure and policies for land tenure. In particular, while current international trade regimes are projected to favor agricultural trade surpluses in industrialized countries and increased imports in developing countries (IAASTD, 2009), it is argued that regional and bilateral trade has remained virtually untapped in Sub-Saharan Africa, thus constraining the opportunity to boost local agricultural production and specialization. Among the “important enablers” proposed, regulatory frameworks for agricultural production standards; a return to substantial public control and investment in Agricultural R&D, training and extension services; a legal and macroeconomic framework conducive to improved rural finance services; and sound “competition policies”: for instance, laws on competition preventing the formation of oligopolistic market behaviors and illegal price setting practices, regulations on direct foreign investments which protect domestic retailers as well as smallholder producers, and a balance between modern retail and traditional wholesale markets. Finally, the “useful enablers” emphasized include the laws, norms and regulations that form an attractive business climate, encouraging improved cooperation and coordination of private and public sector actors of agricultural value chains; the specific facilitation of business linkages for value chain partnerships; the promotion of a local infrastructure for business incubation and business development services (i.e., business management assistance, legal advisory, finance advisory and credit enhancement, agronomics, processing or certification know-how, and export management).

Cross-Cutting Policy Strategies for Private Sector Engagement

This section highlights strategies that can be initiated by different stakeholders (including Donors, NGOs and governments) but are geared to essentially assure respect of public objectives and values, setting
appropriate boundaries for agri-business market action, as well as providing incentives to the private sector to contribute in pro-poor and sustainable agri-business initiatives. Some of the discussed policies include:

- Adopting anticipatory rather than reactive policy approaches through sharper capacity analyzing relevant local and global trends;
- Promotion of *Social Enterprise* initiatives;
- Promotion of multi-stakeholder partnerships, including PPP arrangements;
- Incentives to stimulate the catalytic role of doubly specialized and value adding intermediaries;
- Prioritizing Climate Change adaptation strategies that improve farmers systems, natural resources management and chain wide resilience;
- A private sector policy commitment beyond superficial forms of Corporate Social Responsibility.

**Assessing the Whole Value Chain Performance**

Some final concluding remarks set the agenda for further research on a topic that is not sufficiently explored: the definition of systemic methodological approaches to assessing the whole value chain performance, in all aspects of sustainability. The prospect of exploring the frameworks such as Multi-Criteria Analysis, Lyfe Cycle Assessment and other asset endowment accounting methods are mentioned. The aim is to accompany the policy-making processes for a more sustainable agriculture with assessment tools that provide, science-based evidence (in a user-friendly and possibly interactive manner) as well as multi-stakeholder participation as an appropriate platform for an informed discussion and political deliberation.
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INTRODUCTION

This research explores the determinants of sustainable agriculture value chains in the context of international development cooperation. It focuses on the hypothesis that smallholder participation in agricultural value chains can provide a meaningful approach to poverty reduction and rural development. In such chain context, smallholders can contribute by implementing sustainable farming practices and, through collective action, also take part in the post-harvest agri-business activities downstream. In particular, the research analyzes the institutional conditions, business models and governance mechanisms within which small scale farmers can be facilitated in performing as agents in system that fully recognizes the multi-functional role of agriculture: by adopting/adapting sustainable agriculture technologies, farming practices, and accessing input and output markets smallholders join in an agriculture enterprise that responds simultaneously to poverty reduction, agri-food market and ecosystem services agendas.

A significant portion of global human population is directly engaged in small scale agriculture, with over 2,2 billion people that manage farms of less than 2-3 hectare size. According to recent research by IFPRI (2005), of the 525 million farms in the world, approximately 85 % are of below 5 acres size and in many developing countries they account for the majority of agricultural land (i.e., 60 % in Ethiopia, 98 % in China). At a global scale, this smallholder phenomenon still provides 50 % of the total supply of food (Scheer et al., 2010). In tackling the nexus between agriculture and development, the World Development Report 2008 clearly identifies the strategic value of a development “enhancing the participation of smallholders and ensuring the poverty reducing impacts of agricultural growth” (World Bank, 2008, p. 12).

On the other side of the spectrum, global food markets increasingly tend to be shaped by a decreasing number of corporate players with large scale processing, distribution and retail infrastructures. For this reason they are able to take leadership in organizing and shaping efficient and integrated agro-industry value chains with the goal of creating and meeting the consumer preferences in industrialized markets and increasingly in local urban markets. Some of these preferences are becoming drivers for genuinely higher environmental and social quality attributes (i.e., organic and fair trade qualities of produce) while others resemble the expression of consumerist wants (i.e., ready to eat, highly packaged meals) induced by powerful corporate marketing operations. High input and intensive conventional agriculture systems have expanded in the developing world, with the associated environmental stresses, and have contributed to a standardized modern food supply and standardized diet, so that today it is estimated that over 90 % of the caloric intake from vegetables in modern diets are fulfilled with no more than 30 crops (FAO, 2009).

A long list of market failures has characterized agri-food markets and their capacity to internalize environmental and social costs. As well, many public policy failures – often driven by political motives and ideologies – have driven agriculture away from efficiency in resource allocation, distributional equity and effectiveness in management of the commons. A long established practice of setting subsidy and other sector regulations systems influences global agri-food markets and adds complexity to the governance of agricultural systems, proving again how this arena is influenced by diverse political perspectives and paradigms.

In this challenging context, the opportunity to draft appropriate policies and incentive mechanisms that enable small farmers to play as effective agents of sustainable development, generating income and alleviating poverty, while contributing to support agro-ecosystems health and services and meet the rising global food market demand, in line with the recognition of a multi-functional role of agriculture, is tremendous. This micro policy analysis approach, with specific attention to market and institutional aspects, is also substantially in harmony with the idea that leveraging private sector resources for the poverty and global environmental challenges is becoming an imperative, after decades of ODA assistance with troubling results. The challenges are significant and fundamental shifts in institutions,
policies and market incentives will be needed to mainstream a “sustainable agriculture enterprise” approach. However, the research illustrates that there is ample opportunity for innovation in institutional arrangements, governance and enabling policy/regulatory frameworks conducive to move towards sustainability in agricultural development. As stated recently by a key observer in this realm, “we are moving away from a view of agriculture and food that used to be highly supply-driven, quantity-driven and in fact mainly cereal-driven, towards a paradigm encompassing the entire food chain and including environmental concerns” (Fresco, 2006, pp. 205-206).

This analysis will devote effort on the elicitation of reasons for promoting a convergence of agricultural and rural development, environmental and global food politics agendas. A growing body of experience and technical literature is emerging in support of the hypothesis that business approaches, ownership models, and market mechanisms appropriate to smallholders as players in a multi-functional agricultural system are available to harness. If appropriately implemented within a larger, sustainability-science based policy/regulatory framework, attentive to the public goods nature of many of the resources engaged in agriculture systems, they could contribute to higher efficiency in resources allocation and higher effectiveness in natural resources management. As recently stated, “the management of agriculture and ecosystem services cannot be separated” (Scherr et al., 2010) anymore, while the current prevailing agri-business approach alone fails to internalize both ecosystem services and social costs.

Recent analyses converge in highlighting that Sub-Saharan Africa is the region in which – for a host of reasons – the mix of past policy failures and market failures has left us with a prevalence of traditional agriculture, with many smallholders engaged in subsistence or staple crops farming. The present investigation will therefore take a Sub-Saharan Africa geographical focus in that it will be enriched by an analysis of the adaptability of the promising policy strategies to the context of smallholders in such a challenging region.

This paper is intended to target primarily those institutional and market actors that can contribute to a shift towards sustainable agriculture value chain growth in the developing world, particularly in Sub-Saharan Africa. This audience includes the bilateral and multilateral donor community engaged in agricultural development, the NGO community, the Ministries of Agriculture and extension agencies. It is also targeted to some private sector stakeholders that can contribute to bringing about the technological and institutional innovations at the basis of sustainable agriculture value chain approaches, from consulting businesses engaged in think-thanking, to the private foundations which can experiment with piloting institutional innovations, to the specialized intermediary institutions, to the actual protagonists of the agri-business production, processing, marketing and distribution cycles, who can increasingly influence the way we shape the future of our primary production systems.
2. Framing a Sustainable Agriculture Paradigm

In awareness of the rich epistemology of sustainability and the variety of sustainable development concepts (Lele’, 1991), a first step for defining sustainable agriculture in the context of development cooperation, is to make explicit the definition of sustainable development adopted, thus framing the value system embraced in this analysis. Firstly, development is intended as a concept wider than economic growth, where the latter refers to increases in the production of goods and services irrespective of the eventual biophysical resources limits, while the former includes aspect of social and economic wellbeing or quality of life that do not necessarily imply an increase in consumption of natural capital (Pearce D. et al., 1989). Defined as such, development may encompass economic growth but as a means to higher (or wider) goals, rather than as an end in and of itself. As recently well stated, such development can be framed as “socially and environmentally just and sustainable” when its goal can be analyzed “into three statements: a) development is the use of economic means to enhance people’s choices and improve human wellbeing; b) development must be especially concerned with people who now have the poorest choice set and the most unsatisfactory quality of life; c) achievements in development must not imperil the range of choices or the well-being of people in the future” (Goodwin, 2000, p. 50). Translated in terms of the emerging theory of Sustainability Science, this research admits that agriculture is embedded in larger and complex “coupled human-environment systems”, where its attributes and activities generate multiple feedback loops and interdependencies among the component of these complex systems (Levin & Clark, 2010). Policy should therefore embrace the challenge of trying to internalize such knowledge and make the best use of it in the context of political determination in the appropriate institutional context.

With such a starting ground, this paper argues that sustainability in agriculture, in the context of developing country economies, would be permeated by the Multi-functional Role of Agriculture as a driving principle: the recognition that farming systems do carry the potential for delivering environmental and socio-cultural benefits, including ecosystem service and rural livelihood enhancement, in addition to providing the base of food and other primary commodities production. The OECD working definition of multi-functionality, is thus adopted as it qualifies the association of this concept with particular characteristics of the production process: “....1) multiple commodity and non-commodity outputs are jointly produced by agriculture and 2) some of the non commodity outputs may exhibit the characteristics of externalities or public goods, such that markets for these goods function poorly or are nonexistent” (IAASTD, 2009, p 61). As a multifunctional agriculture perspective is embraced, the theme of looking at business models and institutional arrangements that enable smallholders to link to markets becomes more pregnant of public policy value due to two elements: a) the joint production notion includes an implicit recognition that their activity will influence other sectors (environmental, cultural social fabric, health, etc.); and b) both agriculture and the other interactive sectors are characterized by public goods and/or by the presence of externalities that need to be managed. In addition, public policy intervention is generally justified – even by the liberal thinkers – in that it can be designed to contribute to creating a favourable investment and market development climate.

With the multi-functionality perspective, as illustrated in Figure 1, the farming activity is conceived as a component of a larger food production system (at the center), inter-linked to complex human-environment systems, and capable to deliver on the different pillars of sustainability. Smallholders farmers, in many instances, testify their ability to be naturally inclined agents of multi-functionality. Obviously, such ability is largely reduced in all instances in which small farmers are severely constrained by poverty challenges.
Under the threat of their livelihood, small farmers are faced with no other option than adopting coping strategies: natural shock such as extreme weather events, uncertainty on the property rights of their land, land scarcity that leads to deforestation, or lack of access to inputs and capital which could translate into overexploitation of local natural resources are all examples of factors that are adverse to a symbiotic relation between smallholder farming and the local agro-ecosystem. The question is what type of poverty reduction intervention can promote and sustain a healthy agriculture and rural development that would allow smallholders to secure a rural livelihood while maintaining the local social fabric and their contribution to natural resources balance. Attempting to answer such question is a challenge that requires the adoption of a pluralistic approach to the issues at stake, one that goes beyond the positivist science paradigm (Pretty, 1995). Recent donor attention has been placed on value chain approaches to rural development. As a consequence, the unit of analysis is no longer the farming activity per se, but rather the system of dynamics of the whole production and commercialization chains. This paradigmatic shift in analytical frameworks is accompanied by a tendency to enlarge the scope of agricultural development intervention from supply driven approaches, to also include demand pull approaches. These changes seem conducive to identify opportunities for improving the environmental and equity profile and competitiveness beyond the farm gates, at a systemic level. At the same time, given that market demand becomes an increasingly important driver, there is an opportunity for enhancing the capability of the policy-maker to anticipate the market trends, interpret their implications on the coupled human-environment systems, and promote institutional frameworks and strategies that reconcile the various multi-functionality objectives and reduce potential trade-offs among them.

2 While some scholars identify value chain approaches with interventions linking farmers specifically to high value markets for export or quality urban outlets, the term is used here in its broadest definition of creating any kind of sustained outlet for the agricultural output of small farmers, beyond the one time, “spot market” transaction that can take place when a trader shows up at the farm gate. Value chain is thus a systemic conceptual framework which identifies a network of diverse institutions, including market actors, civic society and public bodies, with functional relationships and incentive mechanisms geared to cooperating for the delivery of goods and services (market goods but also public goods).
In coherence with this general framework, the type of sustainable agriculture value chain approaches of interest for the present analysis are therefore those that would encompass, at least to some degree, the following three dimensions:

a) Poverty alleviation. Agricultural development is conceived as embedded in the wider rural livelihood framework and can effectively become a means to allow people to exit the emergency of subsistence and other basic needs fulfilment. Smallholder farmers are significant actors in agriculture globally (although very diverse), producing over 50% of the current food supply (Scherr et al., 2010). Taking distance from poverty for them is a pathway towards improved capabilities, and incremental freedom to gain access to services and express higher aspirations (Sen, 1999), far beyond simply increasing agricultural yields and household incomes as an end in and of itself.

b) Environmental quality. The consciousness that society receives many benefits from both natural and managed ecosystems, including agro-ecosystems, is crucial (Tillman et al., 2002). While intensive agro-industrial farming systems certainly produce high yields for a specific crop in the short term, they run the risk of reducing the capacity of engaged ecosystems to provide services over time. Additionally, some traditional and poverty induced farming practices are cause of deleterious land use changes or can be inefficient in the use of natural resources (i.e., water). An environmentally sustainable farming system struggles to implement a production function that includes maintenance of provisioning ecosystem services, while aiming at agricultural productivity gains (in the orthodox sense of higher yields) or at “enhancement” of primary production, taking both economic and environmental dimensions into account.

c) Enhancement of primary production. This notion responds to the need for agriculture to efficiently supply markets. The currently fashionable concept of “sustainable intensification” offers a myriad of pathways towards obtaining effectiveness in environmental quality, while simultaneously increasing efficiency in agricultural yield (Godfray et al., 2010). A broader view would delineate agricultural systems for supplying primary production of food crops, livestock, fuel crops/waste, and raw materials which are inputs for a variety of production and consumption systems, in which qualitative attributes should not be underestimated. Population growth and dietary changes are driving the global food demand upward and fuelling predictions that by 2050 the global grains production will need to be doubled in size (Tilman, 2002). A significant sustainability challenge is to design and implement farming practices that are capable of balancing the enhancement of this primary production to meet increasing global demand for food and non-food crops, with the lowest social and environmental impact possible. However, the prevalence of predictive models that focus on the quantitative computation of this challenge (i.e., how to increase productivity in terms of the quantity of unqualified food per unit of land or labour), should not divert us from also tackling the potential for qualitative “enhancement” through more complex, radical, and potentially disruptive options such as novel production systems that prioritize the optimization of inputs and drastic reduction of waste output, or public investments on healthy diet education for consumers to reshape their food demand.

Enhancement is purposely proposed as a concept that does not mean only or necessarily increasing volume of production but may include qualitative attribute improvement of primary production as well as producing the same output with less input and output waste, and even producing less volume output but with higher nutritional value and health standards. For instance, enhancement of primary production would take place in a situation in which a high quality cocoa variety typically with a low yield (in terms of volume of beans per hectare) is farmed, but compared to standard varieties has a much higher flavonoid content; or in cases of a shift away from intensive cereal crop for livestock production systems due to the unambiguous results of lifecycle analysis that demonstrates that energy inputs (as well as the consumption of other natural resources) are much higher than the equivalent kilocalories of the meat output.
The necessity of a macro perspective in investigating this topic is therefore surfacing from the above considerations. Agriculture can not only be treated as a sector of the economy, but rather must be recognized in its systemic relevance to a variety of political “issue areas” and for significant function in many other sectors of the economy, in addition to cultural values and identity of landscapes. While earlier development economists emphasized the role of agriculture primarily as a “sector” able to transfer surpluses and resources to the more strategically important industrial sector, thus accelerating the rate of industrialization of developing economies (Hirschman, 1958), the more recent scholar’s consensus focuses on a broader perspective of strong interdependencies between agricultural and industrial development, leading to highlight that there are several positive cross-sectoral linkages (Vogel, 1994). In particular, the global food politics and the interconnectedness of issues have been convincingly reviewed in recent scholar analyses (Paarlberg, 2010), and an extensive literature has analysed the strong linkages that substantiate the cross-sector nature of agricultural activities: links to issues regarding global food security and markets, growth in other sectors of the economy, food security for the poor, the dual energy and agriculture nexus, the dual role of agriculture in climate change, poverty-migration cycles, natural resources management implications (Bresciani et al., 2004; Collier, 2008; FAO, 2000; IAASTD, 2009). Somewhat less explored is the socio-cultural relevance of agricultural policy, although some eloquent advocates of “local food” production systems point out agriculture’s significance in building or consolidating a local social fabric and the social capital and socio-economic wellbeing associated with it. (Patel, 2010; Petrini, 2010).

With regards to the relevance of agriculture for poverty reduction policies, it is worth noting here the significance of recent analysis provided by the World Bank (2008) and IFPRI (2005), which indicates that agricultural growth as opposed to economic growth in general is typically found to be the primary source of poverty reduction: investment in agriculture is 2.5 to 3 times more effective in increasing the incomes of the poor than is non-agricultural investment. In particular, it can be argued that agricultural policies that manage to respect, enhance and integrate smallholders practices, local norms, organizations and relations with more modern production systems and technologies can additionally carry high social capital gains, thus further enhancing value chain cooperation and coordination with benefits for all participants.

A literature review of sustainable farming conceptualizations and technological approaches goes beyond the scope of this paper, but in summary, three main strands of thought could be identified, making explicit the multiple perspectives and associated value systems at play today in this policy space. The “technological optimism” view is permeated by a positivist scientific approach, where the focus is on technological application, often irrespective of the specificity of local context conditions. This view puts emphasis on the maximizing yield and capital by mono-cropping and engages energy-intensive farming systems, with high reliance on external agricultural inputs, mechanization, and crop standardization. Biotechnology research and innovation is proposed as an imperative priority for finding agricultural development solutions, often with emphasis on transgenic modification, and insufficient questioning on its ethical and equity implications (otherwise quite relevant for policy-making) particularly for agriculture in developing countries. On the opposite side of the spectrum there is the narrative of the “orthodox conservationists” who emphasize farming practice in full balance with natural ecosystems dynamics.

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4 From the literature reviewed, there seems to be an unqualified faith in biotechnological approaches, overstating the potential benefits of transgenic technologies. Beyond ideological positions, there is a lack of attention to the implementation challenges in developing countries such as the management of IPR regimes, or the widespread absence of rigorous competition policies. There seems to be insufficient discussion about a new and possibly less controversial frontier, such as the current R&D on Marker-Assisted Selection of breeding biotechnologies (see Tester and Langridge, 2010). The NERICA text box is a case in point of the achievements of non transgenic biotechnologies paired with local innovation.
whether or not practically viable and are promoters of small-scale and local “food sovereignty” (Patel, 2010). In between the extremes, there are scholars and practitioners who recognize that there is no panacea solution, but highlights the need of a multifaceted approach that integrates views, and recognizes both the potential of external inputs and modern technologies and the largely untapped scientific knowledge of ecological processes (Conway, 2000). Within this strand, the proponents of agro-ecology (Pretty, 1995), of managing soil health and fertility as in “conservation agriculture” (FAO, 2002); the proponents of a shift of mindset towards a cost-effectiveness strategy in farming system decisions, that emphasizes the poverty reduction effect of practices that reduce external agri-inputs expenditure (Erenstein, 2009; Wojtkowski, 2008). The paradigm of “sustainable intensification” of farming practices is also building momentum, indicating that the solutions to be adopted are multiple, context is specific, and that building on traditional knowledge while also embracing science-based approaches, increases productivity while minimizing environmental and social impacts (IFAD 2010; Godfray et al., 2010).

In closing this section, it is important to recognize that each of the mentioned perspectives contribute to the advancement of further knowledge on the issues at stake in agricultural development. Such perspectives also offer keys to further understanding of both the opportunities and the challenges of different agricultural development pathways. Certainly, the process of comparison of these different perspectives clarifies and distinguishes the roles and objectives of differing farming systems. Taking a time scale comparison approach, for instance, the implications can be very different. Hence, the agricultural development approaches based on high input monoculture farming can be justified within a high yield food production sectoral policy, driven by a short-medium term view: for instance, the goal of providing large volumes of staple food in a context of vulnerable populations threatened by imminent food insecurity. As mentioned, however, these high input and intensive farming systems pose serious challenges on the carrying capacity of the soil, on already stressed nitrogen cycles and on other agro-ecological assets, or else on the capacity to maintain high yields in the longer term (Pretty, 1995). When a medium-long term perspective is adopted, the priority becomes sustained productivity of food commodities as well as of other non-commodity outputs over time. This viewpoint encourages a broad and extensive analysis of a farming system, which takes into account the multiple dimensions and feedback loops with climate, local natural resources, ecosystems services, local culture preservation and identity, land ownership, etc. As made evident in the following sections, agricultural systems are made of inherently place-based activities and institutions, which translate into a diversity of agro-ecosystems as well as a variety of associated institutional arrangements. The value chain approach, when chosen as unit of analysis, can assist in widening the scope of analysis on a spatial scale, by including the steps, responsibilities and stakeholders engaged in the wide range of post-harvest, processing, marketing, and consumption activities related to agri-business systems in the framework.
3. The challenges of participation in market value chains: trends, issues and myths relevant to small farmers

Policies for supporting multi-functional and sustainable agriculture activities, as framed in the previous section, would by definition need to be knowledge-intensive and be inspired by a systemic analytical framework. They would need to go beyond the current segmentation of a sectoral approach and be able to create (or strengthen) the appropriate institutional, regulatory and legal macro-climate for supporting the provision of multiple outputs as a result of collaboration of different private and public sector actors. Policies would have to encompass multiple goals, a task that often implies negotiating trade-offs and contentious issues, but that can also elicit complementarities and synergies. Finally policies would have to rely on science-based evidence as well as negotiations among different stakeholders and value systems, with the challenge of finding convergence between the need for long term preservation of public goods and the current needs of private sector players in competitive agricultural markets.

This section attempts to briefly review selected relevant dynamics in agriculture development and the typical issues and challenges faced by institutional and market actors engaged in agricultural policy and investment decision-making, as well as those directly involved in the formation and maintenance of sustainable agriculture farming systems and the associated value chain structures.

3.1. Defining the smallholder phenomenon

Smallholder farming is a phenomenon characterized by wide spectrum of conditions across the rural developing world. Beyond the differing farm sizes, and plots under actual cultivation within them, the heterogeneity is also apparent in a) farming attitude (subsistence, commercial), b) existing land tenure regime, and c) the presence or absence of other non-agricultural income and employment sources for the smallholder family members. In addition, all these factors of diversity are dynamic, making smallholder farming a landscape in continuous evolution. At any point in time, across the continuum, small farms can be commercially oriented and run as a small business which provides the primary (if not the sole) household’s income, or partially cultivated as a secondary source of family income or for most poor rural people, the only source of subsistence and food security. In general, the positioning of smallholders along the spectrum of food insecurity to small farm business, as well as their ability to establish a balanced relationship with the agro-ecosystem, are affected by a range of variables, as described in the following paragraphs. Beyond the quality of agricultural land that can be accessed for farming, which is generally an substantial constraint, it is the severity of rural poverty, the insecure land tenure, the asymmetries on input, credit and outlet markets, and poor rural infrastructure that influence the smallholders to adopt coping strategies. These circumstances may lead vulnerable smallholders to taking a short-term time horizon in their production decisions, which may undermine a long-term strategy of natural resources and farm management (Barbier, 1997). However, in some circumstances, adversity stimulates innovation and the severe local agro-ecosystem and socio-economic conditions can foster a more symbiotic relation with positive outcomes, such as with the experience in Sahel, where small farmers have developed strategies for agro-forestry and sustainable livestock innovations that are “re-greening” the local landscape (Reij et al., 2009).
Smallholders have an ample spectrum of potential market targets: they can be the local staple outlets, or traditional cash crops markets, or non traditional high value crops for domestic or export market channels. The globalization and liberalization of food trade produced a shift towards consumer-driven markets. This trend imposes the challenge of adaptation to new production standards, grades, quality and food safety regulations to smallholders trying to link to higher value markets. A conventional definition of smallholders as farmers with less than 2 hectare plots allows to estimate the phenomenon of small farms at over 525 million (IFPRI, 2005) globally, hosting approximately 2 billion people (Hazell, 2011). They are a significant part of global population and often among the most vulnerable to both natural disasters and economic shocks. In Sub-Saharan Africa, agriculture is generally a significant part of the socio-economic fabric (27% of GDP, and 62% of employment, excluding RSA) and the smallholders in the region account for a large portion of agricultural land. In Ethiopia, for instance, one of the fastest growing countries in the last decade (8.4%/Y), agriculture produces 52% of GDP and smallholders account for 60% of agricultural land (Livingston et al., 2011). However, a large portion of smallholders in Sub-Saharan Africa are located in isolated rural areas: 34% of rural population live more than five hours away from a market town of 5000 people, 45% is 2-4 hour away, and only 21% is in “high market access” areas within 1 hour distance (World Bank, 2009). Additionally, recent studies have indicated that input subsidy programmes deliver fertilizers too late in respect to planting seasons and that tardy application can have a negative effect on yields (Dorward, 2009). Other research results suggest that Sub-Saharan African farmers located more than 4 hours from a major city tend to produce only at 45% of their land agronomic potential on average (Livingston, 2011). Another general trend is that few smallholder farms tend to survive in the long run, and in Africa the exits seem to have a faster rhythm than in other developing world areas, probably reflecting a neglect of the agricultural sector rather than a pull from growth in non-farm jobs. Indeed, according to some scholars, a common mistake is to think that “the exit of small farms is a driver rather than a consequence of economic growth and that the shift to large, mechanized farms will induce faster economic growth. When economies grow, many small farmers (or their children) leave farming because they can find better paying jobs elsewhere. But consolidating land and pushing small farmers off the land before there are better jobs available simply leads to worsening poverty and unwanted levels of rural-urban migration” (Hazell, 2011, p. 6).

3.2. The land tenure uncertainty issue

The weakness of land tenure regimes can be singled out as one of the main causes of inefficient land use and environmental distress in rural agricultural areas of the developing world. Rules of tenure, whether customary or defined by formal legal frameworks, offer the basis for considering a specific plot of land as a production factor. The existence and preservation of traditional norms, or reforms introducing new land use regulations in the absence of previously clear property rights are definitely a pre-requisite for the planning of a long term land use by interested stakeholders, and for the adoption of innovation and of risk-taking entrepreneurial behaviour by the farmers and agri-businesses. In many Sub-Saharan African countries, this land tenure regime uncertainty is an old issue. In some cases, the traditional institutional arrangements have been displaced by poorly designed or politicized land use reforms. In other cases, modern institutions have been implemented but with insufficient attention to transitional mechanisms to mediate with the traditional pre-existing customary rights and social norms.

The land tenure reform is thus a complex endeavour and very influential on the positioning of smallholders in the sustainable agriculture equation. National governments hold title on land in many regions, and local individual farmers and communities tend to enjoy use rights over state owned land, but
formal land property titles in the hands of either individual farmers or collective farmer institutions are reported to be a rare case (Cotula et al., 2009). Weak land tenure regimes discourage farmers from committing to investments on market-oriented agricultural systems. Uncertainties on land rights are reported to hinder a long term use perspective by farmers, thus inducing smallholders to both a) refrain from farming investments (labour and physical infrastructure) and b) contribute significantly to the overexploitation of the land and its natural resources (IFAD, 2010).

This uncertainty on land rights and a weak political voice of smallholders, pastoralist communities and women farmers can also favour a “land grabbing phenomenon”. Large scale agricultural land acquisitions via foreign direct investments is a novel trend in the developing world driven by multiple factors, including rising food security concerns, the rise in global demand of biofuels, and the attempt of the food industry to vertically integrate and secure their supply. In Sub-Saharan Africa, the phenomenon is increasing according to the data in national inventories, particularly in Mozambique, Mali, Ethiopia, Madagascar, and Ghana (Cotula et al., 2009). National governments are starting to take steps to regulate the foreign investments for large scale land acquisitions, in order to promote the involvement of local investors and smallholders, and implement mechanisms such as contract farming and out-grower schemes. The Government of Tanzania is developing standards to include smallholders in the development of land investment for biofuel production. Some governments are taking steps to protect local land use rights, including customary rights, such as in the case of Land Acts in Mali, Mozambique, Tanzania and Uganda.

3.3. Deficits in rural infrastructure and services

Many of the studies on this topic recognize that there is a strong positive impact of rural infrastructure development on small farmers livelihood, although the quantitative analyses has not been quite successful in identifying the exact correlations or the causality between a better infrastructural endowment and the rural household income increase (Torero, 2011). The infrastructure deficits most relevant for agricultural development that typically hinder the participation of smallholder farmers in markets include the network of rural roads, rural energy provision, communication infrastructure (which in turns hinders access to market information), rural finance and insurance services, rural health and education services. In Sub-Saharan Africa, all of these infrastructural deficits are substantially widespread and are among the main factors beyond the scarce participation of smallholders to commercial agriculture. Recent analysis concludes that investments in smallholder agriculture in Africa would be capable to attain a small farm competitive advantage in production in many instances (World Bank, 2009). Such potential for productivity however has to be supported by investments in the relevant infrastructure which would sustain the production as well as the commercialization of their produce.

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5 The International Land Coalition offers an institutional source of information on this trend, including a global portal on commercial pressures on land, defined as changes in land use rights from communities and smallholders to commercial use from domestic or foreign investors and a service for the monitoring of land transactions (over 500 Ha each), see www.landcoalition.org.
3.4. Debate on productivity of farming systems

There is ample scholarly debate on the relationship between agricultural productivity and farm size (Brower, 2004; van Der Meer, 2006). Some argue that smallholder farms are in a weak position to compete in modern markets due to their limitations in acquiring the necessary technology, finance and farm management capability to obtain the required high yields and efficiently deliver in increasingly standardized and commoditized food markets (Collier, Dercon, 2009). Over the long term, farm size normally rises with economic development: past experience has shown how the small farms particularly present in early development stages of national economies tend to feed a process of land holding consolidation in favour of larger and market-oriented farming operations. However, it is recognized that this trend is not disjointed from a) historical and political distortions due to coercive private or public initiatives on land use, for instance during the colonial era (Lipton, 2005) and b) the presence of significant public subsidy programmes in support of large commercial farms (World Bank, 2009). Other scholars argue that empirical evidence shows an unequivocal inverse ratio between farm size and productivity when sustainable technologies and techniques are adopted (Cornia, 1985). Indeed, especially in the many agricultural contexts with labour intensive technology and practices, smallholder farmers tend to perform a more productive farming mainly due to a) higher motivation of labour input, which allows them to apply attention and skill to the farming methods and b) the low substitutability of skilled labour for many sustainable cropping technologies and methods; c) much of this skilled labour input has the capacity to enhance the soil management and thus allow increase of productivity per unit of land. Small farmers also tend to apply a multiple crop farming strategy to take advantages of local peculiarities, in tune with the heterogeneous soil conditions and native agro-ecological systems (Perfecto, Vandermeer, 2010). In terms of comparative transaction cost advantages, small farms demonstrate to have significantly lower labour-related transaction costs compared to large plantations, due mainly to the fact that the latter have to bear high costs of unskilled labour supervision and coordination. On the opposite, large farms tend to have transaction cost advantages in terms of access to market information, capital technology, capacity to access land, input and output markets (Poulton et al., 2010). However, it is important to make a distinction: when smallholders are able to organize in a market institution, then their collective action and horizontal coordination aims at a) reducing exactly these types of transaction costs and b) mitigating the business risks faced when they were independent and more resource-constrained. The organization of collective management institutions that are effective, and free from patronage or other political influence, remains a key element that offers smallholders the ability to overcome more easily the listed transaction costs disadvantages (Toulmin et al., 2003). In general, however, it is important to realize that, given the large variance of farming conditions, crop types, market situations and policy environments, this debate on the productivity of small versus large farms risks to generate a false dichotomy: any statement regarding the advantage of one or the other approach is valid only within quite specific socio-economic, biophysical, policy and crop contexts.

Less controversial is the capacity of small farms to display significant productivity increases compared to conventional high input and mechanized large farming operations when they adopt locally appropriate sustainable agriculture farming methods and technologies. In this respect, the meta-analysis conducted recently by an authoritative international research group (Pretty et al., 2006) on a sample of 286 agricultural projects in 57 countries involving approximately 37 million hectares clearly reports significant crop yield increases, with an average 79% productivity gain, as summarized in Table 1.
Table 1: Summary of Yield Increase in Sustainable Smallholder Farming Systems

<table>
<thead>
<tr>
<th>FAO farm system category</th>
<th>Number of participating farmers</th>
<th>Land under sustainable agriculture (hectares)</th>
<th>Average % increase in crop yields (standard error in brackets)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smallholder irrigated</td>
<td>177,287</td>
<td>357,940</td>
<td>129.8 (21.5)</td>
</tr>
<tr>
<td>Wetland rice</td>
<td>8,711,236</td>
<td>7,007,564</td>
<td>22.3 (2.8)</td>
</tr>
<tr>
<td>Smallholder rainfed humid</td>
<td>1,704,958</td>
<td>1,081,071</td>
<td>102.2 (9.0)</td>
</tr>
<tr>
<td>Smallholder rainfed highland</td>
<td>401,699</td>
<td>725,535</td>
<td>107.3 (14.7)</td>
</tr>
<tr>
<td>Smallholder rainfed dry/cold</td>
<td>604,804</td>
<td>737,896</td>
<td>99.2 (12.5)</td>
</tr>
<tr>
<td>Dualistic mixed</td>
<td>537,311</td>
<td>26,846,750</td>
<td>76.5 (12.6)</td>
</tr>
<tr>
<td>Coastal artisanal</td>
<td>220,000</td>
<td>160,000</td>
<td>62.0 (20.0)</td>
</tr>
<tr>
<td>Urban-based &amp; kitchen garden</td>
<td>207,479</td>
<td>36,147</td>
<td>146.0 (32.9)</td>
</tr>
<tr>
<td>TOTAL PROJECTS</td>
<td>12,564,774</td>
<td>36,952,903</td>
<td>79.2 (4.5)</td>
</tr>
</tbody>
</table>

Source: Pretty J. N. et al., 2006

A recent review focused specifically on the productivity of organic farming practices and based on 293 cases, estimated the yield ratio (the organic: non-organic productivity ratio) revealing that while in developed countries the ratio is on average 0.92, in developing countries there are consistently higher yields and the average yield ratio reaches 1.80 (Badgley et al., 2007). While the results of this analysis are reassuring about the possibility of improving yields with resource-conserving approaches in rural developing areas, they do not take into account two additional positive elements often associated with smallholder farmers adopting them. One element is the higher heterogeneity of crop production, which is important to maintain on small farms: beyond agro-biodiversity gains, the mono-crop production with high productivity can also carry the risks of over-production and the depression of crop market prices. The second element associated with many resource-conserving farming systems is that labour intensity may translate in reduction/substitution of capital intensity, for instance in terms of purchase and application of external inputs, thus suggesting that the yields obtained, once monetized, should also be compared with the net savings in terms of avoided purchase of external inputs. Some scholars promoting the agro-ecological approaches to farming go as far as proposing a whole new set of metrics for the economic valuation and the accounting of net gains of a farming system (Wojtkowski, 2008).

Finally, the debate on farm size and productivity retains much less salience when the primary goal of the agricultural intervention is not to simply deliver food production, in terms of a single dimension mono-crop yield, but rather on the wider rural development and livelihood grounds. Within a poverty reduction perspective, smallholder farming has proved to generally maintain an advantage over agro-industrial approaches with large scale farms on a set of broader grounds (Hazell et al., 2010). Not

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6 This means that, in developed countries, the average organic production equals 92% of the conventional production.
only do small farms employ poor households and their neighbours as they tend to apply labour-intensive techniques, as discussed above, but their expenditure patterns are also more favourable in promoting demand for goods and services produced in the rural non-farm economy (World Bank, 2009). Further, smallholder farming systems adopting sustainable agriculture practices contribute to improve rural livelihood by co-production of non-commodity outputs, some of which are identified as ecosystem services, as briefly discussed in the next paragraphs.

3.5. Ecosystems services of agricultural systems

The awareness of the scientific community of the contribution of agro-ecosystems to the supply of a range of ecosystems services is widespread today (IAASTD, 2009; UNEP, 2011). Such a provision of services from natural and managed ecosystems is often difficult to quantify and, advances in environmental economics and environmental accounting notwithstanding, the pricing and creation of markets for such services in practice is still rare. Agricultural practices can reduce the capacity of agro-ecosystems to supply ecosystems services through several pathways of inefficient natural resources use and overuse of polluting external inputs (it is estimated that only 30-50% of nitrogen fertilizer used globally is taken up by crops), and many current incentive frameworks favour increased agricultural yields at the expense of ecosystems services (Tilman et al., 2002). The scientific and policy challenges today lie in identifying and implementing sustainable agriculture practices that are capable of not compromising ecosystems services, while maintaining the productivity required for adequate primary production supply. An additional source of complexity and uncertainty is that the environmental impact pathways and outcomes can be very context-specific, making the definition of generic guidelines for sustainable agriculture more challenging. In any case, there is wider consensus on the fact that soil health and fertility should be considered as a major production factor in agriculture, a missing link overlooked in much of the intensive cereal mono-crop farming experience to date. A lack of emphasis on maintaining soil health as a core factor for long term productivity of agro-ecosystems has resulted in severe land degradation, often from misuse of agro-chemical inputs, poor water management, soil erosion and too short fallow periods (Tilman et al., 2002; Rockstrom et al., 2009). Scientific effort for accounting the environmental externalities, such as those linked with chemical input use (UNEP, 2011) or the costs of soil erosion (Pimentel et al., 1995), have highlighted the economic and environmental significance of this phenomenon, but the policy attempts to internalize them, especially in developing countries are still struggling with implementation issues (Posthumus, 2007). In the rural developing world, there are contexts in which small farmers can be drivers or victims of environmental impact, as well as stewards of careful natural resource management and ecosystems preservation. The resource-poor farmers pose the threats of deforestation and desertification of land by implementing farming practices (i.e., slush and burn) that are the result of traditional coping strategies under conditions of high vulnerability. It is key to underline that rural poverty and the land tenure uncertainty issues exacerbate such trends. In a growing number of circumstances, smallholders must also meet the challenge of identifying and adopting farming systems that improve their resilience in face of climate change events. Some of the small farmers traditional knowledge systems already include such “coping knowledge”, and modernization of farming systems risks to erode it (FSPG, 2008). As discussed in the next section, there is growing evidence that

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7 The scientific challenge is posed by the generally inadequate knowledge of biological, biogeochemical and ecological processes in coupled human-environment systems.
8 The policy challenge is quite complex, as it has to deal with aspects such as the credible transfer of scientific knowledge to the realm of decision making, and the broad political ramifications of agricultural policies.
9 Conversely, the collection of place-based observations to feed into the elaboration of more context-specific R&D could be costly and is an issue in the face of the current low public expenditure for agricultural R&D.
small holder farming systems embed a good potential for natural resources and landscape preservation as they continue to use (and improve) traditional sustainable agri-practices and integrate them with modern innovations (Pretty, 1995; IAASTD, 2009).

3.6. Specialization in crop production and price fluctuations

One of the implications of the liberalization of agricultural markets for small farmers and their capacity to access market linkages with higher returns is the necessity to adapt to the dynamics of consumer demand driven markets. This implies the necessity of a progressive and continuous acquisition of knowledge, information and inputs geared at a specialization in farming certain crops, of a certain grade, of a certain quality. For the smallholders that, independently or with support of a collective organization, manage to increase their farming specialization on a basket of a few cash crops, this provides them with the potential of new skills development and value addition on-farm but it also translates into assuming new risks in terms of a) the market demand risk of fluctuating agricultural commodity prices and b) the production risk, in terms of yields fluctuations. An additional risk faced by small farmers that decide to link with national and global food markets, is their increasing exposure to competition from international trade, which can facilitate imports of the same commodity crops at lower prices. The trend of most agricultural commodity prices has been negative in the long run and even the recent price spikes of 2007 and 2008 leave many prices below the levels registered in the 1990s (Hazell et al., 2010). In the framework of traditional staple crops, for instance, many Sub-Saharan African small farms in the peri-urban and coastal areas are being squeezed out by the cheaper imports (Hazell, 2011). While price stabilization institutions in the past have demonstrated mixed results, the effort to reduce volatility on food commodity markets is largely recognized as a contemporary policy priority (Rashid, 2007).

3.7. R&D in agriculture, indigenous knowledge and innovation systems

The post-structural adjustment policy era has marked a dramatic reduction in public R&D and extension services, following the global trade liberalization and the progressive dismantling of state led agricultural extension and market promotion mechanisms. In Africa, this has led to the dismantling of institutions such as the marketing boards of colonial legacy, which managed the commercialization of export crops and often the associated subsidies, extension and price regulation. Meanwhile, the private sector has expanded its role in leading and spreading the industrial agriculture model of intensive farming focused on a few agricultural commodities (mainly cereals and traditional export crops) with R&D geared mainly towards crop yield increase, dependency on use of agri-chemical inputs, associated with a positivist knowledge system in which farmers are recipients, driven and created mainly by international commodity markets dynamics. Such a standardized production model (and the associated R&D agendas often technology driven) incorporates the risk of being short of the sophistication required to address the multi-functionality paradigm. It tends to overlook the diversity of needs of the different agro-ecological systems, as well as the broader consequences in terms of social and distributive goals and environmental impact (FSPG, 2008). Scientific and practitioners consensus is growing on the fact that a more systemic approach needs to be adopted if agriculture R&D is to be genuinely recognized as a development aid tool addressing the needs of small farmers and their rural communities (IAASTD, 2009). Especially when the goal is to target farmers with access to marginal land, that has limited capacity for a standardized monocropping yield productivity increase, the agricultural R&D has to broaden the scope of what the realistic
possibilities are for development in a particular context, involving a multi-stakeholders platform including farmers and their knowledge and value systems (see Text Box 1).

**TEXT BOX 1: Allanblackia Tree Collaborative R&D Platform.** With the Novella project Unilever, international NGOs, local R&D professionals from World Agro-forestry Centre and forestry agencies in Ghana and Tanzania, together with over 10,000 smallholder farmers, have collaborated to consolidate the domestication of the Allanblackia tree and the commercialization of its multipurpose oil through local value chains. Thanks to an inclusive knowledge management approach, when the slow seed germination of seed was identified as bottleneck to scaling up production, the partners benefited from farmers knowledge insights (in turn, obtained from mimicking nature) to solve the R&D issue and significantly speed up germination and nurseries productivity. Farmers in Tanzania noticed that giant rats buried the fruit in the ground, other farmers in Ghana had experimented a short storage in plastic bags and others the removal of the seed coating. All of these methods significantly help the germination and have been adopted widely in the nurseries. Today, a smallholder farmer has to bear an initial investment of about USD 400/acre for Allanblackia tree farming and can gain a net cash flow of USD 340/acre per annum (Pye-Smith, 2009).

A revitalization of public spending in agricultural R&D and of agricultural ODA, which seems to take place in some areas of the developing world (FSG, 2010), would be welcome also as an opportunity to reduce risks of R&D agendas led by partisan motives and not necessarily aligned with public interest, social welfare and developmental goals. In Sub-Saharan Africa, a resurgence of public R&D investments and policy-making could be particularly advantageous for appropriate knowledge generation and innovation, as private sector investments have not been significant and have mostly focused on imported input technologies or technological services (IAASTD, 2009). Tapping into the local sources of knowledge for innovation is probably one of the future challenges for sustainable agriculture as development agencies are still largely relying on blueprint approaches far from Korten’s organizational fit notion and from adaptive management approaches (Korten, 1981). Top-down approaches to technology transfer risk failure if they end up discounting the considerable farmers knowledge, the wide variety of agro-ecological systems, and the broad diversity of rural communities (FSPG, 2008). As recently denounced top-down planning and design is still the norm, and donors still require detailed project plans upfront, before funds are released that would enable meaningful community input into design. Most funders distribute resources to governments or large NGOs rather than to farmer or community groups directly, and there is little funding for long-term engagement between farmers and agricultural scientists” (Scheer et al., 2010, p. 13). In this context, there seems to be considerable opportunity for participatory design of R&D priorities and for scientist to leverage local knowledge, thus aligning goals of the public and private sector and addressing the farmers and rural development needs. In Honduras, a research conducted by the Association of Advisors for a Sustainable, Ecological and People-Centered Agriculture (COSECHA) in 1999 documented over 80 technologies and techniques developed by 52 local farmers, among which 45 were selected for further validation and dissemination (World Bank, 2004). The experience with locally conceived sand dams in rural Kenya demonstrates the effectiveness of local innovation in water harvesting techniques (FSPG, 2008). The ongoing partnership experience with the NEw RICe for Africa (NERICA) constitutes another emblematic example of participatory R&D and locally driven innovation in the staple food sector (see Text Box 2).

Locally developed agricultural innovation with significant potential does not necessarily involve technology, but can simply be rooted in know how and empirically developed techniques. A case in point is the System for Rice Intensification (SRI): originally experimented in 1980 by a French priest in Madagascar to improve the viability of smallholder rice farming, it resulted in a protocol of several agronomic, water and soil management practices that blended together contribute to improve rice field yields, while drastically reducing the amount of seeds used (up to 80-90 %), decreasing water demand (up
TEXT BOX 2: The NERICA Innovation in Africa

The New Rice for Africa (NERICA) story illustrates in a magisterial way the potential of modern agricultural R&D leveraging local knowledge and tapping into farmers’ dissemination mechanisms. The R&D pioneered by Dr. Monty Jones from Sierra Leone at the African Rice Centre found innovative ways to crossbreed typical African rice varieties (O. Glaberrima), preferred by African farmers for cultural reasons and for its adaptability and pest resistance, with Asian (O. Sativa) varieties, known for their much higher yield.

Among the many varieties of NERICA, the ten most used by farmers are suited to West Africa’s dry “uplands,” which are primarily rain-fed and far from lowland river valleys or other easily accessible sources of irrigation. In other words, rather than trying to modify the environment with irrigation and fertilizer to meet the needs of high-yielding Asian rice, the NERICA story suggests an approach of adapting to the environment and the culture of farmers. As a result, even without use of external inputs, NERICA can yield 1.5 to 2.5 tonnes of rice per hectare, compared with an average of 1 tonne for traditional varieties. In addition, its growth cycle is faster than Asian rice varieties. As for its dissemination, NERICA breeding research is complemented by participatory varietal selection and support for the organization of farmers groups engaged in seed production. The successful uptake of NERICA by farmers has contributed to significantly improve the volume of production in many SSA countries and consequently reduced their imports of such a strategic staple food.

The accumulated local knowledge of smallholder farmers and its preservation as rural culture in an evolutionary perspective are also at the basis of approaches adopted for improved resilience to climate change shocks. For instance in the Sahel region, donors such as IFAD and specialized research centers have collaborated with local small farmer communities to implement climate change adaptation and mitigation agro-forestry strategies.

The process of reorientation of R&D priority setting towards more participatory models is proving successful also in the rediscovery of indigenous crops. While their potential for sustainable agriculture seems to be still largely untapped, some native crops today are gaining new market prospects thanks to interventions that counteract the global trends of erosion of local cultures, loss of genetic resources and the narrow focus on few cash crops of commoditized global markets. A case in point comes from Kenya, where the Ministry of Agriculture in partnership with FAO and the NGO Family Concern has conducted a value chain promotion project to revitalize the local indigenous fresh vegetables, among them Amaranth Leaf (Chinese spinach)\(^{10}\). Blending a livelihood approach with a pro-poor market development initiative, communities of small farmers were engaged in a value chain of indigenous crops farming with contract agreements with two urban supermarkets chains. A preliminary impact assessment reported that farmers participating to the value chain were making 30 to 70 % more profits that those selling to local informal market outlets (Ngugi et al., 2007).

3.8. The market concentration and the value addition process

The liberalization of agricultural commodity markets and the transition to increasingly global agri-food market systems present potential opportunities for developing country agriculture but also pose challenges. The possibility to attract private sector investments for the development of high value crop

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\(^{10}\) The indigenous crops were Cleome gynandra, Solanum scabrum and Amaranthus blitum. To be noted that, beyond the appropriateness of many indigenous crops to the local agro-ecosystem, their nutritional properties can be remarkable: Amaranth leaf, for instance, can contain 13 times more iron and 57 time more vitamin A than cabbages.
farming systems or for agro-processing industry is definitely attractive to national governments concerned with macro-economic effects such as the improvement of balance of trade, rural development and employment creation, and socio-political factors that cannot be overlooked such as the provision of low price food supply to urban populations. However, many countries in Sub-Saharan Africa have to face the reality of an incomplete transition from largely ineffective state-led agricultural development policy frameworks, away from “supply push” models and towards “demand pull” approaches that recognize the new driver of consumer demand, as mediated by the large scale downstream buyers and retailers. The processes of organizational and institutional restructuring needed to accompany this transition constitute a significant challenge for policy makers and market operators (Henson, Cranfield, 2009). In such context, the public sector has the opportunity to take a proactive role in guiding these processes, setting the regulatory frameworks that can enhance agri-business investments, while safeguarding a pluralistic market growth as well as distributional objectives, according to a growth cum equity approach.

Large scale retailers, or supermarket chains, need to be recognized as a new and increasingly important player in the national and international agricultural value chains. However, as a recent Commission for Africa report states: “supermarkets should assess the development impact of their procurement and standard setting practices on smallholders and help integrate them into the supply chain” (Commission for Africa, 2005). More traditional and informal agricultural markets and wholesale market approaches are still dominant in many poor developing regions, especially in Sub-Saharan Africa, but there seems to be a risk for supermarkets to progressively “crowd out” the informal agricultural markets. This is accompanied by the emergence of a phenomenon of market concentration, in the input supply industry, in agro-processing and in the retail industry segments. Four firms (Dupont, Montanto, Syngenta and Limagrain, are reported to control over 50% of global seed industry sales (Meijerink et al., 2009). As shown in Figure 2 the first top five retailers manage 60% of the global sales of food products. Indeed, a combination of factors have induced an increasing presence of private corporate players in the developing countries, including the implementation of structural adjustment policies in the 1980s and early 1990s, two decades of shrinking public agricultural sector budgets, and the saturation of food retail segment in the OECD area which induced multinational corporations to expand to new markets. On the demand side, drivers for the supermarket chains rise include the process of rapid urbanization, the income growth of the middle class, higher demand for food quality, and increasing employment of women. If the drivers of agri-food markets restructuring trends are indeed inevitable, the question is whether policy strategies of donors and governments can shift from being reactive and compensatory to becoming pro-active and anticipatory, thus improving the capacity to govern the restructuring processes (Berdeguè et al., 2008). In parts of Asia and Latin America, the large retailer model has risen significantly: across Latin America, the share of supermarket sales as a percentage of national food retail sales grew from 10-20% in the 1990s to about 50-60% in the early 2000s (Reardon et al., 2004), while in Sub-Saharan Africa the growth is still in its infancy, with the exception of South Africa where supermarket’s total food retail is estimated at 50-60% and significant growth dynamic is signalled in Kenya, Uganda and Tanzania (Weatherspoon, Reardon, 2004).
Recent analysis conducted in Kenya and Zambia on the share of fresh produce sales through supermarket chains suggests however that supermarkets growth may be progressing more slowly than anticipated (Tschirley, 2010). Other scholars reflect on the opportunity for governments to intervene in markets so that a process of co-development of traditional and modern retail outlets takes place, thus achieving the complementary satisfaction of different consumer demand segments (Cadilhon et al., 2006). Despite the results of different analyses, the salience of the phenomenon lies on supermarkets’ capacity to set the standards of agri-food value chain structure and management and the resulting challenges posed to smallholder farmer participation. As recently pointed out, not only do they structure the market based on consumer demand, but “supermarkets can also influence consumer preferences by introducing new products and packaging” (Torero, 2011, p.18) and by introducing product differentiation strategies. For some agricultural commodities, the market concentration is particularly high: three companies are reported to control more than 80% of the global tea market, four international coffee traders hold 40% of the world market share and four roasters control 45% of the same (Wilkinson, Rocha, 2009); a recent study on cocoa estimates that the top ten processors retained 65% of the global milling capacity in 2006 and four companies control over 75% of the industrial chocolate manufacturing segment (UNCTAD, 2008). In general, as the agri-food systems become increasingly shaped by fewer dominant players in retail, agro-processing and inputs supply, there is growing concern about the risks of them exerting unfair power along the value chain, capturing most of the value and defining and thus influencing the value addition processes (Lang, 2004; Wiggins et al., 2010). With regards to rural poverty alleviation objectives, as the agri-food market becomes controlled by an oligopoly of players, concerns are raised about the distribution of rents along value chain and on the scope for small farmers to increase their share of value added through upgrading strategies (Henson, Cranfield, 2009).

A rule of thumb for an efficient value chain dynamic is that distribution of rents has to be correlated with the role played by each actor in the value addition process. The rewards accruing to a certain actor along the chain, therefore, need to be justified by their contribution to value addition. Further, for a balanced and equitable value addition process there needs to be attention to harnessing the potential for it to happen upstream, at the farming and local processing stages. The empirical evidence provided by many value chain analyses suggests that there is often a concentration of rewards in the downstream activities dominated by the large processors and retailers11. An analysis of the cocoa market segment, for instance, has shown a clear decline of producer share in the international prices of the largest African exporting countries (UNCTAD, 2008). Similarly, the local trader role, often treated in the literature as a “sunk cost”, needs to be evaluated objectively in each particular context: if the local traders play just as “middlemen” in transactions between farmers and larger buyers, with insufficient evidence of value addition, the rationale for bypassing them is evident; if otherwise, the traders bring about some value in terms of market information sharing, know-how transfer, or other services to the farmers (such as informal credit), their role is more credible and justified. A case in Thailand illustrates how a local trader plays a key role in value chain management: the trader specialized in chemical residue free vegetables, linking 40 small farmers to three suppliers to supermarkets in Bangkok, and is responsible for training farmers on the agri-chemicals optimal use, for quality inspection, grading and packaging. The relationship between the trader and the smallholders is fully based on mutual trust, without a written contract, and proves to be strategic for good chain performance (Sheperd, 2007).

11 In this context, it’s worth noting that a pricing aberration becomes common practice in supermarkets competing with each other: some of the tropical imported fresh fruit (i.e., bananas) is often sold at cost (loss items) in order to attract customers, thus inevitably compressing the rewards of producers and other upstream actors. With large margins on other products, this practice is fully sustainable from the point of view of the retailer but totally insensitive to the value chain implications upstream.
4. An analysis of business models promoting sustainable agriculture value chains

The empirical evidence on market based incentive mechanisms supportive of sustainable agriculture farming systems and the related development outcomes is increasingly of interest to development agencies (Sheperd, Rashman, 2010), and object of study by both academics and practitioners. There is a very heterogeneous set of findings in both typology of systems and documented results. This is not very surprising, as it confirms the wide diversity of existing agricultural crops and farming system contexts. Such diversity is especially significant in exemplifying that the variety of natural resources endowment, crop, market, technological, cultural and policy conditions in which experience has taken place are crucial contextual elements that drive the results. In other words, the complexity of the agro-enterprise systems within coupled human-environment systems is so deep that performance of each institutional and organizational model/experience is dependant, at least in part, on the context and its evolutionary features (both natural and socio-economic). This section, however, attempts to elicit a few general characteristics of agri-enterprise value chain models that generally seem to be drivers of good performance in some or all aspects of sustainability. The analysis will identify the boundaries within which such features can be generally viewed as determinants of success in performing a multi-functional agriculture. In parallel, relevant critical issues of implementation of sustainable agriculture value chains will be examined, and an effort is placed on identifying the typical areas of value chain systems in which it is important to focus policy efforts for better performance and for reducing the risks of failure.

4.1. A conceptual framework for the multi-faceted analysis

In order to aid the analysis of field evidence, a simple but multi-faceted conceptual framework is briefly presented that draws upon insights of New Institutional Economics (NIE), particularly the transaction costs economics; from the business management theory, particularly from the emerging social enterprise literature; as well as from the conceptualization of poverty reduction expressed in the Rural Livelihood approaches, that can be traced back to the seminal work of welfare economist and philosopher Amartya Sen (Sen, 1998).

Insights from new institutional economics (NIE). Elements of NIE can be useful for studying the organization of smallholders and other actors into value chains, in particular the work on transaction costs. According to this framework, the economic human exchanges dynamics are shaped not only by neoclassical production costs of goods and services but also by the transaction costs: the range of costs incurred beyond production and associated with searching, measuring, mediating and monitoring the whole exchange process (North, 1990). The dynamics of a society and its economic systems are a result of an interplay of institutions – the rule of the game or the “humanly devised constraints that shape human interactions” – and the various forms of political, economic, social and educational organizations (the game players). Therefore economic activities can be depicted through the interplay of market organizations (game players in the marketplace) and the institutions (setting the rules and regulations for markets). Smallholder farmers and SMEs in the rural developing world typically face access to market barriers, due to infrastructural deficits (i.e., rural roads, water management systems, distribution systems), limits to knowledge and technology access, asymmetric market information, in sum constraints due to their progressively marginal position in increasingly liberalized and globalized food markets. When smallholders are reached by interventions that address the infrastructural, technological and organizational constraints, they still have to deal with typically high transaction costs, especially those
arising in the commercialization stage, due to asymmetric information and limited marketing and management skills. In such agri-food market contexts, various types of organizations and institutions can interplay to advance towards value chain partnership: in this situation, moving away from so-called spot market transactions (with attributes of firm competition, and risks of opportunistic behaviour), small farmers and other value chain actors work in an increasingly more coordinated modality and through enhanced cooperation, sharing of common goals, governance responsibility and value chain management. While the empirical estimation of transaction costs can be quite challenging (Dorward, 1991), this framework provides valuable insight into the analysis of value chain dynamics and performance, and specifically in the qualitative analysis of the competitive advantage of smallholder sustainable farming integration into market value chains. To the extent that each participant aims at minimizing the transaction costs through cooperation, improved coordination, trust building, and definition of standards and contractual specifications, the whole network’s dynamics can become more efficient and effective in producing the intended results in terms of the shared goals on markets, on the environment (if included in the shared goals) and on the socio-economic wellbeing of smallholders.

Insights from business management. The theory of management offers valuable insights into the dynamics of value chains and their implications for sustainability, in particular the sub-discipline of entrepreneurship, which has been empirically tested as a relevant factor contributing to rural development and poverty alleviation (Berkes et al, 2006). Entrepreneurship can be framed as a concept appropriate to smallholders and rural communities, that in the past have been more commonly targeted and conceived within a framework of development assistance and provision of social services and public goods. Indeed, the basic needs and subsistence challenges of poor farmers and vulnerable rural communities clearly limit their behavioural choices, but they also tend to limit their motivation/capacity to take more proactive attitudes. This condition tends to induce a phenomenon that could be termed “latent entrepreneurship”, the situation in which any willingness to express higher aspirations for improving one’s welfare is not necessarily lacking per sé but is highly impaired by the objective difficulty of the basic subsistence challenges. At the individual farmer level, this sense of entrepreneurship may remain latent even after overcoming subsistence hurdles, as formed attitudes do not change automatically. Indeed, individual poor farmers approached by agricultural extension agents or NGOs often exhibit a sound risk aversion attitude, they are reluctant to make investments of labour or take credit for novel farming and planting of new cash crops if they are not convinced that a feasible market outlet will effectively demand their new produce, or if a convincing insurance mechanism to mitigate production risks is not offered. However, what is of significance here is that entrepreneurship becomes a necessary component when from the individual we step up to the collective level, or the farmer organization level. Entrepreneurship is not always/naturally a feature in farmer organization governance structures, and its value often has been underestimated in past development interventions and strategies. As many experiences of farmers associations (i.e., self-help groups and associations) show, belonging to a group and interactive human dynamics promotes learning processes and change. The membership process itself helps smallholders to find the entrepreneurial spirit in themselves, to gain confidence, sense of ownership and willingness to further take up roles of co-management of the value chain. Comparative advantage in farming systems, however, may depend on “the product of land tenure, investment, state policies and institutional arrangements” (Barham, 1995). At this point, “organizational fit” is a second cardinal notion in explaining the performance of market based approaches in the context of sustainable rural development. In the building of effective organizations, indeed, there is not a single set of success factors but, following Korten, good performance is dependent on synergies deriving from a good blending of roles, tasks and organizational variables among the collaborating actors, what he terms “organizational fit” (Korten, 1980). In a rural development context,

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12 The concept of organizational fit refers to the capacity to obtain a good match among “task, context, and organizational variables” leading to synergies and ultimately a good systemic performance. In a rural development project context, for instance, a good fit requires a successful blending of beneficiaries needs and capacities with the
the corollary of such a notion is that “fit” has to be reached through a learning process, which thus moves away from blueprint planning approaches and adopts on the contrary more dynamic, adaptive and error-embracing approaches. More recently, this notion of organizational fit as a way to define performance as a result of systemic synergies among different interacting stakeholders, is echoed by the conceptualization of the *shared value* paradigm, as a novel fundamental driver of firms competitiveness and sustainability (Porter, Kramer, 2011; Wilson et al., 2009). The shared value creation perspective, also called upon recently by the Nestle Group (Nestle, 2010), a food industry with a long and peculiar experience in developing decentralized agro-industry chains directly connected with small producers, means that firms learn to operate in a new fashion, taking distance from short term profit maximization: by embracing strategies for “profits with a social purpose”, they operate in “clusters”, forging partnerships with other local firms and non market actors, or forming “sustainable local enterprise networks” (Wheeler et al., 2005, Juma, 2011), where the production activity of the firms and the support activities of other participant actors are seen with the broader lens of their contribution to social and economic well-being.

*Insights from poverty and livelihood theory.* Following the seminal writings of Amartya Sen on poverty and development, the *capabilities* theoretical framework has consolidated the notion that poverty is a multi-dimensional issue, much linked to aspects of quality of life and the freedom of individuals to gain access to services and express higher aspirations rather than just increasing commodity based material wealth (i.e., agricultural yields) and household incomes (Sen, 1999). The notion of capabilities – the alternative combinations of “functionings” (states of being and doing) that a person is free to achieve - permeates a conception of poverty as a capability deprivation. These concepts of a new modality of *welfare economics* have in part inspired the *livelihood approach*, which identifies poverty as related to lack of access to various forms of capital assets (physical, financial, human, social, natural). Thus, rural poverty can be reduced by improving peoples access to such capital assets. Under this assumption, entrepreneurship can be seen (and becomes) a means to improve such access and achieve higher aspirations. The strategic importance of conceptualizing a linkage between livelihood approaches and market institutions has been well emphasized (Dorward, et al, 2002), as a key to identify a) rural poverty reduction opportunities and constraints arising from market development and b) the institutional issues that are crucial for moving towards a pro-poor market development. Indeed, innovation in institutional arrangements is often needed to simultaneously provide for improved livelihood, economic growth and ecological stability. The *livelihood approach* sensible to the role of markets and institutions, therefore, comes to hand in agri-enterprise systems as it underlines the importance of investment in physical capital, human capital, natural and social capital along the institutional dynamics of the whole agri-business system. In such a context, an agricultural value chain supported by proper policies and institutions that allow the consistent build up of capital assets (that can be shared by the local producers and processors) would be inherently superior in terms of social and environmental benefits at a local level than a value chain governed by biased policies and market incentives that simply maximize the economic efficiency gains of a single crop market segment downstream, for the agribusinesses in processing and trading and/or for final agricultural commodities consumers.

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13 “The concept of shared value can be defined as “policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic and social conditions in the communities in which it operates.” (Porter, Kramer, 2011, p. 66).

14 The use of income indicators as a proxy of poverty levels is problematic as Sen warns us that the capabilities approach “concentrates on deprivations that are *intrinsically* important (unlike low income, which is only *instrumentally* significant)...the instrumental relation between low income and low capability is variable between different communities and even between different families and different individuals (Sen, 1999, p. 87-88)”. 
4.2. A Classification of Sustainable Agriculture Value Chain Approaches

The concept of smallholder participated agricultural business models and value chains that comply with the principles of multi-functionality (as defined thus far), implies that at least four basic characteristics are identified and verified in order for them to develop as a significant contributor to sustainable agricultural development and poverty reduction:

a) Transaction costs reduction. Market transaction dynamics in competitive markets work towards efficiency in allocation of resources and therefore transaction costs matter, from the small farmer and the local village shop to the high end urban supermarket. The different private and public actors participating in an agri-business development endeavour share the goal of reducing transaction costs as a way to bring about efficient allocation, shared economic benefits, and competitiveness of the value chain on either local or export target markets. The smallholders participation in agricultural markets is thus encouraged in value chains that implement mechanisms to reduce their transactions costs compared to their net benefits;

b) Entrepreneurship of smallholders. Endogenous and exogenous drivers can stimulate entrepreneurship among smallholders starting from farming and post-harvest activities. They can be engaged in an entrepreneurial value chain which carries the potential of their “upgrading” and their increasingly rewarded participation as well as contribution to competitive advantages. Even for the least endowed, as farming increasingly becomes an activity generating surplus production for markets, the farm becomes a business venture and the farmer starts to reason about managing business risk. Their participation in an organized manner (i.e., cooperative business, association of producers, or through coordinated contract farming) and the associated institutional arrangements can display their entrepreneurial quality through the level of “organizational fit” in each particular context or, adopting Porter’s conceptual framework, through the capacity of the whole value chain to express “shared value” creation.

c) Public goods delivery along the value chain must be recognized. A diverse array of public goods are interlinked with proper agricultural markets, some of which are non-commodity outputs of social and ecological value, some are basic infrastructures such as energy, roads, telecommunications and water supply, and some are services necessary for pro-poor agricultural market growth. The actors of agri-business value chains do recognize that some of the activities involved have a value for the environmental quality (local and/or global) as well as for strengthening human and social capital. The farmers are indeed potential producers of public goods in the form of ecosystems services such as soil health and watershed management. Farmers, traders, processors and other local value chain actors also express a demand for public goods in terms of enabling infrastructure (i.e., roads, ITC) and services (i.e., agricultural R&D and extension services). These considerations suggests that public institutional arrangements for the provision of public goods should complement private market functioning rules and activities and should also design regulatory frameworks geared at minimizing social and environmental costs.

d) Technological dimension and sustainability. The technology framework is sufficiently coherent with the environmental and social multi-functionality attributes. Farming techniques, technology and know-how implemented by smallholders in their farms, as well as those implemented during harvesting, post-harvest and commercialization phases are conducive to both environmental stewardship and fair labour and social standards. Much of the emphasis of scholars is currently on
the technologies and know-how to be applied at the farming stage. The trendy notion of “sustainable intensification” encompasses all farming technologies and approaches that specifically strive to improve the productivity of land while minimizing the environmental impact (Godfray et al., 2010). However, the value chain perspective goes beyond the single yield productivity at farm gates and expands the analysis to include harvest, post-harvest, marketing and commercialization activities, where the management of the environmental dimension encompasses improving efficiency along the harvesting, storage, processing, packaging and shipping phases as well as in the final uses of food. The food waste flow is indeed a significant phenomenon Figure 3 (UNEP, 2009). In developing countries, it is largely generated by on-farm inefficiencies in harvesting and post-harvesting stages and during transport and processing, thus a large potential opportunity for economic and environmental gains through technological and procedural innovations exists in this area for smallholders and their downstream market partners.

The case studies analysis that follows, is thus focused on verifying to what extent these conditions have manifested themselves bringing the value chain to perform and deliver results on the different levels of sustainability explored (the three pillars of multi-functionality illustrated earlier). And where these conditions are present in a certain experience, what specific aspects of the business model, with reference to the institutional arrangements, the governance and the organization of the agri-enterprise, have had the primacy for good performance or for the emergence of problematic features. An excursion on the empirical field of evidence has led to a selection of about 30 cases from both academic literature sources and primary information sources, gathered through interviews and unpublished materials from stakeholders. The cases selected are inevitably a heterogeneous portfolio of place-based and context specific experiences, reflecting the variety of natural resources endowment, crop, market, technological, cultural and policy conditions in which each experience has taken place. However, they have been selected for their inclination to contribute to the poverty and environmental attributes of the agri-business system, and this allows to narrow down the nucleus of the analysis to their institutional and business organization attributes. A classification of such case studies has been conducted according to the emerging governance models and prevailing institutional arrangements for smallholder inclusive value chain experiences. Table 2 exhibits a summary of their common properties and features, relevant for a comparative analysis of their typical strengths and weaknesses in promoting sustainable agriculture systems. As in any classification, the exercise can capture only part of the variance in the sample, as the practice of rural development has a multitude of place-based and context specific approaches and settings. Further, the governance approach and the business model itself can evolve over time. This classification attempts to elicit typical constraint that seem to be faced by smallholders hindering participation and performance, the different degree of such constraints in different food markets, and examples of institutional innovations that shed light on strategies for overcoming such constraints or accepting them as boundaries for a more appropriate positioning of the value chain approach. The emerging features of governance, as illustrated in the conclusions, are also functional to investigating possible targeted policy
measures in support of the virtuous approaches and institutional innovations or policy measures which can create disincentives to unsustainable practices and approaches.

Table 2: Common properties and features of value chain governance models

<table>
<thead>
<tr>
<th>Business model features</th>
<th>Description of features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drivers of value chain origination and business collaboration</td>
<td>The priority purposes of the leading value chain business facilitator, <em>in primis</em>, and then of the other chain participants. Some business models display diverging (or different) motivations and others are inspired by a higher degree of shared objectives</td>
</tr>
<tr>
<td>Terms of smallholder participation</td>
<td>The modalities that bring about the market linkage for small farmers. Some models emphasize the “upgrading” of small farmers via univocal adaptation to imported technology or to new buyer-defined standards, others stress the local innovation and value addition, the impact on rural livelihoods, and autonomy in production choices</td>
</tr>
<tr>
<td>Institutional and organizational arrangements</td>
<td>The modalities of collective organization of farmers for linking to markets, and the emerging contractual arrangements among chain stakeholders</td>
</tr>
<tr>
<td>Chain wide cooperation</td>
<td>The dynamics that cement business relations and alliances among chain participants. Trust building and a support of farmers’ horizontal coordination are key aspects of cooperation. Equity &amp; inclusive knowledge management – distribution of value chain performance rewards. Attention to development objectives of participating communities, rural livelihood</td>
</tr>
<tr>
<td>Efficient vertical coordination</td>
<td>This is the key element for a streamlined, cost-effective, market demand responsive and economically efficient business management along the chain. Attention is given to identifying the competitive advantage of including smallholder farmers</td>
</tr>
<tr>
<td>Natural resources management strategies</td>
<td>The attitude of the value chain participants in terms of adoption of sustainable agriculture practices, techniques and technologies in farming, post-harvest and processing operations</td>
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</table>

**Corporate driven value chains**

These business models all exhibit a predominant role of the downstream value chain actors, the corporate buyers, in shaping the organization of the smallholders market linkage, or in excluding the participation of smallholders in favour of large farms and plantations. These buyers tend to eliminate the “middleman” node along the chain and develop a direct relation with farmers and farmer’s organizations. Typically the main driver is the paramount need of the buyer to assure a certain volume and quality of supply for either processing or for the final consumer markets. In this context, the norms and standards related to quality, volume, consistency and timing of supply become the most important objectives to be pursued. The adoption of sustainable agriculture practices can be present or absent depending on the
farming and crop context, as the environmental profile of the value chain is typically not one of the main drivers, unless the business model explicitly incorporates social corporate responsibility goals and/or intends to supply organic certified retail markets. The chain anchor role can vary, depending on the specific crop and market situation, and can include processors, exporters, or final retailers. There are at least two variants that are worth distinguishing as follows.

*Direct buyer models*

The agricultural markets displaying direct buyer chain governance models can include those of agricultural commodities, colonials such as sugar, cocoa and tea, and can be aimed at national or export retail. The chain’s anchor actor is typically a large agro-industry, such as a processing corporation or a large specialized supplier of an agricultural commodity for supermarkets. The common institutional arrangements include a network of owned and operated storage facilities, or some kind of other advanced logistics systems, local processing or packaging plants, and formalized contract farming agreements. The Nestlé group milk district model, for instance, implements local storage and buying centers which smallholders access to sell small quantities of milk, as low as 7 liters per day (Goldberg et al., 2005). In Pakistan, the 2004 picture of Nestlé milk district approach documented the participation of over 137,784 suppliers, 98% of which where small producers selling less than 10 Kg/day and amounting 92% of total Nestlé purchases of milk.

The terms for participation of smallholders are usually regulated by a contract farming agreement15, with clear but usually buyer driven setting of quality standards, volumes and prices and often accompanied by technical assistance to smallholders. The farmers can thus obtain higher prices than those on the spot market and the buyer can assure minimal supply volumes and a higher quality of produce. In Malawi, a Dutch processing company has initiated a value chain for paprika production, with company employees offering extension services, local depots for collection and contract farming with minimum price warranty (Shepherd, 2007). The extension agents also identify the lead farmers in the participating communities and select them as Field Assistants to oversee the activity of groups of 300-500 piers smallholders in exchange for a bonus linked to their productivity. Apart from the higher and secure income gains, local value addition is obtained to the extent that small farmers receive know-how transfer benefits and to the extent that some of them (i.e., the field assistants) improve their management capacity.

The cases of vertical integration can be conceived as an extreme variant of the direct buyer models, where the buyer eventually incorporates the farming activities through owned large estates or defines very strict contract farming protocols and quality control conditions with participating farmers. In such cases, the possibility for smallholders to take part in the production plans are usually reduced in favour of large plantations, for which they may be employed as farm labourers. In some cases of vertical integration, smallholders are still included through “out-growers schemes”, which are organized directly by the buyer or by their partner large farms to increase both volume and flexibility of production, as well as to obtain local political recognition and support. It is, for instance, the case of several jatropha biofuel value chain initiatives in Sub-Saharan Africa, that the processor corporations are trying to improve the sustainability and equity features of their bio-energy feedstock supply. The recent corporate choice of Unilever to improve the sustainability of its tea industry brought about a partnership with Rainforest Alliance, and local agencies (such as the Kenya Tea Development Agency) aimed at improving both the sustainability of farming practices and the integration of their own large tea estates with the production of smallholders. Another example is the case of some manufacturers of herbal medicines, who feel that this model responds best to their need of absolute control over the quality of the farming operations and the safety standards of the raw materials.

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15 Contract farming is a notion describing a variety of contractual arrangements by which farmers agree with sponsoring buyers to produce a certain crop with certain minimal volume and quality standards, and they usually obtain a guaranteed price and also access to know-how and agricultural inputs (see FAO, 2001 for an overview).
Retailer driven models

The large corporate retailer or supermarket is the anchor of this business model, very much driven by the precise requirements of retail markets and by the dynamics of modern consumer demand. In the course of the last three decades, the globalized retail of food has paved the way for unprecedented structural changes in the processing, commercialization and consumption of food around the globe. In particular, large retailers have stimulated new pathways and modalities for food procurement systems, with implications for farmers and small processing businesses (Reardon et al., 2010). At the macro level, these trends in food trade have stimulated new opportunities for agricultural production in developing countries, where in addition to the traditional export crops (i.e., colonial commodities) there has been strong growth in the international trade of less traditional export commodities: the segment of fresh fruit, vegetables and cut flowers moved from 14.7% of total world agricultural trade to 21.5%, and the segment of seafood (fresh and processed) moved from 6.9% to 19.4% (Wilkinson, Rocha, 2009).

However, the business models of the global retail industry have been redefining the quality, safety and logistical standards that are pre-requisites to establish and consolidate market linkages with suppliers and ultimately with producers. In such a context, the perishability of the produce, the fito-sanitary standards, the demand for homogeneity and aesthetic features, together with timely production schedules and tightly planned delivery schedules become crucial requirements, and thus potential entry barriers for small farmers unable to collectively adapt to such new and demanding conditions. In these value chains, the supermarkets tend to exert tight control over the procurement and distribution system and establish links with preferred suppliers and specialized wholesalers. On the production side, large scale farms and plantations are typically in the position to guarantee a streamlined operation and adoption of standards, while small farmers possibilities are dependent on the capacity of their collective organizations to metabolize the technical and management skills needed to meet such standards. The reported experience of Carrefour business model in China, which in 1999 started to market a “green” fresh produce line with full traceability, shows how the preference was for large farm suppliers (Vorley et al., 2009). Institutional arrangements that have been implemented for smallholder participation include contract farming agreements and also out-grower schemes. The terms of participation, coherently with the retailer control over the distribution system, are usually strictly defined by the downstream actors through formal contract specifications. In the case of organic and fair trade market outlets, the certification process is an additional requirement and additional burden that increases the transaction costs particularly for smallholders if not collectively organized. As for the value addition process along the chain there are mixed signals. In general, retailer driven models do not score high on equitable distribution and a large quota of value addition is concentrated on the end of the chain. In a context of developing countries with high market (or segment) concentration, competitiveness may decline and the risks of abuse of power by the downstream players is often exacerbated by the typically relaxed regulatory frameworks and weak (or non existent) competition policies (Henson, Cranfield, 2009). There are instances, however, in which virtuous cooperation processes bring about negotiations along the chain with more balanced results, according to a growth cum equity paradigm (see Case 4 in Appendix 1). Such outcomes seem to benefit from the participation of external facilitators or professionalized chain intermediary actors that represent the farmers interests (see next paragraph). Conversely, weak farmer organization management and lack of pro-poor intermediation can favour less equitable terms of trade. The outcomes in terms of distribution of rents along the chain differ by agricultural commodity markets as well. In traditional commodity markets such as tree crops (i.e., tea, cocoa, coffee, cotton), in which typically small farmers combine their production with subsistence or local cash crop farming, scholars have identified a macro trend of lower value retention, or downgrading, at the production stage (Gibbon, Ponte, 2005). For instance, for coffee and cocoa a tendency to adopt new blending or processing techniques has allowed supermarkets to mass
commercialize lower quality raw materials. The safety net of such small farmers is often the traditional agricultural activity they maintain at the margin (for subsistence or local markets). In non-traditional commodity markets, such as fresh fruit and vegetables, the outlook seem generally more positive in the sense that there is typically higher specialization and quality specification, thus translating into higher value addition at the production stage. Correspondingly, smallholders collectively organized and linked to such value chains have more opportunities to negotiate better economic rewards, and to receive know-how transfer. On the contrary, when retailers adopt models not inclusive of smallholder farms, thus preferring large plantations as producers, the risks of uneven distribution of value added can be higher. A recent value chain analysis of Ecuadorian banana plantations export to UK – a market in which five large retailers control 70% of the total supply - revealed that the UK retailers capture approximately 40% of the value (measured as percentage of final consumer price), the international traders 31%, while the plantation owners keep 10% and the plantation workers 1.5% (ActionAid, 2007). In Asia’s emerging markets, analysts have reported recent innovation in the modern procurement strategies of supermarkets which carry a developmental value: public-private partnerships are formed with retailers, NGOs, government agencies, farmer organizations and donors for the creation of “hubs” or “platforms” clustering in rural locations all the necessary services for effective chain coordination, thus reducing the transaction costs and improving competitiveness along the chain (Reardon et al., 2010). Such new approaches – which resemble a multi-stakeholder network approach (described later as Hybrid Model) hold promise for a profitable engagement of smallholders and the widening of effects, including rural socio-economic and livelihood improvement.

**Intermediary driven models**

Under this class of governance models there is a more heterogeneous set of potential leading actors, from the public or private sector, and accordingly the institutional arrangements can vary. Coherently, the set of primary motivations of the anchor actors revolves around the rural development and regional development goals in the case of the public agencies and NGOs. For the private sector intermediaries, the supply of services is motivated by the objectives of satisfying “more discerning customers” (Vorley et al., 2007). In some cases, the market linkages for smallholder farmers is facilitated by local traders, who often act as providers of inputs and other services, such as informal credit and market information. Similarly, there are cases that show how this intermediary role is played directly by input suppliers or by traditional wholesalers. The institutional arrangement usually established is on in which the input supplier offers short term credit agreements by which seeds and chemical agri-inputs purchases are paid at the time of harvest. In other cases, it is an NGO or a public extension agency acting as a catalyst of a market linkage and, in such situations, the institutional arrangements typically recognize the public good nature of the services rendered and of the rural infrastructure development intervention. Grant support is often at the base of such interventions and cost-recovery is not conceived as a priority, rarely in the agricultural extension services and possibly in the provision of rural infrastructure. Where it does not exist yet, the public agency or the NGO contributes to the organization of a collective farmers’ institution. The common denominator, in all intermediary driven models deemed to be sustained, is that the institution facilitating the downstream and upstream linkages performs its function in an way that reduces transaction costs for all value chain participants. The intermediary plays a key role in identifying and carrying on the market linkage for smallholders and its effectiveness depends on its capacity to add value to the chain by performing key service provision.

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16 On the opposite, the upgrading of producers is safeguarded when a fair trade or organic cocoa or coffee is marketed, although some critics point out that also in such instances, the share of rents transferred upstream in the value chain is not very significant.
From the empirical evidence of the cases reviewed, these models seem to have mixed results with regards to the terms of smallholders’ participation. Not surprisingly, the intermediaries external to the value chain (public and civil society type of facilitators) usually propose fairly equitable terms of participation to small farmers, and focus on strengthening their collective capacity to better manage the post-harvest and commercialization activities. However, given that they operate in the context of grant-making interventions, the institutional sustainability and the “organizational fit” of such arrangements can be questioned. Especially in the NGO sector, there is a risk to experiment with market approaches to rural development without sufficient business incubation and development expertise, resulting in inappropriate balance between distributional and market competitiveness goals. For instance, the first experience of a Chinese NGO (see Case 3 in Appendix 1) setting up a fresh organic vegetables value chain with a poor farmer community in Yunnan, ended up offering them purchase prices that were too optimistic for the given market and therefore not sustainable over time. The intermediaries internal to the value chain, on the other side, tend to be less generous but perhaps more realistic in negotiating terms with smallholders, recognizing their competitive advantage especially in labour intensive farming. In general, local value addition is also targeted, in coherence with the attention of these intermediaries to develop the rural economy, and a local processing capacity in addition to quality primary production. As further discussed in the conclusions, the promotion of private sector intermediary-driven chains may impose the implementation of specific mechanisms to mitigate the risk that the private intermediary gain extra benefits at the expense of upstream farmers. The case of NorminCorp in the Philippines (Text Box 3) is exemplary of a intermediation platform that obtained quite a good balance between the needs of professional business and chain management and the developmental goals of small farmers inclusion, within a context open to employ sustainable farming practices. The coordination efficiencies gained have resulted in net benefits for all participants and an increase in profits for farmers ranging from 25 to 35%.
The Northern Mindanao Vegetable Producers’ Association (Normin Veggies) was formed in 1999 to link small farmers to dynamic fresh vegetable markets in the country. It is set up as a non-profit service organization and it clusters over 177 members representing the many stakeholders that can contribute to inclusive and sustainable agriculture value chains: the farmers - poor smallholders, but also medium scale farmers with financial assets and large estates -, input and service providers, development organizations, and local government agencies. The common denominator of this collaborative partnership is that all members share the core value of sustaining smallholder farming and the rural livelihood. In addition, Normin Veggies objectives are the promotion of sustainable production practices, including bio-pesticides use, improved food safety standards, enhancing the consistency of quality of produce and gaining access to new markets. The innovative production organization is based on the concept of production clusters of small farmers producing a specific set of fresh vegetables. Each cluster has to link to a larger commercial farm member in the location, which hosts small farmers’ visits and trainings, and also provides a mechanism of back-up production: the large farm guarantees the supply of 25 % of the vegetable volume contracted by the buyers to the cluster members. Initially, Normin Veggies smallholder producers mainly targeted the traditional local wholesale market. In 2005, with support from the Department of Agriculture and Growth with Equity programme of the USAID, it was able to build a consolidation center at the local wholesale market, which helped to access new outlets such as restaurants, hotels and supermarkets. The smallholder members receive the assistance of NGOs to improve their skills and practice and to be able to participate in these modern markets. However, another important innovation of Normin Veggies has been its ability to engage with both modern and traditional wholesale markets, thus harnessing the advantages of both: higher price premiums in the high value modern markets and the possibility to sell surplus production at optimized conditions in the traditional outlet. In fact, in order to mitigate the risk of insufficient volumes for modern markets (supply reliability), the smallholders usually plan to farm a surplus of 50 % of the orders received from the consolidation center. In scaling up operations, the board of Normin Veggies intelligently realized that the association could not handle all post-harvest and marketing tasks alone and thus it promoted the creation of a corporation, NorminCorp, fully staffed with professional marketing experts, to take on the responsibilities of market monitoring, business development, marketing and logistics. The newly introduced arrangement allowed the large and small farmers to focus on quality production, production planning, grading and post-harvest operations, typically differentiated for each cluster and produce segment. NorminVeggies would therefore guarantee these activities up to the storage in the consolidation center. The role of NorminCorp would be to coordinate all subsequent activities that could be efficiently centralized and became a “market facilitator” company which charges to NorminVeggies a facilitation fee for the transactions. This is different from a trading company arrangement, as the farmers remain responsible and accountable for their produce delivery to the buyers, retaining ownership up to the point of sale, while NorminCorp only handles the transaction negotiations and marketing management. This arrangement provides the farmers with the incentive to deliver the best quality to the buyers who are paying the farmers price directly to them. The traceability system in place also works as a disincentive to malpractice, as all produce rejects can be traced back to the original producer. The NorminVeggies and Normin Corp value chain management optimizes the competitive advantage of all members: for instance, the complementary competitiveness in production is leveraged, so that large farmers produce vegetables that are more capital intensive such as lettuce, and small farmers produce labor intensive vegetables such as cabbage and carrots. NorminCorp strives for optimized management of commercialization by negotiating higher prices, managing the sale of all produce (including lower quality) in differentiated markets, and reducing transaction costs. The gained coordination efficiencies have resulted in net benefits for all participants and an increase in profits for farmers ranging from 25 to 35 % (Conception et al., 2006).
Producers driven models

One way of defining “producer-driven” agricultural value chain models is to consider them as a special case of the intermediation model. This is because they generally are cases in which the smallholders are linked to markets through a bottom-up empowerment process which aims at establishing and/or consolidating their collective organization. This can be done more or less formally. For instance, one way is through the action of a leader farmer, who takes the entrepreneurial responsibility to organize and bulk the produce of neighbouring small farmers for sale to a certain buyer. In other cases, formal institutions are created to organize and manage the smallholders’ community as a single market operator, such as through the formation of an association of producers or the establishment of an agricultural cooperative. The creation of such organizations results is the sharing of fixed costs, economies of scale in the purchase of inputs, and in marketing (Torero, 2011). The facilitation of such collective action can take place through internal leaders or thanks to the action of external intermediary agents such NGOs or public agencies. This process can lead to business-oriented partnerships, such as in the case of Mabeli SA in Guatemala, a community-owned producer of essential oils and medicinal herbs, in which the shareholders are a community development group (51%) and the farmers producing the raw materials (49%). Producer driven value chains that are able to “upgrade” the small farmers into managing the post-harvest value addition are the most promising with respect to sustained rural socio-economic development, as in the case of EPK Outgrowers Empowerment Project Company in Western Kenya (see Text Box 5).

However, the field evidence suggests that this process of “horizontal coordination” is a complex business and calls for a delicate balance between the demand for an entrepreneurial capacity and orientation, and the rural welfare demands that are often associated with the farmers collective organizations, especially those established under cooperative principles. Most of the literature is in agreement that mixed results have been obtained with the institutional arrangement of farmer cooperatives, especially in Sub-Saharan Africa due to issues of complex decision making processes, limited incentive to productive investments, and the common problem of political capture, with the resulting mis-management of the business (Poole et al., 2010; Poulton et al., 2010). The successful and lasting experience of Amul Dairy cooperative business in India, is a case in point of how crucial it is to establish and maintain a competent management board, protected from political interference (Goldberg, 1998), obtain a sustained business growth, with small farmers enhanced welfare and participation. It is intuitive that the cooperative principle is quite a distinguished way of conducting a business operation, which needs a high level of motivation to distributional goals and democratic participation at its basis, and thus is in need of a fertile ground and an endogenous process of self-organization by the farmers in order to function properly. Many instances in which such a process is facilitated by external agents carry the risk of an excessive external intervention, which in time reveals itself as unsustainable. For example, in Mali, a Dutch NGO facilitated a shea butter value chain, supported improved quality production and storage by women’s groups and the establishment of a cooperative union to market the product. Initially the participating women increased their income, but the initiative suffered after the four year project timeline, because the NGO had directly run the marketing operations without building local capacity to take over this activity (Shepherd, 2007). Horizontal coordination can also take place through the establishment of private firms, as in the case of the cashew market in Mozambique (Webber et al., 2010). With assistance of the NGO TechnoServe, one of the local cashew agro-industry leaders convinced a group of small processors to join and create Agro Industria Associadas (AIA) as a co-owned private company, that would offer services in processing, distribution and marketing. Clear economies of scale and other benefits emerged after two years of operation, including improved quality control (poor quality claims reduced by 50 %), improved savings in inputs procurement, and improved joint branding (Donovan et al., 2008).
As for smallholder participation, producer-driven experiences are by definition able to assure good terms and inclusiveness, as they often originate from a self organizing initiative of the rural community in response to local poverty challenges. The association of sisal producers APAEB in the semi-arid of Bahia State, Brazil, which today is fully integrated with its own credit coop and its factory for sisal textiles, has its origins in the decision of the first smallholder families to break out of their dependence on exploitative local “middlemen” relations. In general, the empirical evidence shows that this type of market linkages are also open to expand the participation to collective agricultural production attracting new members or outreaching to additional farming communities (see Case 4, Appendix 1). Leading farmers schemes are also a typical mechanism that improves participation to the value chain. The bottom up empowerment process is also conducive to the development of local innovation and its uptake by downstream market operators. The recent rediscoveries of indigenous crops farming, certainly supported by development agencies, has its roots largely in the local farmers’ knowledge systems.

Finally, a common pre-condition of success (or failure) in sustaining the business model is the quality and authenticity of the motivation in producer-driven models. The primary source of entrepreneurship, as well as of the farmers cohesion, must lie in their communities. Exogenous agents, such as public extension programs or development NGOs can certainly play as facilitators, but have to eventually trigger an endogenous willingness to bring about a certain business venture, which is locally defined, and guarantees a certain identity preservation and rural livelihood improvement, as envisioned by the rural community. The case of Kallari cooperative is emblematic of the importance of such local vision and leadership, as well as the Oromia Coffee Farmers Cooperative Union experience (see Text Box 4).

**TEXT BOX 4: Oromia Coffee, A Multi-Layer Cooperative Model In Ethiopia.** Following a process of market liberalization and the price decline of coffee on the commodity market, in 1999 a group of 34 coffee farmer cooperatives (22500 smallholders) came together to form the Oromia Coffee Farmers Cooperative Union (OCFCU) and obtained a permit to become exporter from the government. Today OCFCU is a federation of over 115 coffee cooperatives representing over 100,000 coffee growers. The union has taken leadership and chose to manage the supply chain by eliminating two or three trading stages and by integrating coffee farming with sorting, roasting and directly exporting its Arabica coffee. OCFCU is active in fair trade only, organic only, fair trade plus organic, as well as conventional coffee markets, with about 40 % of export sales being fair trade certified. About 50 % of the coffee is commercialized locally and the other half is exported. Each primary cooperative is owned by 300-500 small farmers and functions as a hub for quality coffee farming knowledge dissemination and as a first processing center, while the Oromia umbrella organization focuses on the final processing, marketing and distribution of the coffee. As for farming practices, agrochemicals have never been used; instead environmentally sound methods developed over generations have thrived. All of the coffee is shade grown amongst acacias and oaks and the fallen leaves and decaying plant matter, along with animal manure, which helps to enrich the soil. Further a intercropping practice is employed, so the coffee bushes are interspersed with plants such as cardamom and ginger, fruits such as papaya, mangoes and avocados, and root crops such as sweet potatoes. This helps to enhance the fertility of the soil. The average farm is about two hectares (five acres) in size and produces around 400kg of coffee a year. Farmers rarely employ labour as all the work is done by family members except at peak periods such as harvest when families traditionally help their neighbours without payment.

Hybrid network models
Some recent business scholars analysis (Kramer, Porter, 2011), and the literature on social enterprise (Rangan et al., 2007; Prahalad, 2010), as well as some of the interviews conducted for this paper, all point to the fact that a new way to conceive business development is emerging that essentially focuses on the convergence between a) the natural profit motive of the private sector enterprise and b) the goals and needs of the wider societal and environmental context in which the business will grow and mature. The underpinning idea is that embracing a vision of “shared value” creation by the private sector firm, in a context of low income rural developing world, can align poverty alleviation and rural welfare enhancement with solid business growth. The assumption is that these new business models, opening to a modality of multi-stakeholder networks formation, find an added value formula in forging partnership between private firms, government agencies, and civil society (Wilson et al., 2009). This collaborative network behavioural choice can stimulate innovation as well as mutually reinforcing feedbacks, therefore supporting sustainable returns on natural, economic and social capital. The task of stimulating such networks can be quite challenging, as it requires the capacity to establish multi-actor collaborations, and ultimately failure can take place whenever a sufficient balance in blending coordination and cooperation motives is not achieved. A catalyst agent often takes the lead in forging the partnership, but such leadership is expressed without overstating their role and power. In turn, practitioners rightly remark that significant timeframes are required to achieve this balance (Berdeguè et al., 2008).

In the framework of agricultural development, there seems to be a growing experience base adopting a hybrid network business model that combines the best features of buyer-driven, producer-driven and intermediary-driven models, leveraging on the typical strengths of each participating actor along the value chain (and beyond), to bring about a higher performing and possibly more resilient value chain partnership. It is actually very interesting to identify the trajectory of some cases that evolved, through an error-embracing approach and a collaborative attitude, from a producer-driven or intermediary-driven model to an hybrid one. The Kallari cooperative case is emblematic in this respect as it clearly moved from its initial stage of a self-help initiative of cocoa smallholders with the dream of producing chocolate to a social enterprise initiative through the support of a network including US grant-makers, committed individual facilitators, the Slow Food movement, and a chocolate company Scharffen Berger (see Case 5, Appendix 1).

More balanced combinations of shared objectives in terms of coordination and cooperation in the governance of the value chain allow the participants to create a platform for a) genuine negotiation of the different priorities at stake, b) genuine effort to address the trade-offs and c) proper business acumen to leverage the synergy potentials. The challenging tasks seem to lie more on the management side of the equation than on the production cycle or on the technological dimension. In the case of sustainable agriculture, as previously defined, the challenge is to build a trustworthy set of relations among partners in the network in order to reconcile market, poverty and environmental priorities. Indeed, the case study investigation seems to confirm that it is easier to find pilot experiences of successful hybrid value chain models than significantly scaled up examples. This stimulates a reflection on the notion of scalability itself. While pilot projects certainly can be expanded, this does not translate mechanically into an indefinite growth of operations by the original chain participants in a certain region. Perhaps, the more appropriate concept is replicability of the successful experience in similar settings. In this perspective, the scale of production activities is adapted to local conditions, and is one (large or small is not an issue) that assures sustained outputs over time.

The instances showing the adoption of such hybrid models do not necessarily have a dominant anchor actor in the value chain governance. Some cases describe value chains clearly initiated by a social entrepreneur, but often times there seems to be either an immediate or progressive dynamic of alliance building, with shared responsibilities and roles, where the “mixed network” of agents can be seen as a whole. These networks in agri-business value chain development can include many different types of players and institutions, as exemplified in the Table 3.
Table 3: Examples of partner institutions in hybrid networks

<table>
<thead>
<tr>
<th>Typical network institutions</th>
<th>Examples</th>
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| Private sector              | • Farmer organizations  
                             | • Agri-businesses – inputs suppliers  
                             | • Agri-businesses – technology suppliers  
                             | • Agricultural commodity industry  
                             | • Social entrepreneurs  
                             | • Social investment (or impact investment) operators (i.e., ethical banks and funds) |
| Non profit sector           | • Local grassroots  
                             | • International development NGOs  
                             | • Private voluntary organizations (i.e., religious organizations) |
| Government                  | • National government authorities  
                             | • Agricultural extension agencies  
                             | • Decentralized government entities  
                             | • State owned agri-enterprises or federations of producers |
| Donors & Investors          | • Multilateral & Bilateral Donors  
                             | • International institutional investors  
                             | • National agricultural banks and lenders  
                             | • National and international private finance operators (i.e., social impact investment networks, institutional equity investors) |

In these types of networks, the terms of participation of smallholders are usually characterized by enhanced features: compared to corporate driven models, they tend to outperform in terms of the outcomes of value redistribution and local developmental, environmental and cultural objectives; compared to the intermediary driven or producer driven models, they tend to outperform in terms of a higher degree of competitive advantage, through a) improved assimilation of standards and professional business practices and b) improved vertical coordination with the downstream players. An area of weakness seems to be the capacity of these networks to assume the role of standard setters rather than simply assimilating the technical, safety, and aesthetic standards of global market players. The possible exception is the experience known as “fair-trade” and organic agricultural exports. In such instance, a genuine combination of civic society movement endeavours and a responsible consumer demand have been the drivers of change in global food markets.

In terms of institutional and organizational arrangements, the governance structure of these hybrid models is heterogeneous, reflecting the diversity of situations, as well as the typical experimentation setting of institutional innovations. In general, there is a tendency to establish a participatory platform among the main chain partners, conducive to balanced agreements. When contract farming agreements are implemented between buyers or intermediaries and smallholders, there may be clauses that establish flexibility of terms and openness to renegotiation, for instance with price adjustments for the purchase of crops depending on the dynamics of the commodity exchange, or a system of weekly pricing following the market. These innovations in contract farming are contributing to reduce the risk of farmer “side-selling”. In Colombia, private buyer Postobon introduced contractual flexibility in the contract agreements with small blackberry farmers: a market-condition clause was
introduced in which farmers could sell up to 20% of the produce to other buyers in times of high market prices (compared to the contracted price), while in times of low market prices Postobon could procure up to 20% of the contracted volume from non-contracted farmers. In the case of Quatro Pinos partnership, the high perishability of the fresh vegetable supply chain, which translates into a higher production risk for small farmers, brought the actors to agree on establishing that a quota of the sales revenue would be set aside to capitalize a risk mitigation fund mechanism (see Case 4). It is often the case that some sort of co-ownership arrangement allows small farmers to truly “upgrade” in the value chain management and control: one such mechanism, experimented by several networks, is that farmers cooperatives become shareholders of local or international marketing or processing corporations. This is the case of the cooperatives majority shareholders in AgroFair company (see Case 1, Appendix 1) or the full cocoa growers ownership in the Kallari chocolate case. Other times, the participation to the value chain management is gradual, moving from innovative out-grower schemes: participating farmers are asked to reach certain performance thresholds, after which they start acquiring the status of shareholders. In Ghana, such set up has been designed by a German company in the bio-fuel sector. Actors of these value chains point out the long term timeframes often necessary to establish and consolidate resilient partnership and meaningful results (van der Waal, 2011; Berdegué et al., 2008).

Some scholars have identified a class of these hybrid governance arrangements as “new generation cooperatives” (Donovan et al., 2008; Reardon et al., 2010), where cooperative principles are maintained, but blended with corporate business management principles and organizational structures, and there is investment and profit-sharing by member farmers essentially through stock ownership. In this context, the efficient collective action of member farmers allows to minimize the transaction costs of horizontal and vertical coordination, while providing a sound basis for inclusive business and strong negotiating power with upstream and downstream actors. These arrangements are particularly salient for the growth of sustainable agriculture value chains in Sub-Saharan African region, which has seen a substantial development of cooperative initiatives, with heterogeneous results and contradictory assessments (Develtere et al., 2008; Poulton et al., 2006). Clearly, the past history of cooperative development in post-colonial Africa sets the stage for “path dependence” and the continuation of institutional and governance failures. However, recent studies contend that Africa is experiencing a renaissance in cooperative enterprises, more modern and independent, and taking the form of “strategic networks”. Indeed, these arrangements are able to overcome the typical weaknesses suffered in the past with the implementation of agricultural cooperatives, namely the risks of mis-management due to political capture and/or cumbersome decision-making processes, and the issue of weakness in capital availability for investment. The case of the EPK-OEP tea out-growers illustrates an alternative farmer-owned private company which invested in co-ownership of the value chain: most of the tea farming profits are spent on expanding production and initiating tea processing (Text Box 5).

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17 The bio-fuels value chain experiences often attempt fair inclusiveness of smallholders, especially after increased pressure and public scrutiny on the social and environmental implications of bio-fuel plantations. In Mali, for instance, Mali Biocarburant SA is a social enterprise in the bio-fuel manufacturing segment that includes the union of over 4000 participating jatropha small farmers in the ownership structure. They hold 20% of shares, directly benefitting from biodiesel sales (Vermeulen & Cotula, 2010).

18 The typical drawback of traditional cooperatives is the tension between the choice of reinvesting their profits in the business to capitalize the entrepreneurial activity or paying dividends to the members for household or community development purposes.
TEXT BOX 5: EPK-OEP Company, Out-growers & Women Empowerment in Tea Production. The Eastern Produce Kenya Out-grower Empowerment Project (EPK-OEP) is a small-holder owned company with a participation of about 5200 smallholders, many of which are women farmers, supplying tea to Eastern Produce Kenya Ltd. (EPK) a subsidiary of Camellia, a UK base large tea agri-business. Camellia procures tea from its own plantations, but in the 1980s also started to manage out-grower schemes with smallholders and contract farming arrangements. EPK assisted the out-growers in setting up the company in 2006, following their certification as fair trade tea producers by Fairtrade Labelling Organizations International (FLO), with the idea of collectively managing the fairtrade premium. As a result, EPK-OEP started addressing the need for improved terms of trade, diversification of income generation (i.e., food gardens), upgrading the production through technical training and improved access to inputs/credit, education on sustainable use of natural resources, and nurturing women participation (13% of members in 2009) and entrepreneurship. The company accepted the offer to purchase one of the tea estates by EPK with a tea processing facility at USD 5.5 mln. and since then 70% of the fairtrade premium has been used towards the investment, while 25% has financed social projects and the balance 5% goes to cover management costs.
4.3. Unpacking the salient features of the business models

The case studies object of investigation disclose a collection of very heterogeneous settings in terms of farming practices, crops, market outlets, policy frameworks, and rural development stage. The unifying element consists in their common tendency to respond simultaneously to poverty reduction objectives, to environmental stewardship goals and to the aim of reaching competitive advantage in the marketplace, in other words to respond to the multi-functional role of agriculture paradigm depicted earlier. This section of the paper attempts to highlight the features of business models that demonstrated themselves to be the most salient for the promotion of smallholder inclusive sustainable agriculture value chains. In order to ease the recognition of (and amplify the reflections on) such key features, and their implications for sustainable agriculture systems, the analysis is enriched by references that single out illustrative aspects drawn from the database of case studies. Particular attention is placed on the governance mechanisms typically implemented. Some of the distinguished scholars engaged in global value chain analysis have attempted to construct a theory of value chain governance (Gereffi et al., 2005). They propose a taxonomy of governance forms that include five broad categories:

1. Markets. This form of governance is typical of standardized products with low asset specificity, thus offering a low level of complexity in transaction. In the case of a rural village farmer, this includes the local spot market transaction for his/her surplus crop, exchanged at the price negotiated on the spot, usually commanded by the buyer.

2. Modular value chain. Typically the producer is able to supply to customers according to their specifications, which are not difficult to codify. The level of competence of the producer is sufficient to follow specifications and, as a result, the asset specificity and the complexity of transaction is maintained low.

3. Relational value chain. The producer and the buyer have complex interactions, due to the difficulty of codifying the product specifications. The producer capabilities are usually high. The exchange between producer and buyer tends to create mutual dependence, which “may be regulated through reputation, social and spatial proximity, family and ethnic ties, and the like” (Gereffi et al., 2005, p. 86).

4. Captive value chain. This form of governance takes place when asset specificity of the product is high, the ability to codify is also high but the capabilities of producers are limited. The typically large buyer has to exert a high degree of monitoring and control over the typically small scale and locked-in producers.

5. Hierarchy. This governance form corresponds to situations of vertical integration. Usually the low ability to codify the transactions, paired by the low capability of the producers, drive the lead firm to manufacture in-house, taking full and direct control of the production cycle.

Although the value chains object of this paper have their peculiarities, in the sense that a) the smallholder farmers are not fully identifiable with firms, and b) in addition to firms and inter-firm dynamics, they can become market actors due to relationships with non-market actors (i.e., NGOs, public agencies), this conceptual framework is valuable. Drawing inspiration from it, this paper particularly adapts to sustainable agriculture value chains (both local and global) the distinction between relational and captive models, thus synthesizing in two broad governance categories some important differences, in

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19 The relational value chain concept in Gereffi et al. (2005) contains some characteristics that are not very applicable to the case studies object of this analysis, while others are appropriate to summarize the features of governance models in smallholder inclusive agriculture markets.
terms of the main drivers of the business model, and their implications on small farmer participation. Captive value chains, in the agricultural context of interest here, adopt a governance form which highlights the necessity for the large corporate buyer downstream to exert control on the quality, volume and continuity of supply. This takes place through complex transaction specification and complex standards and grades for the given crop. Typically there is a tendency towards high coordination efforts and there is a high degree of power asymmetry, where the buyer has high contractual power over the intermediaries and the small farmers. Information flows also tend to be unidirectional, from the buyer upstream, with limited option for negotiating the specifications dictated by consumer demand. Relational value chains, in the agricultural context of interest here, can be defined as providing a playing field in which, irrespective of the high or low complexity in codifying the transaction, the capabilities of actors upstream (farmers but also intermediaries) are recognized and often nurtured, and the coordination effort is focused on building trustworthy commercial relations, building reputation, with less power and informational asymmetries and more significant opportunity for collaborative exchange, risk-sharing, and “chain-wide” cooperation. Further, the “market” governance form in Gereffi’s taxonomy is associated with the situation indicated as “independent farmers”, in which a single farmer (not organized in a collective institution) accesses a local market through simple spot transactions; conversely, the “hierarchy” model is (at least in part) associated with the situation of vertical integration in corporate-driven business models, in which the buyer owns the large scale farm or plantation.

Risk and transaction cost dynamics in the formation of market linkages

For a more complete understanding of the above mentioned chain governance models and their dynamics in sustainable agriculture approaches, it might be useful to focus on those factors affecting the risk and the transaction costs dynamics for smallholders linking to markets. It is worth repeating here that the focus is on those smallholders that move beyond subsistence farming and thus have the opportunity to bring their produce to formal or informal markets. At this stage, these farmers are increasingly prone to think of their farming as a business, and consequently business risk management slowly becomes a normal attribute of the farming decision making framework. There are many risk factors involved in managing a small farm as a business rather than for simple food security. Decisions need to be made about investments in labour (own labour or hired), technology, external inputs or acquisition of additional land. On the demand side, the crop price fluctuation risks are also at work for small producers. Some of these risk factors play as absolute barriers to market linkages beyond the local trading. If land property rights are uncertain, it becomes quite risky for small farmers to seriously think of farming beyond the subsistence needs or beyond the simple spot transaction in a local informal market for their occasional surplus production. In contract farming experience, the buyers often prefer larger farms, or the less asset constrained small farmers, because producing for the market requires bearing investment costs: in the case of Hortifruti wholesaler in Honduras, for instance, a natural selection of small farmers was imposed by the fact that for participation in the value chain they had to agree to pay the costs of supervision, fixed at USD 1000 for the first year, and USD 500 for the following years (McCullough et al., 2008).

Risk factors can be associated with transaction costs that the smallholders have to ponder about, and dynamics can become complex in this respect. For instance, considering the issue of access to credit, a weak rural finance infrastructure (formal or informal) easily forms a significant barrier to input and output market linkages, and in such situations the transaction costs for searching for, screening and negotiating an agricultural loan, may be too high for an asset constrained smallholder. If rural credit is easily accessible, however, the smallholder farmer that decides to increase production for markets also has to make choices about working capital financing, overcome the fear of commitment to formal or informal lending mechanisms, and take on the borrower risk. Table 4 offers a non-exhaustive summary of
common factors that generate barriers, risks and different types of transactions costs for smallholders that intend to (or have the potential to) become market agents, beyond the local spot transaction outlets. It also intends to offer some insight on how transaction costs can influence the likelihood of occurrence of a certain the type of governance structure that engages smallholder farmers in value chains, or excludes them from value added commercial agricultural activity. For instance, if the existing economic infrastructure is characterized by a weak rural transport system, this generates a risk of crop quality deterioration and post-harvest losses, which in turn define a barrier to reach high value urban markets for remote farmers. If they engage in a value chain, they (and the buyers) also face the transaction costs of compliance to contractual terms, as well as the costs of searching for secondary market outlet options. In such a situation, the likelihood of small farmers linking to value chains is quite low, as local spot transactions allow them to sell crops at the farm gates at no risk, even if the price is less rewarding. For market linkages to take place, transaction costs would need to be mitigated: a collective form of production bulking and transport would need to be organized through a locally trusted trader or a cooperative (Relational models) or by the buyers directly (captive models), or else through the organization of a vertically integrated production, harvest and commercialization through plantations.

Table 5 offers an extremely synthetic overview of value chain governance models motives and typical leading actors, and a comparison of their typical strengths and weaknesses.
<table>
<thead>
<tr>
<th>Factors determining risks, barriers, transaction costs for smallholders</th>
<th>Sources of risks and barriers for smallholders</th>
<th>Sources of transaction cost for smallholders</th>
<th>Influence on the likelihood of governance and organization of market linkages</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Crop-market features</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>➢ Export crops</td>
<td>Risk of failure to meet quality standards</td>
<td>Screening compliance to standards</td>
<td>N</td>
</tr>
<tr>
<td>➢ Perishability</td>
<td>Risk of quality/quantity loss</td>
<td>Proper storage, handling, logistics</td>
<td>N</td>
</tr>
<tr>
<td>➢ Local cash/staple</td>
<td>Price volatility, access mkt. information</td>
<td>Searching &amp; monitoring mkt.s, negotiating</td>
<td>-</td>
</tr>
<tr>
<td>➢ Labour intensive cash crops</td>
<td>Production investment risks</td>
<td>---</td>
<td>-</td>
</tr>
<tr>
<td>➢ High economies of scale in production</td>
<td>High production investment risks</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>➢ High economies of scale in marketing</td>
<td>Access to mkt. information</td>
<td>Monitoring mkt.s, negotiating terms</td>
<td>N</td>
</tr>
<tr>
<td>➢ Complex external inputs required</td>
<td>Access to input mkt. &amp; extension service, production investment risks</td>
<td>Compliance to standards &amp; protocols</td>
<td>N</td>
</tr>
<tr>
<td><strong>Policy framework</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>➢ Absence of clear land tenure regimes</td>
<td>Production &amp; post-harvest investment risks</td>
<td>Uncertainties on long term farming viability and compliance to contract terms</td>
<td>Y</td>
</tr>
<tr>
<td>➢ Weak public extension services</td>
<td>Production &amp; post-harvest investment risks</td>
<td>Uncertainties on quality, consistency &amp; yield of farming (compliance to terms)</td>
<td>Y</td>
</tr>
<tr>
<td><strong>Economic infrastructure</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>➢ Weak transport systems</td>
<td>Risk of quality losses – difficult access to high value markets</td>
<td>Uncertainties on outlet markets and compliance to contract terms</td>
<td>N</td>
</tr>
<tr>
<td>➢ Poor market information</td>
<td>Risk of low bargaining power</td>
<td>Monitoring mkt.s, negotiating terms</td>
<td>N</td>
</tr>
<tr>
<td>➢ Poor inputs access</td>
<td>Risk of low productivity</td>
<td>Searching for input mkt. linkages</td>
<td>N</td>
</tr>
<tr>
<td>➢ Weak rural finance</td>
<td>Barrier to investments</td>
<td>Searching for rural finance providers</td>
<td>N</td>
</tr>
<tr>
<td><strong>Environmental threats</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>➢ High climate variability</td>
<td>Loss of produce risk</td>
<td>Searching for weather information, drought resistant seeds, insurance, etc. Uncertainty on yields (compliance to contract farming terms)</td>
<td>N</td>
</tr>
<tr>
<td>➢ Soil erosion</td>
<td>Loss of productivity risk</td>
<td></td>
<td>N</td>
</tr>
<tr>
<td>MODELS</td>
<td>Priority goals</td>
<td>Catalyst actors</td>
<td>Efficient vertical chain coordination</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td>Corporate driven</td>
<td>Norms/standards related to quality, volume, consistency and timing of supply – competition in commodity markets</td>
<td>Large wholesalers, food industry, large retailers, large farmer-processor (outgrower schemes)</td>
<td></td>
</tr>
<tr>
<td>Intermediary driven</td>
<td>Social/Rural development goals - Service provision – Local value addition &amp; business development</td>
<td>NGOs, input suppliers, public agencies, coops, traders</td>
<td></td>
</tr>
<tr>
<td>Producer driven</td>
<td>Social/rural development &amp; environmental goals via improved market linkage</td>
<td>Leader farmers, associations of producers, coops, self-help groups</td>
<td></td>
</tr>
<tr>
<td>Hybrid Networks</td>
<td>Efficient production &amp; commercialization with chain wide collaboration - shared rural development &amp; environmental goals</td>
<td>Networks of producers, intermediaries, buyers, third party facilitators; social enterprise partnerships</td>
<td></td>
</tr>
</tbody>
</table>
Coordination and Cooperation: two paramount attributes of value chain governance

As described briefly in Table 3, there are numerous business model features that matter when multiple sustainability objectives are at stake, and the setting is as complex as the interconnection of rural development intervention and global agricultural markets can be. In essence, they can be subsumed into the two fundamental attributes of *coordination* and *cooperation*, where the former relates to the principle of efficiency in resource allocation while the latter relates to the dimension of distributional equity and the more intangible elements of alliance formation. In other terms, *Cooperation* is the attribute that puts emphasis on social and developmental goals and on equitable distribution of value along the value chain. *Coordination* is, instead, a notion that prioritizes the entrepreneurial capacity of chain actors in conducting a competitive business activity, without necessarily factoring in distributional issues. The attention is thus shifted to efficient business practice and careful specification of transaction terms. This bi-dimensional synthesis of value chain governance features helps to visualize the plausible strengths and weaknesses of the business models identified in the case studies (figure 4). The starting point can be assumed to be one of an independent smallholder farmer, who most commonly relies on a local spot market for marketing the surplus crop. As he moves away from spot transactions with local traders along the vertical axis of *Cooperation*, a process of transaction repetition with the same traders or buyers builds trust among participants and strengthens the social capital formation, a first step towards establishing long term trade relations and business alliances. This is accompanied by a typical openness to sharing information and knowledge and a bottom-up process of farmers organization, from simply bulking the crop to organize a single sale with the intermediation of a trader, to more formal institutional arrangements such as the formation of a producers group or of a farmers cooperative and the negotiation of a contract farming agreement with specific buyers. Moving along the axis, the marketing related transaction costs of smallholders tend to be mitigated by the formation of trade relations and by forming collective organizations. Collective action becomes a key institutional element that reduces transaction costs and risks for member smallholders. On the upstream market linkages side, the organization of collective farmer institutions reduces transaction costs related to inputs, technology and know-how procurement; on the downstream side, it reduces the transaction costs of post-harvest and commercialization activities, through economies of scale. The established trading relations decrease the transaction costs related to searching and screening market partners and those related to contract enforcement.

The *Coordination* imperative along the horizontal axis is to focus on a professionally conducted vertical coordination of the whole value chain functions with the ultimate goal of reaching or maintaining a competitive advantage on the agricultural/food markets. This emphasis on efficiency streamlines the commercial chain activities, usually to the benefit of the downstream actors. Their primary motive to organize the value chain business model is related to securing a certain volume of supply, with specific quality grades and safety standards, and thus the contractual definition of transaction terms is key to reduce their business risks. At the same time, the coordination of production and commercialization functions allows them to interface with intermediary institutions that reduce the transaction costs related to aggregating the supply from small and dispersed producers, monitoring compliance to quality standards, as well as those costs related to collection and logistics. Depending on the context, the type of crop and the market, the contractual format can take many forms, from simple verbal commitments to the

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20 In reality, this process of smallholder production collective organization, also referred as *horizontal* coordination (Ruben et al., 2006), takes place also throughout the axis of coordination, in forms that are more often driven or facilitated by the downstream actors (i.e., contract farming arrangements). In a three-dimensional graph visualization, it could have been the third axis.
most complex forms of contract with high transaction specifications. Moving along the coordination axis many of the significant transaction costs for the downstream actors tend to be reduced through contractualization. For instance, buyers transaction costs related to seasonal variability or to scarce consistency in quality and the related monitoring costs all tend to go down with the increasing complexity of transaction specification (Delgado, 1999). As for the smallholder farmers, their business risk in terms of price volatility is reduced through contracts and as a consequence transaction costs related to market monitoring and contract negotiation, for instance, tend to decrease.

Figure 4: The Dynamics of Chain Cooperation and Coordination

The case studies investigated reveal that in the practice of agricultural development intervention there is often a tension between these two fundamental attributes of value chain governance. The ideal harmonization of coordination and cooperation features could bring about a process of development along the diagonal axis of progressive value chain management, according to a growth cum equity principle, moving the small farmers from spot markets to participation to value chain partnership. As shown in the figure, the body of empirical evidence from the case studies shows a dynamic of divergence from this ideal balance of virtuous sustainable agriculture value chain partnership. Most often the experience with sustainable agriculture manifests governance approaches that tend to emphasize either the vertical coordination (captive models in the figure) or the more collaborative and development oriented approaches (relational models in the figure). In Captive models, increasing transaction specification may not necessarily be accompanied by an increase in farmers’ proactive participation, chain wide cooperation and rewards redistribution. In Relational models, emphasis on trust-building and on local development,
may not be accompanied by the adoption of increasingly efficient coordination and chain management capacity, thus limiting access to the most competitive and high value market outlets. Accordingly, the analysis of the case studies confirms that the different business models analyzed (adopted in the value chain classification above) end up positioning themselves in Figure 4 in different parts of the cooperation-coordination quadrant. Instances pertaining to the class of corporate-driven models often achieve high coordination results at the expense of chain wide cooperation and rural livelihood objectives. Cases pertaining to the class of producer-driven models can often achieve high cooperation, social capital and developmental results, but their further growth may be impaired by inefficiencies in vertical coordination and insufficient entrepreneurial capacity. It is worth clarifying that the multi-faceted world of agriculture, with the associated multiplicity of political underpinnings and policy priorities, necessarily offers a rationale for each of the many agro-business approaches, depending on the context. Empirical evidence also suggests that in the evolution of an intervention, a certain governance model adopted as appropriate at a certain point in time and at a certain scale of the intervention, could become obsolete and thus need to evolve and change. There is no *panacea* or single form of superior approach, but rather different circumstances may suggest the appropriateness of a certain business model versus others at a certain point in the social and economic rural development timeline. In terms of business risk management, for instance, captive value chains may often offer higher warranty against price volatility through transaction specification over relational models. If a rural region is not plagued by poverty, rural income sources are highly diversified in the non-farm economy, the regulatory framework assures good levels of environmental quality in farming, but it has the pressure to compete in commodity export markets, the context tends to suggest that a corporate driven value chain (inclusive of smallholders) or even a vertical integration approach with large scale plantations may demonstrate to have the most appropriate “organizational fit”. Likewise, certain crop/market attributes help define the boundaries of a good “organizational fit” for value chain governance and the underlying business models: if a crop is highly perishable and holds the potential of being upgraded to an export commodity, thus requiring complex safety and quality standards, then a resource constrained producer-driven initiative may prefer to target less demanding local market linkages, at least until a further stage of growth is obtained, and associated management capacity improvement to match the more demanding export market requirements are also developed and sustained (van der Waal, 2011).

In all instances in which there is a need to promote sustainable agriculture as a vehicle of multi-functionality and rural poverty reduction strategy, than the preference for moving towards value chain partnership is less contestable. In such frameworks, multiple market and non-market stakeholders commit to play a role and to find synergies, with a clear scope for improving value chain performance on both the coordination and cooperation sides (moving towards the upper right corner of the Figure 4). The challenge for policy makers and for the chain actors is to identify and agree on a) incentives to reconcile the tension that exists between these two key features of value chain governance, aiming at higher overall performance over the long term and b) activities which improve the capacities of chain actors to respond to these new and “sustainability-oriented” incentives.
5. Concluding remarks and policy recommendations

As mentioned earlier, the policy crafting needed to support virtuous value chain partnerships must target improvements on both the cooperation and vertical coordination of value chain governance. This calls for institutional innovation that can assist in aligning the goals of different actors and define an advanced type of “organizational fit” in the intervention’s institutional architecture. For a genuinely sustainable agriculture, the challenge seems to imply the adoption of an adaptive management and participatory approach, with the commitment of stakeholders to the necessary process of mutual understanding, co-learning, transparency, goals-sharing, as well as risk-sharing. In sum, this requires working towards genuine partnerships for value chains that include smallholder farming contribution, natural resource management principles, as well as the corporate ability to coordinate production and marketing in a competitive manner. The intellectual effort of the business academia proposing a paradigmatic shift towards “creating shared value” (Kramer, Porter, 2011) is promising in this respect, although the corporate driven models identified for this paper seem to suggest that there is much work ahead in order to make such a partnership concept fully operational. The “hybrid network” business model cases analyzed (of which Appendix 1 contains a few examples), often blended with social entrepreneurship drivers, emerge in this analysis as a potential disruptive element capable of creating shared value and true partnership. Ideally, virtuous value chain partnerships would be those in which government agencies create enabling conditions, downstream market operators embrace more chain-wide cooperation, food market preferences are also influenced by producer/intermediary driven innovation, thereby allowing for higher food biodiversity, and for a more knowledge-based consumer awareness of the food production and commercialization implications.

While the challenge is considerable, the urgency of sustainable rural development and poverty reduction calls for a concerted public and private sector collaborative effort. *In primis*, all players need to reach a common understanding and agreement on what the contended stake for the future is, what the aspects of global transitions that can be influenced are and what trends are inevitable, and finally what degrees of freedom there are for the negotiation of a certain collective agreement or compromise. The public stakeholders, while striving for socio-economic progress and redistributive outcomes, have to admit that some of the many courses of action may carry a high opportunity cost while others may be more cost-effective. Private market operators have to admit that, while certain market dynamics are dependent on “inevitable drivers” of market restructuring (Berdegué et al., 2008) hence considered exogenous variables, other market dynamics can be changed, or adapted, to accommodate environmental or social concerns. Once this common base of understanding is established, the empirical evidence seems to suggest that it is easier to identify institutional innovations that allow the structuring of truly collaborative and mutually rewarding multi-stakeholder partnerships.

Much of the successful case study evidence pertains to either small scale pilot projects or larger scale but still somewhat isolated interventions. Many cases portray some discrete interventions along the value chain which have proved effective (i.e., support to farmers collective action and supply aggregation, or crop grading and quality enhancement, or technology and finance delivery, etc.), while fewer seem to be the result of a more concerted action. It seems therefore that in order to improve the durability of these value chain approaches, their replicability or their scalability, there is a need for a more systemic and structural set of interventions to “regovern markets”, stimulate new (and sustainable) business models,

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21 Ultimately, value chain partnerships able to advance economic growth while contributing to social progress and environmental stewardship, are inspired by business models in which the entrepreneurial mentality and attitude are not shaped only by orthodox competitiveness principles, but are actually permeated by altruism, and “love” (personal communications Makey J., 2010; Chaudary N.K., 2011).
and create the appropriate policy and regulatory frameworks. It is not a novel notion, as Nobel laureate economist Gunnar Myrdal reminds us, that the complexity of the target environment requires a collaborative effort of different disciplines and a coordination of different and interrelated policy measures. However, while this concept is intellectually shared by many, it continues to face obvious implementation obstacles, due to a host of reality challenges, vicious politics, administrative obstacles, power asymmetries. As discussed, there are many drivers of global transitions which influence agriculture, its sustainability attributes, and its contribution to poverty alleviation. In such context, there are many reasons to affirm the legitimacy of public intervention in “regoverning” agricultural markets and nurturing private sector incentives able to align liberalized market goals with pro-poor policies and long-term progress. As recently well stated: “No country has developed its agriculture on a model of pure private sector development. Up until now public intervention in agriculture has been of paramount importance in OECD countries. If we set aside the paraphernalia of subsidies, there are many economically rational and socially valuable market interventions that governments can implement. Public policies favoring inclusion can at the same time be very pro-poor and very pro-market” (Berdegue’ et al., 2008, p.35). Finally, those engaged in the study and practice of rural development need to recognize the heterogeneity of smallholder agriculture contexts and thus tailor the policies measures to such local contexts, trying to find the balance between standardizing the general principles and tailoring for the specific local implementation (Wiggings et al., 2010). The following paragraphs highlight some of the policy strategies to be implemented by the various stakeholders in order to foster the movement suggested by Figure 5, towards more hybrid, science-driven, policy-supported value chain partnerships.

Figure 5: A Possible Scenario: Policy Induced & Science-based Value Chain Dynamics
5.1. The delicate role of intermediaries

Within a context of facilitation and nurturing of sustainable agriculture value chains, intermediary institutions have the special role of connecting the nodes at the extremes of the chain. They are supposed to provide channels to ease the flows (in both directions) of information, resources, technology, power, and access needed for development to take place. Their role is delicate in the sense that they have to exert the ability to “piece together a worldview that can include portions, at least, of the worldviews of the two extremes. They can often act as interpreters, putting the knowledge and values that come from one extreme into language that is comprehensible at the other” (Goodwin, 2000, p.55).

Going back to the scenario suggested in Figure 5, for proper promotion of sustainable agriculture value chains further work is required on defining strategies that can influence their governance structures. Incentive mechanisms need to be structured for moving away from just “captive business” models, when they fulfill the efficient supply of commodities at the expense of the smallholder farms agro-ecology and/or the disruption of rural livelihoods. At the same time, normative frameworks are also needed to allow more inclusive and “relational” approaches (i.e., producer-driven, or NGO driven) to strengthen their business management profile and organizational capacity, without compromising the attention to social welfare and environmental quality. For such an endeavor, many promising cases reviewed show how strategic the role played by intermediary institutions along the chain can be, often determining success or failure. Indeed, the virtuous dynamics of cooperation are rarely spontaneous and the presence of facilitating agents, which take the responsibility of creating and maintaining convergence towards shared goals, equitable outcomes and strategic alliances, reveals critical. In analyzing the value chain, it is critical to fully understand which type of intermediary actors have played the catalytic role. These facilitators, can broadly be distinguished in two categories: agents exogenous to the value chain, such as local/international NGOs, donors, and local government agencies, or private sector actors of the chain, such as input suppliers, traders and wholesalers. It is important to capture their strategic value in the context of sustainable agriculture promotion. It is equally important to understand if and how their role can be made endogenous to the value chain, how they manage the risk of creating a situation of dependence on their action by the upstream farmers, or how they plan and manage a proper exit strategy for ensuring an institutional sustainability of farmers’ collective action.

Farmers organizations (with any suitable, context-specific legal form) themselves can become key in managing producers collective action in processing and commercialization. External agents such as grassroots groups, NGOs, donor programs or public agencies for agricultural assistance and extension can facilitate smallholders participation in market value chains, and can play a pioneering role in testing new approaches. All these intermediary institutions require capacity development and leadership when they commit to promoting sustainable agriculture enterprise. Empirical evidence seems to point to the fact that some of these intermediaries slowly become “doubly-specialized” development motivated and business-oriented agents (Berdegue’ et al., 2008; Vorley et al., 2009). There are examples of these new class of intermediaries that show promising outcomes. The NGO Africa Now in the Honey Care Africa case (see Case 2, Appendix 1) illustrates how an NGO can “upgrade” as chain actor, while at the same time safeguarding the pro-poor market mission of the intervention. In becoming doubly-specialized intermediary institutions, they have to acquire the skills to balance their service provision function with the progressive transfer of capabilities, in order to reduce the risk of creating a syndrome of farmers’ dependence over time. The case studies revealed that, especially those intermediaries belonging to the

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The term intermediary, as seen earlier, is used here broadly for a host of different players (internal to the value chain or external, public and private) fundamentally active in facilitating the farmer’s access to upstream and downstream markets and to public goods and services instrumental to farming.
non-profit sector, are often weak in facilitating institutional sustainability and may end up facilitating governance models in which farmer organizations independence is not seriously fostered. As seen earlier, in the short term, intermediary-driven or corporate-driven chain governance models may actually show advantages in implementing small farmers market linkages, as they provide a whole support infrastructure to smallholders, with coordinated access to technology, inputs, and knowledge. In the medium term, however, it may be sensible to invest in building stronger and more resilient producer organizations (endogenous intermediary institutions) that learn a) to be more entrepreneurial and independent, b) to more effectively interconnect to the chain actors, as well as with satellite organizations from the public sector and from civil society for the arrangement of specific services. The case of Normin Veggies, an association of fresh vegetable producers in the Philippines, setting up NorminCorp as its independent corporate marketing arm, illustrates this point very well (see Text Box 3).

An intermediary role is also played by private sector actors, more or less informally. Input suppliers have often informally facilitated their client farmers linkage to processors or downstream buyers. Trading agents are more formally linking small producers to processors, wholesalers, or final retailers. The open question is if/how these agents can upgrade and become “doubly specialized intermediaries”. While all of them tend to be intrinsically conversant on professional business practices, it is less likely that they exhibit a capacity to be responsive to rural development and local environmental priorities. The proximity of many local traders to the producers and their communities, their being part of the local social fabric, in contrast to the negative conventional connotation of the village trader as “middleman”, has actually been identified as a factor contributing to positive outcomes for smallholder market linkages. Practitioners have reported several instances of traders working closely with farmers, where a mutual understanding of both market and developmental priorities can be found at the basis of their business relation (Sheperd, 2007).

The case of Cuatro Pinos (see Case 4, Appendix 1) illustrates how the successful participation of intermediaries, such as specialized wholesaler LA Salad Company, to a value chain partnership is justified by their contribution to value addition and to the competitive advantage of the overall chain. Business models that intend to “cut out the middlemen” traders, such as the direct buyer approach discussed, are not easy to implement as the transaction costs related to searching and aggregating the supply, to enforcing contracts with farmers, screening compliance to standards, guaranteeing the quality and consistency of volumes can be very significant. If the engagement of a local trading agent is capable of efficiency gains in performance of such functions, thus reducing transaction costs (or absorbing them at a lower cost than downstream buyers), this offers an attractive solution to large scale buyers or processors competing in downstream price-sensitive markets. As testifed by a prominent Indian retailer, in absence of an intermediary able to represent small farmers, it would be virtually impossible to do business with them due to constraints in the legal enforcement of contracts between individual farmers and the retail firm (Vorley & Proctor, 2008). An increasing number of private companies are emerging as examples of specialized intermediaries able to balance downstream market competitiveness needs, with farmers’ need for rural livelihood improvement (Cadilhon et al., 2006; Sheperd, 2007; Vorley et al., 2009). Evidence shows that in this type of private intermediary-driven value chains the redistribution of rewards along the chain has to be negotiated and monitored, and care must be taken in avoiding the capture of extra benefits by the intermediary due to information asymmetries. The Bimandiri specialized wholesaler experience in Indonesia is often cited for its capacity to mitigate this risk by implementing a transparent pricing mechanism, by which the trading margin in supplying Carrefour supermarkets is known to the small producers (Vorley et al., 2009). The lesson from the case of Hortifruiti in Honduras, a specialized wholesaler supplying fresh fruit and vegetables to local supermarket chains, seems to be that this type of private sector driven intermediation, when independent from local governmental or grassroots organizations assistance, tends to be more selective and limit sustained participation of smallholders to those able to respond to the entrepreneurship required (Berdeguè et al., 2008). Indeed, a private sector operator implementing a honest business practice should not take the responsibility of filling the gaps of
public goods and rural development needs. It can only do its best in stimulating farmers entrepreneurship, as in Hortifrutí’s experimenting with a “leader farmer” business model, where essentially the leader farmers become invested of the responsibility of consolidating and monitoring the production of neighbouring (and less entrepreneurial) farmers and become the channels of know-how and inputs as required (Vorley et al., 2009). From the point of view of the downstream retailer or processor, the intermediator able to reduce transaction costs can provide another competitive advantage: it eliminates the risk of opportunistic behaviour associated with investing directly in supporting small farmers production, either by the farmers themselves (side selling to others) or by competitors (free-riding).

Finally, the challenge, but also the strategic opportunity, for this class of intermediaries is to develop capacities to become incrementally proactive on upstream and downstream market linkages, fostering local innovation and local processing, promoting sustainable intensification practices and natural resource efficiency, and reconciling the market coordination with the chain wide cooperation objectives. The case of AgroFair is exemplary of how this opportunity can be harnessed on international fair trade and organic certified markets (see Case 1, Appendix 1). Eventually, those intermediaries able to take leadership, are also exerting a novel standard-setting capacity, with the potential of influencing the shape of food markets demand rather than just responding to a possibly retailer-induced consumer demand. Emblematic, in this respect, is the cassava couscous story (attiéké) which, thanks to the facilitation of local women’s networks, has transformed a staple food dish known only in specific areas of the Ivory Coast into a newly and widely traded food in urban markets of Central Africa (Wilkinson, Rocha, 2009). In sum, policy measures targeted to establish and support “doubly specialized” intermediaries are much needed as discussed in section 5.4. Institutional innovations, in both public and private sectors, can be triggered by such intermediaries that link different actors, often with a diversity of motives that somehow get blended into a collaboration towards the common goals of the value chain (Goodwin, 2000).

5.2. Donors strategies

A Commitment to Increased Total Aid for Smallholder Farming Systems.

The renewed attention of the Donor community to agricultural development spending is promising, but coordinated and sharper initiative has to be defined for inclusive and sustainable agriculture value chains to fully benefit. The macro level 2009 picture developed by FSG researchers (FSG, 2010) shows that agricultural aid accounts for 5.4% of total Aid. The Agricultural Aid focused on smallholders seems to reach a 40% share (12 billion USD of Aid projects) which is equal to 2.2% of global total Aid. Given the potential for sustainable agriculture to effectively reduce rural poverty and this current picture, there is little doubt that the Agricultural Aid share should be increased.

Qualify the Financial Aid by Mainstreaming Sustainability in Agricultural Intervention

While the case for increasing the overall size of aid supporting smallholders is well justified, it is the quality of aid that eventually exerts a positive influence on inclusive sustainable agriculture. In other words, there seems to be a significant scope for Donors to qualify their financial support in agriculture.

Attiéké is obtained from cassava roots processed into a kind of fermented cassava semolina, dried and steamed. This local dish, today widely consumed, is produced by women according to a traditional technology requiring several hard operations.
Blueprint planning approaches carry the risks of not being sufficiently targeted, flexible and context-specific. According to some scholars, disbursement of funds for African agriculture should be conditional to the existence of a credible, externally accountable and coherent national agricultural development strategy (Poulton et al., 2006). A key strategy to qualify such financial support can be the mainstreaming of sustainability. This means including substantial environmental management and poverty reduction elements in the production function of agriculture rather than just limiting sustainability to the realm of complementary elements, as it is in the case of compensatory interventions. In this sense, the newly released Environment and Natural Resource Management Policy of IFAD, *Resilient livelihoods through the sustainable use of natural assets* (IFAD, 2011) offers a promising example within the donor community, as it shows a clear effort to embed sustainability principles in the core design of its lending operations. Transferred at a country level, this recommendation could be made operational through Donors’ effort to strengthen the capacities of government agents, for instance, by supporting an improved and transparent mechanism of inter-ministerial coordination to review the existing Poverty Reduction Strategy Paper, or to enhance the capacity to scrutinize and eventually negotiate investment proposals put forward by private sector agri-business.

- **Improve Donors Attitude Towards Experimenting Institutional and Market Innovations**

As seen earlier, much of the success in sustainable agriculture ventures is attributable to the ability of actors to experiment with institutional innovation, entrepreneurship, and management adapted to the local context requirements. A critical prerogative of Donors committed to sustainable development is that they can take risks and experiment with interventions that test new institutional and business model innovations. Together with financial resources, they have the chance to supply technical expertise for the formulation and testing on novel legal forms of farmers organizations, for instance, geared at overcoming the typical weak governance issue and, weak management and undercapitalization issues of traditional collective organizations. In this respect, the instrumental use of international NGOs or similar intermediary channels can be strategically important as they a) manage bundles of pilot initiatives into a funding package for the Donor, thus reducing the transaction costs, and b) they can eventually propose to scale up or replicate successful pilot initiatives. What seems apparent from several case studies is that even minimal donor finance can leverage significant local impact, when it supports the appropriate blend of smallholder entrepreneurship, strong motivation and professional downstream value chain management (see case 5 in Appendix 1).

- **Leadership in Adoption of Systems Thinking Frameworks**

An important role for Donors is to take leadership in the adoption of systems thinking frameworks when tackling sustainable rural development challenges. This leadership can, in turn, positively influence the national and decentralized decision makers levels that are engaged in rural development planning. The key point is to diffuse the awareness of the multi-functionality of agriculture and the interconnectedness of food production systems with many dimensions of sectoral intervention. Appendix 2 introduces a graph of a “programme structure” with an example of general goals, specific objectives, policies and measures (or programme components) that may contribute to sustainable agriculture intervention. The programme structure is a simple tool, originally adopted in the French planning tradition which visualizes in a double coaxial matrix format the interrelations existing among different policy arenas, objectives, policy interventions and measures. It is suggested as a tool to promote the need for public stakeholders to foster inter-agency collaborations, coordination of measures, and multi-sector participation, thus recognizing the sustainability science paradigm of integrated action design in coupled human-
environment systems. An important ally of this systems thinking and attitude towards planning rural and agricultural development is the capacity to discern when “blueprint” planning approaches are not feasible or effective, and therefore a more flexible and error-embracing “learning process” is preferable (Korten, 1980).

- **Facilitating an Appropriate Finance Structuring and Financial Leverage**

Donors that manage grant-making/soft lending programs with rigid planning, limits on re-programming, and bureaucratic approaches can contribute to create problems, including false expectations, inefficiencies, corruption, financial default and ultimately, market failure. Even if successful in the short term, the reliance on inconsistent grant-making sources can make the replication of sustainable agriculture pilot projects quite difficult. Traditional approaches to the development of rural infrastructure and agriculture have tended to use donor funds (grants and soft money) as if it were capital, often with the investment managed from afar. As a result, the activity risks to become neither replicable or scalable, and therefore unable to attract additional local sources of private or institutional capital. The opportunity to adopt Donor strategies that allow the articulation of a wider basket of flexible finance tools, and strengthen tailored financial engineering, as required for implementing small agri-business *incubation* and further financial *leveraging* of local finance, is huge. Some private foundations, for instance, have started to experiment with “social investment” (FSG, 2010), and have set up “mission related investment” offices, with the notion of investing their capital assets in harmony with their mission, rather than just on conventional financial markets. These experiments are promising as they usually break away from the bureaucratic approaches and can spark significant leverage of Donor funds.

- **Financial Support Conditionality**

Access to soft financing for the start up phase of a pro-poor agri-business venture is crucial. Financial support that is different from market finance (grants, soft loans) should obviously be approved according to a set of criteria that identify the nature of sustainable agriculture enterprise (as defined so far). One additional key conditionality factor, for both Donors and recipients, is the planning of an *exit strategy*, that is a point in time in which the Donors let the recipients of funds mature as independent actors along the value chain and marketplace. The correct identification of the appropriate exit is objectively challenging given the uncertainties and dynamics of value chain projects evolution, but at the outset it is important that Donors require project proponents to demonstrate at some point that they have planned to achieve financial sustainability. While a consistent accompaniment of the recipients is crucial for its growth into maturity, at the same time Donors need to avoid the risk to create a syndrome of dependency. This conditionality is particularly important for funding directed to farmers organizations, or to “doubly specialized” intermediaries, once they have developed the skills to independently manage their role in the value chain. For example, case study analysis often reports that a common mistake is made by intermediary NGOs: they tend to keep control of the marketing functions on behalf of their farmers partners, without transferring the management skills to them, thus increasing the risk of failure if the NGO has to abruptly withdraw due to lack of funding (Donovan et al., 2008; Sheperd, 2007).

- **Broader Donor Commitment Timelines to Include Patient Capital**

Not necessarily in contradiction with the previous point, Donors that decide to engage with market-based pro-poor agricultural value chain approaches need to adopt the necessary flexible mechanisms to adjust
their commitment timeline. Too often the bias towards short term results to be publicized in “annual reports” contribute to cause dramatic field activity failures. There is a scope for differentiating funding instruments: while the grant funding for the technical assistance that launches a sustainable agriculture venture should have a limited timeline, the investment funding for the more complex growth phase of the venture should be made with medium-long term timelines. This notion of “patient capital” is much needed to match the often slow consolidation of value chain cooperation and coordination dynamics. Investments in equity of local ventures, for instance, can provide medium-long term finance, contributing to ensure professional governance and develop new accountability mechanisms. Case study evidence seems to suggest that lenders and private foundations that started to supply patient capital and succeeded in adopting longer term strategic planning have made a profound impact in the field. In addition to equity investments, another specific form of finance for growth is working capital financing and credit lines for business growth, the so-called “missing middle”, as described in the Root Capital case (Text Box 6).

**TEXT BOX 6: Root Capital Finance Supply for the “Missing Middle”**. Root Capital is a Boston-based specialized provider of rural finance services, working in the “missing middle” space of rural enterprise finance, targeting local entities that are too large for traditional microfinance and too small for conventional commercial lending. The typical intervention is based on a three prong approach, including capacity building on finance, facilitation of market connections and financing for short term working capital and for long term growth capital. The core of finance innovation lies on the use of the borrower’s future sales contracts as a collateral, and the adoption of a factoring model by which the buyers pay the loan principal and interest directly to Root Capital, which in turn remits payments (net of finance costs) to the rural enterprise. The success of this model at the first quarter of 2011 is marked by a lending portfolio balance of nearly USD 48 mln., and USD 24 mln. of new loans reaching 105,000 farmers/artisans, and 172,000 hectares of land sustainably farmed.

- **Leadership in Establishing Sustainability Monitoring & Evaluation Systems**

This is a very important public good provision, considering that serious M&E is typically complex to implement and often sacrificed in project budgeting. In particular, lack of databases and weakness of monitoring systems do not allow to ease measurement of the effectiveness of Donor support to value chain initiatives (Berdegué et al., 2008). Leadership is needed for Donors to provide intellectual and financial resources to set up credible and widely concerted M&E systems that are targeted to measure the sustainability performance of the whole value chain (see section 5.4). This objective fulfils the widespread need to establish “systematic learning” platforms, which can also enhance Donors’ effectiveness and coordination (Donovan et al., 2008).
5.3. **Role of National Governments**

National governments continue to play a dominating role in agricultural development for several political\textsuperscript{24}, strategic and economic reasons (Paarlberg, 2010) and thus have a significant opportunity to influence the drivers towards sustainable agriculture value chains. However, agriculture as defined so far has cross-sectoral elements and implications, and therefore national agencies need to form coordinated policy platforms. In Sub-Saharan Africa “only a limited number of countries have a credible and coherent national agricultural development strategy” (Poulton et al., 2006, p. 267), and there is scope for improving the participation of major economic Ministries (Ministry of Planning or Finance) together with Ministries of Agriculture and the capacity of farmer organizations and civil society to contribute with their “voice”. In setting up the “rules of the game”, government authorities have a clear challenge of designing policies that are anticipatory and proactive, rather than reactive, so that more synergies can be created and supported among the social (pro-poor), environmental and market growth goals. At this macro level there are policy arenas (some already introduced in section 2), that can trigger systemic change, with profound implications for sustainable agriculture value chains. Figure 6 summarizes a hierarchy of “enabling conditions”, adapted from an FAO report, that support the competitiveness and functioning of agro-business, where the necessary and most basic conditions lie at the bottom of the pyramid (Christy et al., 2009).

**Figure 6: A Hierarchy of Enabling Policies for Sustainable Agriculture Business Development**

\[\text{Diagram showing hierarchy of enabling conditions} \]

Source: Adapted from Christy et al. 2009

\textsuperscript{24} According to Paarlberg, deliberate use of political power has in many instances undermined proper agricultural interventions: “it is not for lack of sound advice from international financial institutions that so many governments in Africa, dominated by urban elites, continue to under-invest in agricultural research, rural infrastructure, and farm extension services” (Paarlberg, 2000, p. 179).
Policy Strategies for Essential Enablers

➢ Reforming Trade and Subsidy-based Policies

Trade policies influence the domestic and international agricultural markets and the rationale for reforms by national governments to address their shortcomings and distortive effects has been covered amply in field literature (Pretty, 1995; World Bank, 2009; UNEP, 2011). Fiscal incentives and subsidy-based policies also need to be redefined and more carefully designed. Current international trade regimes are projected to favor agricultural trade surpluses in industrialized countries and increased imports in developing countries (IAASTD, 2009). On the contrary, regional and bilateral trade has remained virtually untapped in Sub-Saharan Africa, thus constraining the potential to boost local agricultural production and specialization. The issue is that governments are tempted to satisfy the urban food markets with cheap food imports from the industrialized regions, inevitably depressing local production. Another related issue is that of “urban bias” of state interventions in the form of local agricultural output subsidies, for instance with state-led “marketing boards” that, controlling crop market prices, effectively end up “taxing their farmers to help finance subsidies for urban poor food consumers” (Paarlberg, 2010, p.96). On the input subsidies side, many developing country governments, often with support of traditional ODA sources, still put emphasis on indistinct agri-chemical inputs subsidies, with insufficient attention to a) their use-efficiency vis-à-vis the heterogeneity of agro-ecological and soil conditions; b) the effects on agricultural supply and prices, c) the impacts on the environment and human health due to excessive use or misuse, and d) the risks of political capture. Some experience is emerging in implementing “smart subsidies” designed to be more specific and targeted, thus creating specific incentives and redistributing rewards along the value chain. In Malawi, for instance, targeted fertilizer subsidies for certain crops and only for poor smallholders have been experimented with some success in terms of food security (Christy et al., 2009). Higher fertilizer prices under private sector supply regimes, however, have also been recognized as an incentive to improve the use efficiency (IAASTD, 2009) and their integration with organic soil management techniques (Poulton et al., 2010).

In any case, both trade and fiscal policy reforms face more general challenges. First, the objective difficulty in forecasting the intended and unintended effects of direct public intervention on markets and society at large (Rashid, 2007). Secondly, for sustained reforms to take place there is a need to generate a political awareness and action against the widespread phenomenon of institutional “path dependency” (North, 1990), for which current institutional arrangements tend to perpetrate the status quo. An interesting recent analysis on the persistence of this “institutional inertia”, links it to the fact that institutions have evolved into their current state by adopting frameworks that reduce the transaction costs of the existing societal and market infrastructures: changes in policy frameworks and new institutional arrangements would imply facing new and higher transaction costs, thus provoking the institutional rigidities to the transition to new incentives and new strategies for more sustainable development (Barbier, 2011).

In breaking away from institutional inertia, it becomes clear that a transition to more sustainable agricultural practices would highly benefit from a fundamental reform of current fiscal incentives. The following is an exemplary basket of trade and fiscal policy measures that could be selected to support sustainable agriculture value chains:

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25 This is to point out the prevalence of unsophisticated approaches of “blanket high dosage” which, beyond the associated environmental hazard, tend to undermine the rationale and cost effectiveness of synthetic fertilizer use (IAASTD, 2009).
- Particularly in the Sub-Saharan region, the promotion of regional and sub-regional agricultural trade agreements;  
- Reforms shifting subsidy budgets from chemical agri-inputs to “green inputs”, sustainable agriculture technologies and the associated know-how delivery;  
- Tax exemptions during the growth phase of cooperative businesses;  
- Farmer subsidies linked to ecosystem services delivery;  
- Smart financial subsidies: decreasing subsidy on the interest rate for first and second round lending to new sustainable agri-business ventures;  
- Promotion of fair trade protocols and sustainable agriculture certification;  
- Branding of indigenous crops and productions with a local identity;  
- Import tax or value added tax exemptions for sustainable agriculture technologies;  
- Shift from domestic agricultural produce export taxation towards value added taxation;  
- Fiscal incentives to R&D on local agro-processing and product development.

- **Land Tenure and Use Policies**

  Land tenure and use policies that clarify property rights or land use rights over agricultural land, with attention to distributional equity among farmers, are a key enabler for any adoption of farming decisions beyond subsistence agriculture (see section 2). This is a delicate area with political controversy and significant socioeconomic implications, but for smallholder inclusive sustainable agriculture markets it is imperative to count on institutional arrangements that allow both smallholders and the downstream chain actors to invest capital and labor on a production factor, land, under clear tenure regimes. Land reforms that remove the uncertainties on land tenure have not been implemented without difficulty, especially when distorted by political motives or not sufficiently sensitive to existing customary rights. National government frameworks (land laws and regulations on tenure, land lease, taxation of land, etc.) that enhance the security on land property rights or even on traditional informal regimes can, however, be effectively developed. In this respect, a consultative initiative led by the African Union has been started to enhance the political will and supply general guidelines (IAASTD, 2009). Evidence of benefits of clear customary land rights and norms, for example, the abuna and abusa sharecropping contracts are reported to have been at the heart of the significant expansion of cocoa farming and trading in Ghana and Cote d’Ivoire (Toulmin, 2011).

- **Rural Infrastructure Development Policies**

  State governments typically hold the responsibility to provide rural areas with public goods in the form of a) physical infrastructure, from rural roads and storage facilities, to electricity supply, irrigation, and ITC networks; b) market support infrastructure and services, such as agricultural market information,  

26 Extensive discussion on the potential facilitation of intra-African trade via the Regional economic Communities (RECs) can be found in Juma (2011).
commodity exchanges, or territorial branding and marketing facilities; c) rural health and education facilities and services. Beyond the many quantitative analyses to estimate the contribution of infrastructural investments to rural development, it is intuitive that the effectiveness of each infrastructural intervention is improved when coordinated within a portfolio of measures addressing the other key contextual weaknesses in accessing markets. There is certainly scope to experiment with Public-Private Partnerships (PPP) collaborations for the improvement of rural infrastructure development, but the design of such mechanisms is the responsibility of accountable governmental agents, and needs to be inspired by a satisfying “organizational fit” from a societal perspective. The stage agencies, however, especially in a Sub-Saharan context, may not have sufficient capacities to formulate and manage the PPP arrangement, or may be exposed to private rent-seeking behaviors of corrupted officials. In such cases, collaboration with external Donors may be strategic in forging such PPP arrangements, as it could be helpful for defining transparent governance mechanisms and for assuring a more equitable outcome (Poulton, 2009).

Policy Strategies for Important Enablers

- **Setting Standards and Regulations on Production**

Public policy has a crucial role in maintaining control of how standards on food safety, on the use of chemical inputs, on environmental quality, and certification protocols are developed, implemented and monitored. It is indeed a legitimate role for state agencies to set up rules for food safety and grading systems, in addition to international standards such as the FAO’s *Codex Alimentarius*. Pesticides abuse and misuse is particularly concerning and unfortunately the norm in many developing regions, with a high variability of country standards and regulations. A good pesticide use control measure is for governments to carefully regulate the licensing and registration. The existence and effective functioning of public agencies accountable for labour and environmental regulations is also an important factor that clarifies the scope of the agri-business climate in a country. As compliance to regulations and standards tends to present challenges, public investments in participatory processes, training and education are sensible strategies, rather than simply focusing on centralized control and enforcement. In general, a state legislation that sets clear rules on primary production and commercialization inevitably exerts a positive influence on the adoption of contractual arrangements linking smallholder farmers to downstream chain actors, such as the “contract farming” arrangements or the “outgrower schemes” promoted by large agri-businesses.

- **Public Investment in Agricultural R&D and Extension Services**

Increased public sector investments in sustainability-qualified R&D are needed to influence the nature of innovations that will shape future primary production and food markets. As discussed earlier, to the extent that such R&D programmes incorporate the necessary attention to the multi-functionality of agriculture, to increase productivity, as well as to the issues and solutions voiced by the local farmers and processors, they could generate sustainable outcomes. In addition to financial resources, national governments in coordination with donors and international research centers must also develop a specific agenda of R&D priorities, thus stimulating virtuous pathways by leveraging private sector resources and partnerships. The case of Allanblackia tree farming (see Text Box 1) is emblematic of the achievements that can be reached when a true collaborative R&D network is forged among large processors (Unilever), local R&D professionals (World Agroforestry Centre, and forestry agencies in Ghana and Tanzania), and local
farmers: when the slow seed germination was identified as bottleneck to scaling up production, the partners benefited from farmers’ knowledge and insights (in turn, obtained from observing and mimicking nature) to solve the R&D issue and significantly speed up germination and nurseries productivity (Pye-Smith, 2009).

Training and extension services are also an important prerogative of state (and decentralized) agencies, as part of the package of public goods that can shape the development of local agriculture. It is important to define a public strategy for extension service that reflects the wider agricultural policy priorities, in terms of the chosen technological innovations, the farming methods to be promoted, and the virtuous value chains to be facilitated. The transition to sustainable agriculture farming systems requires a concerted effort to implement a knowledge-intensive farming paradigm, in which imported science may need context-specific adaptation and locally generated science has to be promoted more vigorously. This translates into a need for substantial improvement of public investment in R&D and extension services. The professionalization of extension service delivery is a key component for reaching the smallholder farmers and including them as active agents in the local knowledge system. The interactive approach of the Farmer Field Schools has been promoted with some success in building local ownership and shaping extension services more responsive to local needs (IAASTD, 2009). However, the efficiency and cost effectiveness of service delivery by public agencies and their sponsors can be placed under scrutiny. A promising model is the reform of the national extension service in Uganda, now named National Agricultural Advisory Service (NAADS) and piloted in half of the rural districts. Within a general framework of administrative decentralization, NAADS provides short term advisory contracts to farmers through “NAADS service providers” that are either public officials, private sector or NGO agents. The results of the experiment are not yet evident, but certainly a competition is established among commercial, public and NGO professionals in the delivery of extension services (Poulton, 2009).

Policies Promoting Rural Finance Services

Access to finance is a key prerequisite for agricultural value chain actors to build and consolidate their business, starting from small farmers and their collective organizations. The national authorities, in primis, need to create and maintain the conditions for macroeconomic stability, building trust and confidence in the local financial markets. As well, the proper legal framework needs to be in place, for instance for ensuring effective contract farming and its enforceability. There is an outstanding need for rural finance to farmers organizations and small agricultural enterprises, virtually untouched by the wave of conventional “microfinance”. This “missing middle” in agricultural finance hinders the scaling up of successful pilot value chain initiatives. An institutional mechanism that can stimulate rural finance is the set up of credit guarantee facilities, aiming at edging the risk of local lenders and investors and mobilizing financial resources otherwise locked in rural banks. Another interesting innovation, which governments can stimulate, is the adoption of warehouse receipt systems, by which the receipts for the delivery of produce to the warehouse are negotiable and can be used as collateral at local banks27. More indirect types of public intervention capable of influencing the investment climate are those that contribute to reducing the agricultural value chain risks of production and risks of price fluctuations. A measure for mitigating crop failure risks is the promotion of crop insurance and weather-indexed insurance systems, for instance through government subsidies. A policy measure that can contribute to crop prices stabilization is the set up of commodity exchanges, although the outcomes have been mixed (Rashid, 2007). Finally, national development agencies and banks can play an important role, in partnerships with

27 This instrument is important in value chain financing, but its benefits need to be assessed together with the challenges to proper functioning (see Miller et al., 2010).
international Donors and with the central government, to leverage funds of private sector finance and, in such a role, they can also become direct co-investors in the agri-business venture.

- **Sound Competition Policies**

The advent of modern food retail systems, together with the significant market concentration often associated with them, calls for a more proactive role of governments in assuring a tight political scrutiny of their business models and procurement operations. As discussed earlier, large supermarkets have the clear potential to be standard setters: sustainability in agriculture requires a public sector oversight of such standard setting capacity to make sure that private sector standards are verified as coherent with the national agricultural development priorities, and are not in contrast with environmental quality and smallholder inclusiveness. Laws on competition can prevent the formation of oligopolistic or monopolistic market behaviors and the risk of illegal price setting practices. Regulations on foreign direct investments which protect domestic retailers as well as smallholder producers are also needed in many Sub-Saharan African countries. Regulatory frameworks for large retailer markets can also contain incentives that encourage new business models (i.e., Porter’s *Creating Shared Value*), favouring retailers that work with high environmental quality standards and invest in solid relations with smallholders and their communities. In parallel, regulatory frameworks and incentives need to be designed to maintain a balance between modern food retail and traditional agricultural markets (Ruben et al., 2006), whenever the local traditional wholesale markets are deemed to play an important role in providing a viable outlet and livelihood for many remote and rural small farmers. Some practitioners suggest that they can also be seen as a bridge for small farmers to increase their production volume and quality and to eventually link to modern retail systems, but often reforms are still necessary to allow local farmers and processors to trade on free markets and not oblige them to trade though government controlled wholesale market monopolies (Vorley & Proctor, 2008).

**Policy Strategies for Useful Enablers**

- **Business Climate Facilitation**

As rightly noted at a recent conference “private initiatives often remain “islands of success” due in part to an unsupportive policy environment” (Vorley & Proctor, 2008, p. 28). The role of national governments in setting up the general laws, norms and regulations that form an attractive business climate is paramount, as this encourages the private and public sector actors of agricultural value chains to identify the synergies for improved cooperation and coordination. In terms of macro-economic climate, the stability of exchange rate, inflation control and trade liberalization norms are critical. Among the business climate enablers is also the establishment of a clear legal framework for agri-business growth, for instance through norms assuring legal protection of private investments, but also through laws that ensure a sound contracting and a solid contract enforcement system at national level. Further, legal frameworks for the proper establishment of independent producers’ organizations are much needed, especially in many Sub-Saharan countries, where inappropriate policies still inhibit their development (Van Der Meer, 2006). Regulations on cooperatives should also contain provisions that protect them from the risk of political interference.

More specific measures can be defined as well. The promotion of specific “clusters” for a certain crop production and processing, for instance through infrastructure development, facilitation of finance, and
provision of extension services, also helps to create a favourable business climate and a competitive advantage of a territory on a certain agri-market segment (Juma, 2011). Another specific intervention is the setting up of a Commodity Exchange, such as the one formed in Ethiopia in 2008, with 11 warehouses and a single trading floor in the capital.

Policies to Support National, Regional and Local Markets

In supporting value chain initiatives, it is important for state governments to strive for more balance between export and local markets. Public-Private Partnerships in value chain which are not only driven by an export or retailer market “demand pull” are essential for staple crop production, price stability and local food security. These PPPs can additionally revitalize indigenous crops farming, as described in the case of Amaranth leaf experience in Kenya (Ngugi et al., 2007). In the absence of a balanced presence of modern restructured markets and traditional food market, the following structural issues risk to remain as limiting factors: a) the farming production methods need to be very flexible and open to change according to the exogenous changes in consumer demand patterns and associated private sector standards; b) the environmentally sound farming solutions proposed (if any) tend to be biased toward the introduction of exogenously developed new technologies, which can be positive but do not necessarily encompass local knowledge and non-technological innovations; c) risk of a reductionist view of small farmers as “new consumers” at the bottom of the pyramid (i.e., consumers of agri-chemical inputs). National governments can thus support traditional markets, for instance, by co-investing in the modernization of wholesale market infrastructures making their logistics more efficient for buyers and at the same time more accessible to small farmers (Reardon et al., 2010). Among the specific policy measures, a “critical commodity chain” approach has been proposed by some scholars to simultaneously address the pro-poor market development and typical issues with intensification of staple crop production, such as price instability, discontinuity in service provision, and strategic default in rural finance provision (Poulton et al., 2006). This model foresees that a state agency would provide a maximum supply of free “options” to small farmers each year at planting time, which would guarantee the purchase of a certain volume of staple crops at a given price. A further amount of options could additionally be sold through an auction mechanism. At harvest season, small farmers would decide to exercise their options or not. The model would mitigate the farmers’ risk of price fluctuations, at the same time providing an incentive to intensify their staple production. Additionally, the options could be a substitute of collateral in credit arrangements and, in case of surplus production, the state agency could use the purchased staples to stock fair price shops for the poor consumers or similar such arrangements.

Facilitation of Value Chain Business Linkages

National and decentralized government agencies and officials can play a direct role in stimulating the implementation of virtuous value chains that assure growth cum equity. One simple function is the convening power of public authorities to facilitate business alliances. At a central level, the Ministry of Agriculture officials can work with Donors, local buyers and smallholders to facilitate business initiatives, such as in the case of the indigenous fresh vegetables produced for local supermarkets in Kenya. At a decentralized level, extension agents are often formally or informally engaged in brokering the farmers produce to external buyers. A more tangible policy measure is the direct public investment in physical infrastructure in rural areas (i.e., public warehouses, collection centers) and technical assistance, acting as a catalyst of market linkages and Public-Private Partnerships. Concrete realizations of this approach are the “food parks” in India, or the agri-business “clusters” in Africa (Reardon et al., 2010; Juma, 2011). In general, as discussed earlier, public intervention can effectively invest on the
strengthening of farmers’ organizations capacity, with the aim of a) favoring the horizontal coordination, with the resulting aggregation of production, more consistent quality farming and a collective marketing structure, b) building their entrepreneurial and negotiating capacity. The facilitation of market linkages for smallholders through strengthening their collective institutions can improve their participation in value addition not only through their improved marketing capacity but particularly by supporting the primary processing. Public authorities can use various policy measures to stimulate the transfer of technologies and equipment (i.e., import tax exemptions, temporary income tax reductions for processing plants). An example from China illustrates the government’s shift from farmers (and farming) focused approaches to chain-wide support: the creation of a special public agricultural fund supports the establishment of “dragonhead” enterprises, as vertically integrated entities engaged in production, processing and marketing stages, aimed at both commercial and local development objectives, typically in poor rural regions (Vorley & Proctor, 2008). Another similar policy approach is for the government to create an intermediary company, as seen in Malaysia with the Malaysian Agrifood Corporation, with a double and interlinked commercial and social objective, thus helping smallholders in their horizontal coordination, while also stimulating vertical coordination requirements of downstream food processing and retail market operators. Government agencies can also establish incentives or prescriptions to induce retailers and processors to adopt “pro-poor procurement” strategies, such as obliging supermarkets to reserve adequate shelf space to sustainable and small farmers’ produce.

➤ Promotion of Business Development Services

This public policy strategy aims to support the establishment and growth of a local professional infrastructure that can supply the agricultural value chain actors with both financial services and other business incubation and business development services, including business management assistance, legal advisory, finance advisory and credit enhancement, technical know-how such as agronomics and processing or certification, and export management.

5.4. Cross-cutting Private Sector Engagement Strategies

The restructuring of global and local food systems is inevitably a driver of significant change. As contended, it can become a stimulus to increase the engagement of the private sector in concerted action to simultaneously satisfy food markets demand, environmental stewardship and rural poverty reduction. However, this requires an improved institutional capacity to govern markets so that they perform within certain boundaries of growth cum equity. This section focuses on cross-cutting policy strategies that can be initiated by different stakeholders (including Donors, NGOs and governments) but are geared to essentially assure respect of public objectives and values, setting appropriate boundaries to agri-business market action, as well as to provide incentives to the private sector for a contribution to pro-poor and sustainable agri-business initiatives.

➤ Donor and Government Anticipatory Policy Strategies
As mentioned earlier, it is a key responsibility of both Donors and Governments to identify or predict certain global market trends and develop an internal capacity to rapidly interpret the sustainability implications of such trends so that anticipatory policy strategies can be discussed, planned and eventually implemented. A sharp policy analysis can support the design of courageous programs that can strive to prevent, rather than compensate, the undesired effects of the global or national market dynamics. For instance, a sharp competition law and regulatory framework can discourage foreign investments of unscrupulous large agri-businesses, but at the same time set the stage for more sustainable food market investments that have higher socio-economic and environmental local returns, possibly with outcomes of both higher competitiveness and inclusiveness.

- **Promotion of Social Enterprise Initiatives**

A growing number of hybrid entities (here at times indicated as social enterprise) that do not seem to fit the old style classification distinguishing private sector enterprise and non-profit organization are emerging in the developing world, including in the sphere of sustainable agriculture. They seem to fit with this broader business model philosophy of growth cum equity. While there is certainly a need to further research and study their best models and founding elements, policy strategies should be adopted by donors and governments to promote their development. Among the Donors community, funding to social enterprises is emerging as a novel positive trend, especially by foundations and some institutional funding agencies, but should be more widely and courageously sustained.

- **Promotion of Multi-Stakeholder Partnerships**

Public-Private Partnership (PPP) arrangements have been experimented in a number of agricultural development interventions, often with the scope of a collaboration on R&D and technology innovation in agriculture. PPPs linking farmers, with agri-businesses and with public R&D institutions through contract farming arrangements have been implemented in removing market barriers for smallholders with success (Ruben et al., 2006). There seems to be scope for further emphasis on PPP model implementation, for instance for a) enhancing the delivery of services to farmers and farmer organizations; b) managing the high knowledge intensity of sustainable intensification farming practices; c) supporting the professionalization of post-harvest and marketing activities in smallholder inclusive value chains; d) contributing to reshape the consumer preferences towards sustainability through education and information dissemination. For all these instances, the fostering of public-private and NGO partnerships, as occurred in several hybrid network value chain experiences, is a strategy that seems promising. The PPP models implemented to establish “new generation cooperatives” (Reardon et al., 2010) have also demonstrated convergence on sustainable results.

The development NGOs sector, especially starting in the early 1990s, has had an increasing influence in the delivery of agricultural development interventions (Pretty, 1995). They generally demonstrate flexibility and capacity to adaptive management, as well as the ability to embrace long term strategies, as long as they are not forced to execute projects that are bound to the tyranny of short term grant-maker’s goals satisfaction. Both Donors and governments seem to have scope for improving their strategies to form effective partnerships with development NGOs, stimulating their good practices, experimenting institutional innovations in sustainable agriculture in pilot ventures, thus eventually setting up programs for replication of successful experiences. The strengthening of partnerships with NGOs is also functional to developing rural human and social capital, a critically important factor in knowledge-intensive and sustainability-based agricultural production systems.
Prioritizing Climate Change Adaptation Strategies

In general, policies oriented to support smallholder agricultural production are intrinsically building the resilience of their rural society to climate and market shocks. Both Donors and national governments should take leadership and attract the private sector to deliver Climate Change adaptation technologies. These public sector actors, indeed, would mainstream policy measures and prioritize budgetary allocations for support to technologies and agricultural practices that can respond to the challenges posed by climate change adaptation and mitigation. Through such strategy, the implementation of technologies for improving efficient irrigation, for instance, would be stimulated, as well as the spread of weather-indexed crop insurance services and renewable energy powered local processing.

Incentives for “Doubly Specialized” Intermediaries

Incentives to stimulate the catalytic role of value adding intermediaries can go a long way in executing institutional innovations and partnerships for smallholder inclusive sustainable agri-business chains. Both Donors and governments can contribute at least through two types of action: a) specific funding programmes for intermediaries in support of sustainable agriculture value chains, and b) the set up of targeted capacity building programmes for intermediaries to become “doubly specialized” (development motivated as well as business-oriented). Public funding for such programmes needs to find a balance between offering a sufficiently long execution timeframe and mitigating the risk of creating institutional dependence. While this balance is not easy to ascertain, public incentives and funding need to contain clear exit strategies and stimulate measures for incorporating the beneficiaries as endogenous chain nodes, with their own financial sustainability plans. Pride Africa is one example of an NGO that fits the concept of a doubly specialized intermediary, as summarized in its DrumNet initiative.

TEXT BOX 7: DrumNet, Kenya – A intermediation platform aiming at financial sustainability
Launched in 2003 as a pilot project of Pride Africa, Drumnet is a rural value chain management system targeted at farmers with up to two acres plots. The business model is to act as a platform linking smallholders, input suppliers, agro-business buyers, and commercial banks for cooperating towards an efficient end-to-end finance, production, delivery and payment process. This is typically done through a contract farming arrangement intermediated and managed by DrumNet. An ITC platform provides the controls to monitor transactions and to assure contract compliance. For its brokerage and administrative costs, DrumNet charges an intermediation fee to the value chain members (Miller et al., 2010).

Commitment Beyond Corporate Social Responsibility

Private sector players rightly cannot become substitutes of the public authorities in the delivery of basic public goods, however they can and should significantly contribute as “development partners” (Vorley et al., 2009). In order to move beyond superficial Corporate Social Responsibility approaches, it is necessary that corporations and their top management intend and fully buy-in to the “creating shared value” paradigm (see section 2). As mentioned earlier, they can promote internally and externally adaptive management and governance models that enhance the benefits of efficient coordination, while promoting genuine and chain-wide cooperation, knowledge management, and inclusive business. This means, for instance, that downstream chain actors will propose flexible contract farming terms of trade to smallholder farmers – allowing for price as well as volume adjustments – and will also refrain from “side-buying”, thus investing in creating long term trustworthy relations with the farmers and their
organizations. Another policy innovation adopted in the food retail segment is a “pro-poor procurement” strategy, by which supermarkets have decided to keep a certain space on shelves for commercialization of smallholder farmer products.

5.5. Assessing the whole value chain performance

The segmentation typically present in policy approaches to agriculture discussed earlier is reflected in the way the assessment of outcomes and evaluation of impacts are often designed and implemented by different stakeholders, whereas each of them tends to emphasize their perspective and therefore the aspects related to their priority mission. In contrast, scholars and practitioners readily acknowledge the need to develop systemic assessment tools, although they accept that this entails difficulties. Those concerned with sustainability have attempted to design holistic and multi-dimensional evaluation frameworks, for instance in the assessment of poverty alleviation, moving away from the traditional predominance of income and/or consumption key indicators (Cohen, 2009; Donovan, 2010). When a value chain approach is implemented in agricultural development interventions, the intrinsic multi-stakeholder context, including corporate, government, civic society and farmers’ organizations and communities, clearly enhances the need for a comprehensive M&E methodological framework. Further applied research on this issue would fill a critical gap and the following are suggested avenues to be explored.

Among the methodological approaches that seem suitable for this complex task are those in the family of Multi-Criteria Analysis (MCA)\(^\text{28}\), a policy decision aid tool particularly appropriate for the selection of alternative course of action in the presence of multiple objectives, different perspectives and value judgements. In particular, the techniques of Multi Attribute Analysis (MAA) seem appropriate to the context of assessing an intervention in presence of competing stakeholder views and objectives, imperfect information and mixed quantitative and qualitative data (Munda et al., 1994). These methods abandon the logic of optimization and, recognizing the pluralism of goals and actors, try to identify the possibility of comparing different scenarios, resulting from the mediation among multiple criteria and their associated priority weighting vectors. They are typically used in an iterative way with high interaction between the analyst and the policy-makers, thus allowing for a process that itself fosters a deeper understanding of the many implications of a given intervention. Using a MAA framework ex ante would ease the planning of value chain approaches of different nature. The development of an MAA approach ex post would contemplate the comparison of a baseline situation with the outcomes of a value chain approach implemented in the past.

Life Cycle Analysis (LCA) is another family of methodological approaches that could offer inspiration for designing value chain sustainability performance evaluations. LCA methods have traditionally focused on the ex ante or ex post environmental evaluation of a certain production process and product along the entire value chain, with a thorough inventory and accounting of all relevant inputs and waste flows. Thus, in the design of new agricultural interventions, LCA can be employed to predict the environmental sustainability of a new agri-business chain. While these methods face the issue of quantification of all relevant aspects in a consistent way, their integration within multi-criteria

\(^{28}\) In general, MCA methods support a realistic evaluation framework in which multiple criteria represent the plurality of objectives at stake, and systems of priority weights are applied to represent explicitly the value judgments of different actors engaged in the decision process. In AMA methods, algorithms that describe decision attributes are used for comparison of alternative scenarios and identify the preferable compromise solutions and the objectives that generate most trade-off or conflict situations.
Frameworks could be explored in order to also capture the socio-economic implications of a certain course of action.

Another interesting methodology emerging in rural development assessment, partly inspired by the Rural Livelihood paradigm (see section 4.1), is based on the asset endowment analysis (Donovan, 2010). The basic principle for assessment is to measure the changes in the capital assets before and after the value chain project implementation (or compared to a control group). At farmer household level, the focus is on changes in capital assets (including natural, human, social, physical and financial capital) and at the enterprise level the focus is on measuring changes in capital assets and in business viability and competitive advantage.

Elements of all these methodological frameworks, perhaps blended in a coherent and comprehensive method, could be instrumental in doing a deeper analysis of the potential of value chain approaches in advancing the agenda of sustainable agriculture. Given the complexity of interrelations and feedback loops within human-environment systems, the isolation of impact at the chain level will remain challenging: for instance, the influence of the dynamics of the macro policy/regulatory environment typically has an influence, and the “attribution problem” cannot easily be bypassed. However, it is still of strategic importance to accompany the policy-making processes for a more sustainable agriculture with assessment tools that provide science-based evidence as well as multi-stakeholder participation as an appropriate platform for an informed discussion and political deliberation.

**TEXT BOX 8: LCA lessons on bio-fuel value chains:** The evidence from LCA assessments inclusive of energy use accounting is illustrative of the lack of systemic approaches in agricultural R&D, policy analysis and intervention planning. A controversial example is pertinent to the public subsidy programmes used to stimulate agro-industrial value chains for the production of first generation bio-fuels. Although not easily acknowledged in many policy fora, LCA assessments offer science-based insights on the salience and credibility of a public choice for subsidizing large scale bio-fuel production from certain crops, especially in temperate agro-climatic conditions. The results show that the energy inputs of some farming/production methods is too high for them to hold as a rational choice: for instance, bio-diesel production using sunflower in the US agriculture context may require 118% more fossil fuel than the bio-diesel produced, or bio-ethanol produced with corn grain may require 29% more fossil energy than the bio-ethanol output (Pimentel et al., 2005).
APPENDIX 1: SELECTED CASE STUDIES

CASE 1: AGROFAIR – A FARMERS CO-OWNERSHIP MODEL

The evolution

AgroFair was launched in 1996 as a private company co-owned by farmers based in Africa and Latin America. It was founded by the Dutch development organization Solidaridad, which today is an international network organization inspired by the vision “that sustainable production in agriculture and industry, combined with fair trade in the products of these activities, can make a significant contribution to combating poverty and preserving people's environment, in the context of a globalizing economy”. After successfully introducing the first Fairtrade coffee (Max Havelaar fair trade label) for the Dutch market in 1988, Solidaridad formed AgroFair to work on fair trade bananas and demonstrate to the mainstream agro-industry that it is possible to adopt a more inclusive business model.

The market

AgroFair today is a tropical fresh fruit company which joins the farming activities of the producers with the certification (fair trade and/or organic), export, marketing and distribution activities in high value markets. It has been the first to introduce Fairtrade banana in the international markets and is passionate about the rights of banana workers and about improving the way the banana industry is run financially, environmentally and socially. Today, the product basket of Agrofair has enlarged to include sustainably produced pineapples, citrus and mangoes. There is a significant focus on improving the quality for the export market, but the company has also devoted attention to minimizing the waste along the chain: the effort is to process also second and third quality produce, as well as surplus quality in periods of low seasonal demand in order to maximize producers rewards and reduce losses through a set of local processing activities for production of fruit juices, purees and pulp that are packaged in drums and exported. The producers organizations access local processing plants owned by third parties, while AgroFair handles logistics, export and sales. The producers participating are spread in 13 developing countries and the demand market covered includes the USA and 14 European countries. In 2009, the net turnover was about € 53 million, with a € 5,5 million gross margin.

The organizational model and institutional arrangements

AgroFair profile as a co-owned business is one of a social enterprise that empowers producers and creates the conditions for more equitable cooperation and value addition along the value chain. Its mission and vision statements declare:

….We supply our customers with responsible products produced by farmers committed to fair and responsible social, environmental and economic standards. We provide the most respectful, fruitful and tasteful choice of fresh and preserved produce to the consumer. We are at the forefront of innovation in combining sustainable produce, logistic solutions and marketing concepts. Our approach will be an inspiration to other companies in the industry so producers and plantation workers and their families can enjoy better livelihoods and produce in harmony with the surrounding ecosystems. AgroFair’s ownership structure (see table) shows how the producer groups are the majority shareholders of the company (30%), thus they are represented on the board and at annual shareholders’ meetings and accordingly they participate to the share of profits. They are united in the Cooperative of Producers of AgroFair (CPAF). Agrofair minority partners include an NGO ethical investors and a network of fair trade shops. To be noted that El Guabo, one of the producer groups, has also a direct 5 % stake in AgroFair, thus strengthening producer’s empowerment and cooperation in the venture. The governance follows a two tier structure considered a best practice in the Dutch market: the Management Board (made of 1-3 members) carries high executive responsibility and the Supervisory Board (5 members, of which 2 are elected by the
producers, 2 are elected by the ethical investors and their chairman that is elected by the other members) is responsible to a) verify that the management is in line with the statutory and shareholders guidelines and goals, b) it also serves as a “consultant” to the management on technical issues. Both Boards are directly accountable to the General Assembly of Shareholders.

As long as they are Fairtrade certified, fruit producers supplying AgroFair can apply for membership to the CPAF. The cooperative facilitates knowledge and expertise transfer to its members and represents them at the shareholders meetings of AgroFair. AgroFair itself, through TASTE Foundation, earmarks donor funds and offers technical assistance services and some R&D for production improvement. Occasionally, AgroFair has extended loans to CPAF members. The contractual arrangements with the producers groups are based on a formula with fixed minimum prices and minimum volumes of supply, on the basis of a negotiated production planning schedule. In order to protect producers who supply smaller volumes, voting power in CPAF follows the cooperative principle ‘one man one vote’, so their instances can be considered in decision-making in a democratic way. In order to reward entrepreneurship correctly, however, the producers that contribute with higher productivity can count on the incentive mechanism managed through the company’s dividend distribution policy, which is based on the value of the fruit delivered by each farmer to AgroFair.

<table>
<thead>
<tr>
<th>Shareholder</th>
<th>% of ownership</th>
<th>Type of shareholder</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPAF</td>
<td>30 %</td>
<td>Cooperative of Producers</td>
</tr>
<tr>
<td>Inversiones Una Viva</td>
<td>15 %</td>
<td>Ethical investment company</td>
</tr>
<tr>
<td>High Tide</td>
<td>15 %</td>
<td>Ethical investment company</td>
</tr>
<tr>
<td>Comma Commissie</td>
<td>14 %</td>
<td>Social entrepreneur trust</td>
</tr>
<tr>
<td>World Improvement Money</td>
<td>10 %</td>
<td>Ethical investment company</td>
</tr>
<tr>
<td>Solidaridad</td>
<td>8,75 %</td>
<td>International NGO network</td>
</tr>
<tr>
<td>El Guabo</td>
<td>5 %</td>
<td>Association of banana producers</td>
</tr>
<tr>
<td>Consorzio CTM - Altromercato</td>
<td>2,25 %</td>
<td>Consortium of fair trade shops</td>
</tr>
</tbody>
</table>

Reflections on the Case:

AgroFair illustrates a case of a “hybrid” governance model, with a private company as value chain anchor originally launched by an NGO and adherent to “social enterprise” principles. In addition, the partnership adopts a farmers’ co-ownership formula (through their member organizations). Its modality is to fully integrate all the main supply chain functions to reach high value markets, obtain efficient production and commercialization increasing profits, while at the same time improving their equitable distribution among members and offering embedded technical services to producers and processors upstream. The most interesting institutional innovation aspect is the hybrid model of a private sector company in which the main shareholder is a cooperative, bundling many tropical fruit producers from Africa and Latin America belonging to small and medium scale farms. The decentralized production system and the associated farmers’ cooperative governance, ruled by democratic and inclusive principles, is coupled with a centralized export and marketing management under private sector competitive market rules. While the cooperative CPAF and other producers associations participating promote a chain wide cooperation, smallholder inclusiveness, development goals and social capital formation upstream, the company in Europe strives for competitive and efficient chain management and vertical coordination, with an eye to the standards requested by the downstream market actors. This allows the coexistence of small farmers empowerment and participation to governance, as well as the corporate attention to efficient management, rewarding productivity and competitive marketing. The company also handles a technical assistance service to the producers in order to address quality of production challenges and experiment more sustainable use of natural resources. This model seems to respond very well to the rural development and the social and fair trade goals of sustainable agriculture. The environmental goal is also pursued to the extent that the producers associations decide to reinvest some of the income from the
FairTrade premium to improve farming and post-harvest practices. AgroFair, in such cases, uses its own resources to co-finance the CPAF members initiative, and promotes know-how and technology transfer for limited (optimized) chemicals input use practices, and for organic and/or resource conserving agri-practices. Banana farming, for instance, even if organic certified, requires significant water inputs, and R&D is taking place to investigate how to improve water use efficiency. However, in terms of smallholders inclusiveness, the CPAF membership does not usually include the lower end small holders (< 1 ha/farmer) but is reported to include small 2-4 hectare farmers. This may cause exclusion of poorer subsistence farmers or on the contrary may lead to their upgrading, the AgroFair experience does not offer univocal insights. What seems unequivocal is that entry barrier for smallholders in this export market is significant due to the stringent quality standards and contractual specifications requirements. In such context, more than the size of each single smallholder farm, what is important is the capability level of their collective organization (i.e., cooperative or association of producers), in terms of its capacity to metabolize the production standards, to take part in professional quality control, grading, handling of produce, with adequate data processing and traceability.

The ownership of the company (see table above) is also inclusive of some of the most critical types of intermediaries in virtuous agri-business value chains: in addition to the producers, there are the investors, focused on the triple P (people-profit-planet) and able to inject capital for growth, and the NGO sector (Solidaridad) in this case (as often) performing the role of originator and broker of the whole business approach; a network of Italy based small fair trade shops. Finally, a strong financial performance (20 % return on equity, according the 2009 annual accounts), makes the business model potentially attractive to conventional investors and possibly replicable through orthodox corporate channels as long as the commitment to the original fair trade and low impact mission is safeguarded.

Finally, one of the main limits of AgroFair business model lies on the nature of the subject crop market and its significant concentration, particularly the banana segment. The distribution chain of AgroFair ends with the large European retailer companies, which maintain a strong bargaining power over the rest of the value chain upstream. In the case of non-organic bananas, for instance, they are able to retain up to 40 % quota of the value addition (40 % of the consumer price). In such context, it is challenging for networks such as AgroFair to exercise leadership with the chain actors downstream and to bring about new equilibrium for a more equitable distribution of benefits in the value chain.

<table>
<thead>
<tr>
<th>Summary Assessment of AgroFair’s approach</th>
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<tbody>
<tr>
<td>Multi-functionality (ability to provide ecosystem services and preserve social fabric and identity)</td>
</tr>
<tr>
<td>The work with fresh and processed fruit (i.e., puree), attention to support both organic and low input agri-practices (IPM, precision farming), are a good framework</td>
</tr>
</tbody>
</table>
for environmental sustainability. The ownership model with small farmers engagement, is also conducive to social fabric preservation.

owners of the network organization. In the cases of mid-size plantations, farm workers standards are high.

enjoying the centralized management of logistics, sales and marketing.

coops. The catalyst role has been played by an agency (the NGO) endogenous to the supply chain and this brings about shared vision and goals.

Replicability outside of these conditions (i.e., local staple crop markets) is more debatable. The integration of local processing for loss minimization is a replicable strategy.

<table>
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<tr>
<th>REFERENCES</th>
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<tbody>
<tr>
<td>- AgroFair web site</td>
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<tr>
<td>- Interview with Heini Grandi, Manager of AgroFair Italy 02/18/2011</td>
</tr>
<tr>
<td>- Interview with Hans-Willem van der Waal, Managing Director of Agrofair 03/01/2011</td>
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<tr>
<td>- AgroFair Annual Report 2009</td>
</tr>
</tbody>
</table>
CASE 2: HONEY CARE AFRICA – A KENYAN SOCIAL ENTERPRISE

The evolution
The company was launched in 2000 by Farouk Jiva, a Kenyan entrepreneur and two investors as a triple bottom line venture that would create social, environmental and economic value. The basic business model was to structure quality honey production by subsistence smallholders and commercialize it among urban consumers. The conditions were perfect to set up a significant scale operation in Western Kenya, a region with a long tradition of honey production but without sufficient experience in quality and a country where previous donor and governmental attempts had failed due to lack of a systemic approach.

The market
In 2003 Honey Care reached profitability and by 2006 it employed 48 full-time staff, soon after becoming the largest supplier of honey in East Africa. In the Kenyan market, Honey Care reached a market share of 68% of supply, engaging beekeepers with over 28,700 beehives. Its distribution network was able to successfully target a diversified cluster of buyers, including large and small retailers, restaurants and hotels. Exports started to pick up, reaching the eastern USA and European markets with both honey and bees wax.

The organizational model and institutional arrangements
Honey Care has a profile of social enterprise that puts a significant effort on forging local and international partnership networks, engaging small producers, community based organizations, microfinance institutions, international NGOs and donors. The model implemented has been described as a tripartite model as it is centered on the synergies among the following three actors: the private sector (Honey Care company), the rural communities (the many small scale honey producers) and the development sector (many donor, institutional lenders, and NGOs). The chosen approach of working with small subsistence farmers and build a growing network of producers was to use local NGOs as facilitators, as they generally had invested in building long term trustworthy relations with local farmers, usually more suspicious of corporations, government agents and cooperatives. Initially, indeed, it was challenging to forge relationships with such local NGOs as there had been a stigma associated with private sector initiatives. The contractual arrangement with the small scale beekeepers was a kind of contract farming arrangement with immediate cash payments for the supply of honey, a detailed contract specification, and embedded services in the form of technology provision (modern beehives) and training. The organizational mechanism for the transfer of beehives was a source of trial and error. Initially they planned to sustain individual beekeepers through regular loans, but the financial capacity of Honey Care was insufficient, local interest rates quite high and banks would not accept the absence of collateral; also, the dialogue with NGOs about the strategic importance of avoiding giving away beehives in order to nurture the entrepreneurship of farmers and increase their incentive to produce high quality honey revealed to be quite difficult in the beginning, but eventually the NGO partners improved their capacity to adopt a business perspective. The final result of negotiations was actually a powerful innovation in the business model. Donors would provide grants to the NGOs, which would then purchase the beehives with donor funds. Honey Care would lend them to small farmers at the original cost and with a gradual repayment schedule through a mechanism of retained cash on the monthly income from honey production. This mechanism had very efficient results and was cost-effective compared to regular micro-lending schemes. A Revolving Fund was therefore established as a payment collection mechanism for the beehives ownership transfer. Once fully paid, the beekeepers could start gaining the full income from honey production. The payments collected in the revolving fund generated new capital for each community to carry on other developmental activities or expand the honey production. Another aspect of the contractual arrangement and partnership with beekeepers has been that there is no request of exclusivity: beekeepers are free to sell their honey production to any brokers. This choice, although
objectively risky on the buyers’ end, ended up strengthening the trust and loyalty of producers, with limited instances of farmers’ opportunistic side selling, many of which in any case returned to work with Honey Care once the competitors vanished. Finally, an incentive plan was established to motivate and reward the productivity of the company’s employees. A system for monitoring and linking the volume and quality of honey to the work of project officers in the field was also devised, thus allowing Honey Care to offer them a bonus on top of their salaries. The success of this incentive system with employee motivation was paired with a significant improvement in the production forecasting accuracy of the company: because the employees monitored the production more closely, Honey Care was able to know how much honey would be able to collect every month and better plan distribution activities.

<table>
<thead>
<tr>
<th>Partnership</th>
<th>Activity</th>
<th>Type of partner</th>
</tr>
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<tbody>
<tr>
<td>Africa Now</td>
<td>Co-development of supply chain expansion</td>
<td>NGO</td>
</tr>
<tr>
<td>UNDP-GEF</td>
<td>Bees for Trees agro-forestry initiative</td>
<td>Multilateral donor</td>
</tr>
<tr>
<td>DANIDA</td>
<td>Funded pilot for 100 beehives</td>
<td>Bilateral donor</td>
</tr>
<tr>
<td>IFC</td>
<td>US$ 500,000 soft loan for market expansion to Tanzania</td>
<td>Multilateral lender</td>
</tr>
<tr>
<td>Swiss Devl. Corp.</td>
<td>US$ 350,000 soft loan for market expansion to Tanzania</td>
<td>Bilateral donor</td>
</tr>
<tr>
<td>Nature Cradle Foods</td>
<td>Entry in US fair trade &amp; organic market</td>
<td>Private company</td>
</tr>
<tr>
<td>Kenya Honey Council</td>
<td>Advocacy in a professional sector platform</td>
<td>Sector association</td>
</tr>
<tr>
<td>K-Rep Bank</td>
<td>Rural credit structuring for honey producers</td>
<td>Finance operator</td>
</tr>
</tbody>
</table>

**Reflections on the Case**

Although the company describes the business model as a tripartite model that brings in a win-win-win solution, the pivotal role in the value chain is still played by the private sector company. Clearly the strong leadership of Honey Care management exerts a potent role in forging strategic partnerships. A similar leadership is exerted by the NGO Africa Now, which provides a very fertile ground to the promotion and dissemination of the business model in rural Kenya. Such an NGO, in fact, became a natural partner of the social enterprise thanks to its experience in adopting pro-poor entrepreneurial development approaches among rural communities. This alliance is a good illustration of the **synergies that can be obtained in value chain approaches when the private sector downstream operators can find the support of “doubly specialized intermediaries”** (Vorley et al., 2007), which are conversant on professional business practice, open to develop private markets, while maintaining their focus on the proper developmental and environmental implications for the rural communities. The strength of the tripartite partnership mechanism, which is reflected in the contractual arrangements among them, is that each partner commits to play a complementary role and is accountable to the other two partners for a correct execution. As a result of such collaboration, the partnership advances in reaching the multiple goals of a “multi-functional” agriculture. Finally, the practical procedure adopted for extending credit to small producers is an important institutional innovation, in which the revolving fund is a powerful mechanism for enhancing the value chain sustainability performance.

<table>
<thead>
<tr>
<th>Summary Assessment of Honey Care Africa’s Approach</th>
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<tbody>
<tr>
<td>Multi-functionality (ability to provide ecosystem services and preserve social fabric and identity)</td>
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</table>
The small farmers engaged can continue their subsistence farming for food security and tradition as the income generating beekeeping is not labor intensive. Environmental sustainability embedded in quality standards and contribution to ecosystem services (i.e., pollination) and in the agro-forestry activities induced.

The terms of participation are extremely equitable. Small producers obtain a fair trade price and their communities are also supported in the planning of other development activities.

Transaction costs are reduced through a tripartite value chain network, leveraging the complementary roles of the private sector, institutional and NGO actors. Marketing related transaction costs are reduced via the the centralized collection, processing, sales and marketing.

The model has a fit that is well suited to the goals of all participants. The catalyst role is played by both the local partner NGOs and the company and this brings about shared vision and goals.

The model is showing success in a high value added product line with a limited requirement of capital investment and labour input. A premium price is captured on both international markets and diversified urban national markets. Scaling up is underway focusing on quality, honey collection and finance bottlenecks.

REFERENCES


Honey Care Africa Web Site (www.honeycareafrica.com)
CASE 3: LIJIAN ORGANICS, CHINA – AN AMBITIOUS NGO-DRIVEN PILOT EXPERIENCE

The evolution
This small scale experiment with a rural community enterprise took place under the sponsorship of Global Environment Institute (GEI), one of the first independent environmental NGOs in China (Beijing, 2003), in the northern part of Yunnan Province. Smallholder farmers in the community of Changshui village, only two miles away from the booming tourism town of Lijiang, were a marginalized subsistence farming community, largely at the mercy of the new local private companies that controlled the food market chain. GEI formulated an integrated rural development intervention inspired by the concept of sustainable agriculture and rural livelihoods, with high emphasis on market access and market mechanisms as a tool for sustainable development of the community. The intervention was focused mainly on the provision of technology for biogas production, with the intention of reducing wood fuel consumption and improving bio-waste management; know-how transfer for organic horticulture in greenhouses; establishing a village guarantee fund for improving rural finance access. Production of high added value vegetables such as cucumbers, chili and baby tomatoes was targeted. At regime, GEI calculated that the project managed to reduce the fuel-wood consumption and associated forest degradation by 4.2 tons per year per farmer (equal to 0.5 hectare of forest saved), the groundwater and air quality improved due to the capture and treatment of manure with the biogas plant, and farmers enjoyed a 12-fold increase in household income.

The market
In 2006, the farmers’ cooperative was established to produce organic vegetables with only three founding farmers. The cooperative then grew to the size of 36 smallholder households participating as cooperative members. The organic vegetables, including greens, tomatoes, cucumbers and chilis, were to be marketed to the local Lijiang high end markets, such as the local hotels according to the business plan. However, in the course of implementation, the price established by GEI to farmers revealed to be too high for this market to absorb. The organic fresh produce markets of Shenzen, Guangzhou and Beijing therefore became new target channels, although they presented new challenges and risk factors.

The organizational model and institutional arrangements
The Changshui farmers were organized in a cooperative business and received technical assistance from the NGO to adopt cash crop organic farming methods, integrating their traditional and mainly subsistence farming tradition. Eventually GEI also delivered capacity building to improve their management skills, with the goal of decreasing their dependence on GEI’s staff for management. In March 2007, Lijiang Snow Mountain Organic Food Ltd (LSMO) was established as a private company that would purchase the marketable production of the farmers’ cooperative to commercialize it outside of the local market, targeting urban markets which could pay the premium for the organic quality of the produce. For the initial capitalization of LSMO, GEI injected equity as well as other philanthropic sources of funding. Towards the end of the project it seemed clear that the profit margins of LSMO were at a level that would not assure its long term viability.

Reflections on the Case
This pilot experience could be classified as an intermediary-driven value chain model, in which the Chinese NGO experimented for the first time playing a facilitory role and thus was thus far from being a “doubly specialized intermediary” in rural development. The limited experience in aspects of pro-poor market development such as business planning and incubation, marketing, and rural finance, made the execution a learning experience, in which GEI demonstrated an error-embracing attitude and openness to adaptive management approaches. Not only was the chosen rural context a challenging target community
of subsistence farmers which raised the costs of the community engagement efforts, but the initial lack of a thorough market study on the target crops drove the project to set up initial contractual agreements that resulted in being unsustainable in the long term. The establishment of a local marketing company, with the NGO as part of the ownership, is an interesting innovation that demonstrated the adaptive capacity of the NGO and its sensible adjustments of marketing strategy in outreach towards high end remote urban markets. However, this pilot experience in completion teaches that a) the market mechanism of LSMO had a limited “organizational fit”, and insufficient financial stability; b) the NGO seems to have internalized some lessons from implementation hurdles and c) the weak “fit” in project design and execution left the smallholders without a linkage to local markets and under the risks of more unstable, and challenging remote urban markets. Rather than trying to implement, during the course of a grant-maker sponsored project timeframe, such an ambitious linkage between very poor subsistence farmers to high-end organic perishable produce markets, a more balanced “organizational fit” would have been to match the simple and small farmer’s cooperative to the less rewarding but possibly more stable local market outlets, in addition to diversifying the production of organic and regular vegetables.

Summary Assessment of GEI’s approach

<table>
<thead>
<tr>
<th>Multi-functionality (ability to provide ecosystem services and preserve social fabric and identity)</th>
<th>SH inclusiveness (i.e., terms of participation)</th>
<th>Competitive advantage of value chain on markets</th>
<th>Organizational fit</th>
<th>Boundary conditions (i.e., market/crops type, farming systems, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The intervention targeted subsistence farmers and engaged them in modern organic farming as well as in biogas production. On environmental standards the results were satisfying, but the target group was quite challenging in terms of its initial capacity to absorb change and preserve identity.</td>
<td>Participants in the coop were all small holders, mostly on the line of subsistence agriculture. The contractual terms promised by the NGO were extremely favourable and initially too optimistic as GEI had no previous experience and did not perform sufficient market research in the local town.</td>
<td>Transaction costs were reduced through the aggregation of farmers into a cooperative, collective organic certification, and subsequent contract arrangements with the buyer company LSMO. Such company received attention of a Hong Kong based supplier which expressed interest in arranging an exclusivity agreement.</td>
<td>The original design had to be adjusted. Organizational fit included the right actors, with the NGO driver able to perform adaptive management. However, this was the first experience of GEI with rural agribusiness, resulting in risk of farmers dependence and of coop under-performance in management.</td>
<td>The boundaries of applicability remain uncertain – there seems to be a mismatch between the ambition of the NGO to outreach to urban markets and the limited collective capabilities of farmers and NGO staff to sustain such a marketing model.</td>
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REFERENCES
CASE 4: CUATRO PINOS, GUATEMALA – EVOLUTION TO A VIRTUOUS NETWORK?

The experience of this fresh vegetables export value chain is illustrative of how value chain governance dynamics can evolve towards hybrid networks in which all nodes express leadership, and share responsibilities as well as the benefits of cooperation and coordination. The farmer cooperative Cuatro Pinos located 35 km from Guatemala City, was established in 1979 with the support of a host of Swiss development assistance actors, following the national earthquake catastrophe of 1976, and originally served the local fresh vegetable market. Thanks to the continued provision of technical assistance, including rural finance access, Cuatro Pinos started to experiment and develop the production of high value crops for export markets, particularly snow pea. As the business grew, the farmers started to obtain income increases and the cooperative fulfilled rural development goals, with the provision of health and education services to members and of credit to farmers. It suffered, however, inconsistent performance in its evolution. Particularly in the 1990s, a host of factors drove the cooperative into crisis, including management conduit problems, soil depletions due to overuse of agrichemicals, increasing pesticide resistance, repeated violations of pesticide residue regulations, rising quality standards by the importers, snow pea international price volatility and higher production costs partly due to overuse of external inputs. In 2001, with a grant from the Canadian Cooperative Association and the return of leadership to the original group of leading members, it was able to start a recovery process: production shifted to French beans (with a less volatile market price) and also towards diversification (radicchio, baby carrots, zucchini and others); in addition, the cooperative invested in a phytosanitary laboratory, which allowed farmers to keep up with the export standards, and in a local packing facility. At this stage, Cuatro Pinos started to reach out to non-member small farmers to increase production volumes. Today Cuatro Pinos reached a turnover of over $10 mln., with 580 member smallholders producing French
beans (approximately half of the turnover value) and other fresh vegetables for export, together with a 
network of over 1500 non-member small farmers located up to 6 hours away. At this growth stage, with 
professional staff and consolidated delivery of extension services, high quality inputs and credit to 
farmers, the cooperative was able to develop a long term relationship with a US specialized wholesaler, 
LA Salad Company, which in turn consolidated a relation with COSTCO as final buyer.

Institutional arrangements and key achievements

First, the business model summarized in the flow chart below is the result of an evolutionary process, in 
which individuals in each of the four critical chain nodes progressively found mutual trust, commitment 
to problem solving and to shared goals and responsibilities. The business relationship of Cuatro Pinos 
cooperative with LA Salad was consolidated over a period of ten years, and the latter has demonstrated a 
capacity for adaptive management as it implemented innovative arrangements to keep up with market 
coordination as well as with the improvement of smallholder participation. More recently, the relationship 
developed with COSTCO reinforced the development cooperation dimension of the business model, as 
the large retailer wanted to commit preferential procurement from smallholders. The highlights of the 
institutional innovations are as follows:

Production. In order to increase production volumes and stabilize them, Cuatro Pinos uses two strategies: 
a) it started to reach out to smallholder farmers outside its membership, engaging in contract farming 
about 1500 additional farmers in more remote areas, offering technical assistance and informal credit; b) 
although only smallholder production is traded, Cuatro Pinos has an informal agreement with San Juan 
Agroexport, a plantation scheme, under which they both share supplies in order to top off each other’s 
orders, as needed. In addition to French beans, the portfolio of vegetable crops has been enlarged. On the 
downstream side, COSTCO has agreed, through the intermediation of LA Salad, to relax its terms 
regarding the volume of production and its possible fluctuation.

Post-Harvest. The farmers can count on Cuatro Pinos for a local laboratory to check quality and food 
safety standards and for a local packing facility. LA Salad has been crucially instrumental in the 
development of the packing technology. In addition, Cuatro Pinos has been vigilant of the opportunities to 
cooperate with the national government for rural infrastructure development and nearly US$ 1,7 mln. has 
been leveraged from the Government’s Social Investment Fund to support the realization of packing 
facilities and irrigation schemes.

Transport. LA Salad has innovated logistics investing in a refrigerated sea-freight system, reaching 
significant economies of scale in distribution compared with airfreight.

Risk Mitigation. The commitment of small farmers to producing for more rewarding export markets, as 
experienced in the snow pea market of the 80s, also bears risks of dependence on international price 
fluctuations, imported agri-inputs, and the typical production spoilage risk which is particularly high for 
fresh produce markets. LA Salad and Cuatro Pinos decided to implement an innovative risk management 
mechanism: they created a “settlement account” and agreed that 10 % of the value of French beans sold 
would capitalize it. The primary use of such a fund, as agreed, is to cover the risk of farmer production 
damage and guarantee payments for their contracted production. When in 2005/2006 season an hurricane 
spoiled the whole produce, US$ 230,000 was used to write off the loss.

Social Development. After further engagement of the Cuatro Pinos-LA Salad-COSTCO value chain 
partnership, in 2008 they negotiated the establishment of Juan Francisco Garcia Camparini Foundation as 
a local NGO, in which each node would contribute with a quota of sales proceeds to capitalize the fund 
for social development projects at a rural community level.

The partnership experience has also revealed the existence of some issue areas, among which the 
following are noteworthy:

Credit to Farmers. For the purchase of inputs and irrigation kits, and for cash flow financing, small 
farmers need access to affordable credit. Their participation in the value chain can thus be facilitated and 
Cuatro Pinos extended credit informally, for instance with a credit-in-kind through provision of inputs.
However, as the supply chain expanded, it found itself with US$ 910,000 of outstanding loans (2006) and recognized the need to identify a professional microcredit institution to take on this specialized task.

*Farmers participation.* Among the participating farmers there are two categories, those that are members of the cooperative and those that take on a contract farming agreement with the cooperative. The latter group does not obtain the access to cooperative member services and this generates some discontent. As in other contract farming schemes, some participating farmers have practiced side-selling to other buyers.

The French bean season of 2005/2006 has been object of a value chain analysis for the identification of rewards distribution and the overall impact on rural development. The breakdown of the participation of the final price of a French bean box sold at a COSTCO warehouse is indicated in the flowchart below, where the remaining 35% is used by all actors to cover the settlement account, packing, shipping, product spoilage, and the final retail product losses.

In terms of household income benefits, in 2006 the average smallholder family received US$ 1,504 profit, after accounting for inputs and irrigation costs, and considering the family labour input as income. In addition, the French bean supply chain generated impacts at the post-harvest stage by providing employment to 546 rural people (84% of which women) for a total US$ 827,000. Households surveyed reported that the extra income was used to invest in health care, children’s education, land acquisition, and home improvements.

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CASE 5: KALLARI ASSOCIATION, ECUADORIAN AMAZONIA – THE EVOLUTION INTO A CHOCOLATE MANUFACTURING SOCIAL ENTERPRISE

The Kallari Association was established by the indigenous Kichwa, people in the Ecuadorian Amazon. The cooperative is equally owned by all member families and elects four leaders to their directive board. The small organization has benefited from the assistance of scores of international volunteers, including US biologist and conservation volunteer, Judy Logback, who arrived in the Napo Province in 1997 with a commitment to work for two years on her own personal savings of two thousand dollars.

The purpose of the cooperative members – now 850 families with established organic certification as well as 300 families in the process of acquiring registration – is to defend a livelihood and a cultural identity based on the symbiotic rain-forest product harvesting by forming an artisanal agricultural cooperative in order to get a direct market for their crops and handcrafts. The village leaders felt ready to take the step to become an enterprise, to improve the quality of the agricultural production and eliminate intermediaries. The coop initially made its revenues directly selling arts and crafts, first to national shops and hotels, then through exports to the US. An Ecuadorian conservation foundation gave a small amount of money (less than $2,000) and Ms. Logback worked alongside Paula Andi and Fausto Andi, who taught handicraft courses in order to standardize the quality. Export of the crafts began in 2000, but the artisans hoped to find more markets and decided to change their strategy. With these initial steps the team applied for a grant to the Ecuadorian – Canadian Development Fund office, and started to assist Kallari farmers with their cocoa production and value chain. The three year grant of $240,000 initiated in the fall of 2001, and added eight additional full-time staff members to the original trio. The project included a $15,000 fund to purchase a portion of the regional cocoa and coffee harvests. The first step towards value chain management was to bulk the bean production of the small growers and negotiate direct sales with the exporters, bypassing the local traders. Initially, however, the cooperative did not own a truck to transport cocoa beans, so they used the grant funds to buy all the beans of the cooperative and experimented selling them directly to exporters in the port of Guayaquil. Cocoa growers were responsible to harvest, ferment and then dry the cocoa harvest on their own farms. Within two weeks, the farmers would transport the dry cocoa beans to cooperative collection points, by foot, boat and bus. Since the organization did not own a vehicle, it was required to improvise on-the-spot hiring of small taxi trucks to transfer the harvest to the cooperative centers. At the center, the technical staff sorted and classified the beans, and then prepared them for transit to the coast port by contracting large harvest trucks from local intermediaries. This first step of independence allowed the Kallari members to gain further confidence and cohesion, and to increase the price received by buyers, from USD 20 cents/Pound to USD 48 cents/Pound. This growing development and confidence led Kallari to begin commercializing their cocoa beans to big league chocolate makers. The organization first exported their cacao harvest directly to the United States and Switzerland in 2004, and signed a five year contract with Felchlin, the most prestigious Swiss couverture manufacturer by the fall of the same year.

Kallari started to receive Bilateral donor funding and was able to set up basic infrastructure including an office. In 2003, after two years as a Pre-Association with a pending registration with the Ministry of Export, Kallari was finally recognized by the Ecuadorian government, and elected its own directive board to supervise the technical staff that was paid by grants and the small margin of cocoa profit. The leadership directive was familiar with international funding agencies and garnered several small grants from USAID, GTZ, DED and SIPO. The funding was granted with the requirement that the farmer organization improves the quantity and quality of their harvest, and exports it directly to foreign nations. The cooperative leaders began to understand over time that the terms of reference for these grant agreements were established with the motivation of securing cocoa beans for chocolate for international interests.
To secure a contract the cooperative leader Diego Grefa agreed to completely standardize production by having the farmers sell their harvest immediately after removing the moist cocoa beans from the pods, in the pulp form. This was well received by the farmers, who were able to save the two weeks required to ferment and dry the delicate beans, but a new problem presented itself: the weight of the beans were nearly triple due to the water trapped within them. This second step of upgrading along the supply chain took place because international buyers demanded that the cooperative improve and standardize the quality of their production. This step was accomplished in a single harvest season, as the technical staff had already mastered the logistics of the initial collection phase, and the prices offered for the cacao increased in conjunction with their ability to master the fermentation process and the sorting of bean grades.

In 2004 Kallari received the interest of Robert Steinberg, founder of Scharffen Berger chocolate. He made chocolate with Kallari’s beans and assisted them in presenting it at the Slow Food Terra Madre conference in Turin Italy, where Kallari would be nominated for a presidium and return for the subsequent three years. Later that year, the Swiss chocolate maker paid them the highest price they had ever received for their beans, USD 94 cents per pound. Inspired by this success, the Kallari board decided that they were ready to start materializing their original dream of producing chocolate. In 2005 Kallari became the first cooperative of indigenous cocoa growers ever to not depend on commodity markets but make the full profit on their own final product, earning 5 times more than they had in 2001. This third stage was the most challenging for the organization, as it involved breaking away from commodity markets. When the leaders suggested the concept of making their own line of chocolate with their harvest as a lever to try to increase the price offered by international buyers, the chocolate manufacturers were humoured by their naivety. They criticized the indigenous board by questioning how Amazonian people could create chocolate without knowledge of the process, machinery, recipes, packaging, distribution and retail markets. The small cooperative was able to challenge these notions by finding German food technician Stephen Hubbes who taught them the tempering process and how to experiment with recipes. They rented a small highland chocolate workshop to make small batches, and then retailed the chocolate at their own café in the tourist sector of Quito. Once recipes were established, marketing leader Carlos Pozo stepped up promotion to open up various markets with hotels and lodges throughout Quito and the Tena region — including the gift store of Marriott Hotel. Kallari’s success attracted more international volunteers to help in perfecting the rustic line, most notably, Canadian chocolatier Eric Gilbert, who instructed the staff on the complex procedure of truffle creation with couverture chocolate. Kallari’s small effort to produce its own chocolate began with just a small sample batch of 800 lbs of cacao beans, so they were quite surprised when representatives of one of the international donors insisted that Kallari return the funds for one of the cocoa drying structures built with a $50,000 donation from their fund. This harsh measure was implemented by the grantmaker because their donor was an international buyer of Kallari cacao that was concerned that the harvest would not be available for their chocolate production. Kallari responded to and resolved the challenge by saying that if they returned the money they would document the process photographically and post images on the internet alerting international volunteers of the same organization and the media of this monopolistic unfair play.

In 2008, the Kallari cooperative started their trajectory towards a fourth important stage of evolution into a chocolate social enterprise with a solid national and international distribution and marketing format. This turning point was facilitated by a philanthropic effort of US natural deli entrepreneur Stephen McDonnell (Applegate Farms). He offered business assistance and a no interest loan large enough to allow Kallari to set up large scale production by hiring a modern chocolate factory in Ecuador. McDonnell additionally played a pivotal role by linking Kallari to Whole Foods, the world’s largest all-natural culinary retailer, and assisted them in setting up a national distribution, by loaning his office as a work-station and his expertise in the natural foods industry. He also hired one of the world’s leading expert chocolate manufacturing engineers, Tomas Keme.
After two years of strengthening Kallari Chocolate Company LLC, that Stephen McDonnell co-founded with Judy Logback and Carlos Pozo, Stephen McDonnell handed over all distributor accounts, inventory, and intellectual property to the newly formed Kallari L3C. Non-profit accounting professional Martha Nolin worked pro bono for Kallari to help them establish the L3C company in the USA, fully owned by the cooperative. (The L3C company status in the USA is actually a new model that essentially identifies social enterprise as a hybrid between non-profit and for-profit organizations. The L3C status is only recognized in a few states, but has specific terms that favour farmer/producer organizations like Kallari.)

By creating their own brand, Kallari has encouraged their member farmers to concentrate on their traditional Kichwa agricultural techniques, improve fermentation practices and excel in quality grading of the harvest to guarantee superb homogeneity for their commodity, semi-processed and chocolate exports. Less than one year after Stephen McDonnell helped Kallari enter the U.S. market, the leading chocolate distributor in Scandinavia, Benny Erickson, signed a contract with Kallari leaders to supply Sweden, Denmark, Norway and Finland. Months later, Kallari initiated sales of their bars in Supermaxi, the luxury chain of supermarkets in Ecuador.

In 2010, Kallari sales were over 150,000 bars per year and 60 metric tons of cocoa beans. Their total revenues, including sales of chocolate bars in Ecuador, Scandinavia, and the US surpassed USD $500,000. The cooperative has signed contracts with prestigious French, Italian, and British chocolate manufacturers, as well as a Japanese vitamin distributor, for semi-processed cocoa liquor and couverture, Due to increasing demand for the chocolate bars, and the new interest in semi-processed chocolate, Kallari is expected to have revenues surpass USD $1 million in 2012.

In 2008 the cooperative had a slight profit margin, but during 2009 and 2010 invested that fund and all other incomes into three key areas: a) land purchase, b) capital holdings for harvest funds, and c) infrastructure renovation. The small cooperative retains a margin of 5% from the price paid to the growers, staff costs, and the end sale of their harvest to international buyers. Much of the start-up profits have been deployed in increasing the price to the farmers and the growth of the business:

a) The cooperative has purchased four plots of land in the Napo Province, for their cooperative centers and the site for a future manufacturing facility. The new factory is due to be completion by the end of 2012, with financing made available by the Ecuadorian government. The facility is projected to employ 50 full-time employees, including marketing professionals, chocolatiers, and retail staff to handle direct sales.

b) Each year, as market demand has increased, the cooperative has had to invest substantial working capital in raw material purchase, production costs (they do not own either of the two facilities used to make their products), and maintaining one full-time and one part-time marketing staff member.

c) Infrastructure renovation and maintenance is another important budget item. The cooperative experienced severe losses due to flooding in March of 2010. A small portion of the harvest was damaged by the rains, but the main expense was rebuilding the cooperative center facility and adding a retaining wall to prevent further damage from future floods.

The Kallari cooperative case can be described as an initiative that started as a grassroots, small producers venture, and slowly evolved into a more sophisticated hybrid network or social enterprise initiative. What makes Kallari unique is the full participation in value chain ownership by the smallholder cocoa producers upstream. This is a particularly remarkable governance outcome, especially as it takes place in one of the most challenging colonial crop export markets areas of the world. The global cocoa and
The chocolate market is currently dominated by three corporate actors in processing and only a handful in distribution. The commodity exchange prices of cocoa are kept low and the value added share of producing countries has been decreasing over the last decades as confirmed by a recent UNCTAD analysis. At the upper end of the supply chain, most of the global cocoa production is farmed by small growers, who are pushed by the low prices to maximize the yield per acre. This push to excess intensification, in the Ecuadorian Amazon context, has resulted in the practice of eliminating the other fruit and hardwood trees needed for the household’s livelihood and for biodiversity.

An initial lesson from Kallari is that production quality enhancement can be obtained in an environmentally sound manner. It is known by chocolate experts that 80% of what makes good chocolate is the bean quality. Kallari, unlike even the world’s gourmet chocolate corporations that purchase beans, is able to supervise harvest, collection and fermentation and drying of beans to create a pinnacle flavor profile. Additionally, the area of Napo Runa the rainforest region of the Kallari cooperative is a unique tropical lowland rainforest region with nutrient rich volcanic soil, high biodiversity in the small Kichwa home gardens and has a wide variety of cacao heirloom varietals – all of which combine to create the rich unique flavor that makes an excellent chocolate. The typical member of Kallari is a smallholder with a 5 -50 hectare plot of land, with about 60% still in primary and secondary forests. The crops are cultivated in a sustainable and environmentally friendly way, with only manual labor. The smallholders income increase results from their co-ownership in the cocoa production and processing value chain which reduces the need for coping strategies such as tropical wood harvesting.

A critical lesson of Kallari evolution is the level of cohesion nurtured through the cooperative enterprise: in contrast to other farmer cooperative experiences, that are weak on governance and capacity to invest in the business, Kallari has demonstrated that it has mobilized small growers to incrementally achieve higher quality cocoa bean production as well as control on the subsequent value addition processes, including the final product manufacturing. The growers themselves understood early on that the only way they could face the challenges of avoiding intermediaries and taking charge of their own destiny was to form a cohesive union. Their cooperative survived other similar attempts in the region, that were much better funded, due to this fundamental trust-building, the social capital creation and the members’ desire to preserve their rainforest and an honorable livelihood.

A third lesson to draw from the Kallari case is the crucial value of investing in local processing. Kallari is one of the first indigenous cocoa growers organization in the world to fully own the chocolate supply chain. Local chocolate manufacturing allows members to maximize their participation in value addition and therefore transfer the value chain benefits to their communities and their ecosystem. Conservation International, in fact, has identified the Kallari production region (the Tropical Andes) as the world’s leading biodiversity hotspot. Kallari smallholders currently grow cocoa trees on less than 2 % of their land, which includes an average of 50 species of hardwoods, fruit trees, edible, medicinal and handicraft plants amongst their cocoa groves. This has established the necessary conditions for a successful example of grassroots enterprise, which has attracted the economic support from local authorities. Kallari has proven that viable development alternatives exist to forest logging or petroleum drilling (currently a serious threat) and is a successful model of the social and economic sustainability benefits to be accrued through smallholders’ value chain ownership.

A fourth lesson from Kallari cocoa growers is that a producer driven business model is feasible and can be sustained, even in one of the most oligopolistic colonial crop global markets, if a virtuous governance partnership can be facilitated with committed professionals (Carlos Pozo and four other Kichwa agribusiness engineers, Martha Nolin, Ms. Logback, Tomas Keme, and Stephen Hubbes), angel investors and grantmakers (Mr. McDonnell) and downstream retailers (Whole Foods and Supermaxi. Amongst others), all sharing the goal of promoting proper attention to quality farming, biodiversity conservation,
quality chocolate manufacturing, certification, marketing and finance. The volume production of Kallari is currently surpassing 100 metric tons.

Growth projections are lofty, as the cooperative produces less than 20% of the cocoa in the Napo Province, with the majority of other farmers cultivating this tree crop with similar Kicwha traditional growing practices. The Ecuadorian government has agreed to support the chocolate factory construction, with the understanding that Kallari will grow to encompass over 100 villages, nearly 5 times the current size of 22 community organizations. The unique aspect of growth throughout the region, not based on production per acre, offers an excellent model for expansion and leaves opportunity for other crops or product lines from the diverse rainforests of the small landholders. Kallari appears to have various aspects that can be replicated by other smallholder farmers, and the Kallari people are aware of their role of standard-setters.

Indeed, ownership of the value chain brings about very important (and so far rare) elements: the innovation of smallholder cocoa growers and self-defined market “standards”. By shifting the value creation to genuine attributes of the cocoa beans and chocolate manufacturing, they are setting the standard for retailers and consumers to learn that the origin and nutritional content of chocolate defines value. The Kallari chocolate quality and taste is linked to its high content of elements such as the flavonoids and therefore discussion in the cooperative is taking place on ways to propose a quality certification linked to the traditional diverse Kichwa agricultural practices used throughout their cocoa groves.
APPENDIX 2: PROGRAM STRUCTURE FOR INTERVENTIONS SUPPORTING SUSTAINABLE AGRICULTURE VALUE CHAINS

### PRIMARY OBJECTIVES FOR SMALLHOLDER INCLUSIVE SUSTAINABLE AGRICULTURE

<table>
<thead>
<tr>
<th>Objective</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>ENHANCEMENT OF PRIMARY PRODUCTION</td>
<td>✔️ ✔️ ✔️ ✔️ ✔️ ✔️</td>
</tr>
<tr>
<td>FOOD SECURITY</td>
<td>✔️ ✔️</td>
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<tr>
<td>SUSTAINABLE NATURAL RESOURCE BASE MNGT.</td>
<td>✔️</td>
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<tr>
<td>POVERTY REDUCTION &amp; RURAL LIVELIHOOD IMPROVEMENT</td>
<td>✔️ ✔️</td>
</tr>
<tr>
<td>CONTRIBUTION TO GHG EMISSIONS REDUCTION</td>
<td>✔️</td>
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<tr>
<td>OTHER?</td>
<td>✔️</td>
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### SPECIFIC OBJECTIVES

1. **Enhancing Productivity of Existing Sustainable Agriculture Practice**
2. **Introduction of New Agriculture Practices Appropriate for Smallholders**
3. **Enhancing Productivity of Agro-processing & Post-Harvest Activities**
4. **Public Goods Delivery (ITC, Roads, Irrigation, R&D, Extension Services, etc.)**
5. **Smallholders Access to Rural, Urban & Global Markets**
6. **Enhancing Quality Standards of Farming and Post-Harvest Operations**
7. **Support to Rural Finance Markets & Private Sector Investments**
8. **Promoting Equitable Public-Private Value Chain Partnerships**

### SPECIFIC MEASURES/PROJECT COMPONENTS

- Know-how and technology transfer, adaptation and appropriation
- Dissemination of resource-conserving farming practices (i.e., organic, IPM, conservation agriculture, etc.)
- Support to NGOs and other intermediaries supplying business development services to farmers
- Incentives for establishment and technical assistance for growth of farmer organizations
- Rural credit enhancement infrastructure
- Farmers micro-insurance and micro-credit programmes
- Capacity building for decentralized public extension agencies
- Capacity building programs for rural entrepreneurship
- Sustainable improved seed technology and breeding programmes
- Promotion of farmers innovations & indigenous crops
- Legal frameworks for cooperatives and farmer groups
- Post-harvest (storage, logistics, bulking and packaging) management services
- Incentives/subsidies on clean technologies and inputs for sustainable agriculture
- Smart subsidies for product quality enhancement (i.e. fair trade certification)
- Market information infrastructure and services
- Fiscal policies
- Tax policies
- Regulations to create enabling investment climate
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