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in

Petruzzella D. (ed.), Sancassiani S. (ed.).
Feeding knowledge

Bari : CIHEAM

Options Méditerranéennes : Série A. Séminaires Méditerranéens; n. 120

2017

pages 113-137

Article available on line / Article disponible en ligne à l'adresse :

<http://om.ciheam.org/article.php?IDPDF=00007193>

To cite this article / Pour citer cet article

Lamberti L., Belsanti V., Woodgate G., Bessaoud O. **Priority 4: Sustainable development of rural communities in Mediterranean Region**. In : Petruzzella D. (ed.), Sancassiani S. (ed.). *Feeding knowledge*. Bari : CIHEAM, 2017. p. 113-137 (Options Méditerranéennes : Série A. Séminaires Méditerranéens; n. 120)



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Priority 4: Sustainable development of rural communities in Mediterranean Region

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I – Key messages



The growth of agro-industrial practices, global climate vulnerability and policies that favour the dominant global food regime all threaten regional food security. Smallholders can make an important contribution to ameliorating food insecurity and achieving food sovereignty, i.e. local control over food production and supplies.

Rural development has a multi-dimensional nature that encompasses economic, social, political and environmental sustainability. Smallholders need empowerment to take action and participate in all development processes. Such action can be fostered by appropriate institutional arrangements, including opportunities to engage in political activity and the design and implementation of relevant public policy.

Agroecology has emerged in response to the negative impacts of the first Green Revolution and has matured in response to proposals for a new Green Revolution. Agroecology offers an alternative agenda for addressing poverty and hunger through food sovereignty.

A socially just solution needs a careful combination of public and private investment to assist smallholders to lift themselves out of poverty, improve incomes and secure their access to good-quality, culturally and ecological relevant food. Furthermore, such support is also important in terms of allowing certain sectors of rural communities to diversify into non-farm activities and enhance their livelihood security.

Rural communities are confronted with multifaceted challenges and vulnerabilities – demographic, economic, social, environmental (climate change and natural resource degradation and depletion). A more context specific and participatory research is needed and a more targeted set of policies must be designed and implemented under sound governance regimes, involving innovative institutional arrangements and decentralisation.

II – Extended summary

Recent trends and strategies for sustainable rural development recognise the central role of smallholders in development dynamics and their crucial contribution in achieving food security. This paper embraces that stance stressing the multi-dimensional and cross-sectoral character of sustainable rural development and the idea that development strategies should not rely solely on increasing agricultural productivity through technical innovation but matching production as closely as possible to agroecological potential. Moreover, the latter should be framed within the hierarchy of social, cultural and political structures that provide the context for development activities.

The present document begins by outlining the current situation of rural smallholders in the Southern and Eastern Mediterranean Countries (SEMC), highlighting their importance in the rural landscape of this region, where agriculture still counts as the main economic activity but is threatened by land fragmentation, water scarcity, limited rural services, and climate vulnerability. At the same time the region is experiencing a population increase that brings along problems such as youth unemployment, heavy influx of rural migrants to urban centres and widespread rural poverty.

The outline provides a classification of the major farming systems of the area, categorised according to socio-economic and institutional contexts, as they reflect the complexity of rural livelihoods, the interdependence between on- and off-farm activities and rural-urban linkages and the need to adjust livelihood systems to limited resources. According to the specific contexts some main strategies for increasing income and generating growth - intensification and diversification of production, development of off-farm activities and, eventually for some, exit from agriculture- are identified.

The document, in the following sections, sets out a number of key development challenges: demographic trends, off-farm economic activities, climate change and natural resource degradation, poor services, gender inequalities and inadequate decentralisation.

It is particularly stressed the importance of the state in facilitating sustainable development by providing public goods like rural infrastructure, extension services, credit, education and access to markets. At the same time it is acknowledged the limits of state action in targeting and responding to the needs of rural communities because of the lack of administrative coordination, conflicting priorities and restricted budgets. In this context local stakeholder organisation and action take on increasing importance. Through participation in decision-making and development processes, community organisation and collective action, and the mobilisation of under-utilised local resources smallholders and rural communities can better respond to development priorities articulated at the local level. Decentralisation has played a major role in empowering local stakeholders but the process remains incomplete. There is still a need for policy to: support the emergence of innovative institutional forms; promote the role of both formal and informal groups and networks; and, above all, to foster the expansion of capabilities and development of critical innovation and learning competences among the full range of rural development stakeholders.

In order to provide appropriate guidance to policy makers, the paper concludes by assessing immediate policy needs and identifying priority issues for research: creating and systematising knowledge on sustainable agricultural practice and natural resource management, understanding smallholder farming systems and appropriate technologies, identifying key development actors and institutions, assessing the potential for capabilities expansion through the development of critical innovation and learning competences among the inhabitants of rural communities and the employees of relevant state, private and third sector institutions.

III – Introduction

Food security, as defined by the World Food Summit (1996)¹, requires people to have physical and economic access to food at all times. Despite a significant reduction in the proportion of people living in extreme poverty since 1990, according to the FAO (2012), almost 870 million people remained food insecure and chronically undernourished in 2010–12, the vast majority living in developing countries. Rural communities, who account for 48% of the total global population (2004), and include 70% of the world's 1.4 billion poor, are among the most severely impacted by food insecurity (World Bank and IFAD, 2011).

Rural people's vulnerability to food insecurity depends on several factors, characterised by interrelated complexities and linked to specific local contexts. These may include: scarce and environmentally-fragile resource base, extreme and unpredictable weather events, population growth, and weak local economies. Public policy shortfalls resulting in insufficient or locally inappropriate provision of services (access to market, credit, education, extension), rural infrastructure (roads, electricity, information and communication technologies), regulatory frameworks (land rights) and protection for the most vulnerable groups (women, youth, displaced), have also contributed to the political, economic and social marginalization of rural communities (IFPRI, 2011). Nonetheless, rural communities and small-scale farmers remain very important actors in terms of producing food and contributing to the feeding of more than 50% of the global population (IFAD, 2009), and, at the aggregate level, they manage vast land areas and natural resources, determining their maintenance or degradation.

Important research efforts conducted in more than 50 poor countries over millions of hectares, demonstrate the extent to which poor, small-scale producers are able to apply resource conserving, low external input technologies, maintaining or enhancing natural resources, while improving food security and incomes (Pretty *et al.*, 2006; WOCAT, 2007; IAASTD, 2009). Literature also reports greater land use efficiency and productivity for smallholders compared to larger producers (Hazell, 2011; Conway, 2011; Eastwood *et al.*, 2009; De Schutter, 2011) the validity of their conservation technologies, polycultural and integrated farming systems; their ability to adapt to stress and changing conditions, invent and innovate technologies, preserve and use fragile landscapes, and maintain bio-cultural heritage (Altieri, 2008; Barthel *et al.*, 2013; Critchley, 1999; FAO, 2002; Pretty, 2006).

Success stories often emerge from new patterns of working between external and local institutions, especially the shift from top-down to bottom-up approaches. Key elements for success are the recognition of the agroecosystem/territorial specificities and the active participation of rural communities in technology development and dissemination, innovating productive activities, policy and decision making, building informal knowledge systems, territorial planning, market processes, and resource management (FAO, 2012; Critchley, 1999; Lamberti *et al.*, 2011). Almost without exception, an appropriate institutional framework is a key element in the success of smallholder agriculture, giving power and authority to rural communities in vital sectors related to their livelihoods development (OECD, 2012; FAO, 2012).

Numerous international agencies and fora emphasize the importance of investing in rural communities to facilitate sustainable development and inclusive growth as a viable path towards food security and sovereignty² and poverty eradication. The FAO proclaimed 2012 the International Year of Cooperatives and 2014 the International year of family farming, thus highlighting the crucial role of local institutions and small scale producers

Investments by governmental institutions are needed to target a set of key elements for supporting livelihood strategies, which include intensification and diversification of smallholders' agricultural activities; production of more and cheaper food while protecting natural resources and human health; development of non-farm rural economies, linked to agricultural activities or as an alternative where agriculture cannot be intensified, to generate alternative employment and raise

incomes; development of institutions to improve market and services access and development planning; public goods supply, addressing the urban bias in development policy, protection from unpredictable and unstable economic and political events at the national and regional levels, as well as the more obvious secure access to adequate land and natural resources. The empowerment of marginalised groups, such as women, is also identified as a key goal for increasing the productivity of rural communities (FAO, 2012; IFAD 2011).

The role of the rural poor in generating food sovereignty and security continues to be threatened, besides the aforementioned multidimensional challenges by the increasing expansion of a global agro-food system pushing towards a new Green Revolution³ (Box 1). In the wake of last years' more people-centred and resource conserving approaches aiming at local and sustainable rural communities development agroecology⁴, for its transdisciplinary, participatory, and action-oriented approach to the development of sustainable food regimes (Altieri, 1995, 2009; De Schutter, 2011; Gliessman, 1997, 2000, 2007; Mendez, Bacon and Cohen, 2013), appears as a promising approach for addressing the "interrelated global problems of hunger, rural poverty, and sustainable development" and is identified as a discipline whose principles should guide the design of sustainable strategies and policies (IAASTD, 2009).

Box 1

By the middle of this century the global human population is estimated to grow to around 9 billion, leading to calls for an increase of 70% in global food production by 2050 (Conforti, 2010). Numerous reports have claimed that the most effective way to achieve this increase in production is through significant investment in biotechnology (World Bank, 2007; Bertini and Glickman, 2008; Baulecombe *et al.*, 2009; Beddington 2011) to accelerate and disseminate what Conway (1997) has referred to as the 'Doubly Green Revolution'. It has been estimated that a new Green Revolution of this type would theoretically allow the world's food requirements to be produced on roughly 50,000 large-scale industrial agricultural units (Amin, 2011). However, as Holt-Giménez and Altieri (2013: 94) enquire, if this were to happen "how would 2.5 billion displaced smallholders be able to buy this food"?

The further global expansion of industrial agriculture through a reinvigorated Green Revolution represents a significant threat to the ability of smallholders to continue farming. The further consolidation of what McMichael (2009) has called the 'corporate food regime' would involve transnational corporations in land-grabbing campaigns, the assertion of intellectual property rights over crop genetic materials and the establishment of oligopolies in both inputs and food markets. In the process smallholder livelihoods will be destroyed, agro-biodiversity will be reduced and ecosystem services and resilience will be weakened – developments that will "increase global hunger and limit our ability to mitigate and cope with climate change" Holt-Giménez and Altieri (2013: 97). Emerging in response to the negative ecological and social impacts of the first Green Revolution and maturing in response to proposals for a new Green Revolution (Gliessman, 2013), new development approaches, like agroecology, putting rural people and small farmers at the centre of development and offering an alternative proposal for addressing poverty and hunger.

Development institutions should also investigate success stories and best practices in order to learn lessons and feed them into policy processes. Significant changes are needed to establish and strengthen more appropriate institutional attitudes and capacities. Development approaches need to be adapted to the specificities of the bio-physical and socio-economic environments where rural communities live, while agencies must learn to work with rural communities rather than trying to manage them. In fact, best practice in relation to community empowerment, based on decentralization and participation, natural resource conservation, and cross-sectoral approaches,

often remain confined to specific projects, while they deserve to be included in higher level policy and institutional strategies, which further demands an upgrading of institutional capacities (Pretty, 1995).

Success and sustainability depend on expanding people's capabilities and empowering rural communities to secure their own access to natural resources, information and markets, and guarantee their rights to participate in policy making and governance processes (OECD, 2012; FAO, 2012; ESCAP, UNDP and ADB, 2007, Via Campesina).

1. Aim and Scope

The present document identifies rural communities as crucial actors in the struggle to end food insecurity and poverty, and contribute to the sustainable development of rural areas. It provides an overview of the situation in the Southern and Eastern Mediterranean Countries (SEMC), for which current conditions and regional trends are assessed and key areas requiring research are identified by drawing on a range of international reports, on the tenets of agroecology and the goals of food sovereignty. The aim of the research agenda is to generate better understanding of the roles of rural people and communities in achieving food sovereignty and sustainable development and the institutional arrangements required to facilitate their efforts.

The specific objectives of the paper are briefly to outline the situation of smallholders and rural communities in the SEMC in terms of their geographical and social contexts, their agroecological resources and food systems, their livelihood strategies, political and institutional contexts, and the environmental, social and economic challenges they face. Having described their situation we identify which aspects would additional research to provide a more targeted and specific set of policies to address development deficits and allow them to tackle food insecurity and achieve food sovereignty.

IV – Concepts and definitions

The present paper reports and discusses issues related to the following concepts and definitions:

Rural communities: conventionally understood as human populations clustered together in hamlets, villages and small towns located in rural territories (ISTAT, 2010). They share similar socio-economic and agroecological conditions that influence the livelihood systems of their inhabitants and have long-established cultural norms and institutions for dealing with community problems and resolving disputes. Especially within pastoral and semi-pastoral traditional communities, activities are governed by customary rules and land ownership is characterised by tight linkages between ecological conditions and social structures. Families (nuclear and extended) are the main social unit in rural communities.

Small scale producers: these are the backbone of rural communities. They include: "women and men, farmers, fishers, livestock producers, and forest users who produce on a small scale for both auto-consumption and the market ... [They] are relatively vulnerable to food insecurity due to limited resource endowments ... Scale refers to farm size for farmers or to the scale of production for fishers and forest users" (FAO and IFAD, 2012).

Rural livelihood systems: sets of activities that are carried out to secure the necessary means for living. Livelihood systems can be defined at the level of the individual, the household or the community. They are characterised by a number of factors: agroecological resources, human and physical capital, and access to infrastructure and services. Rural livelihoods are based largely on natural resource management. Small scale producers manage resources including cultivable lands, forests, rivers, rangeland, etc., to which they have a mixture of access rights: private property, state property with management rights, common property and open access resources.

Livelihood strategies: in order to satisfy different human needs and to cope with risk, seasonality and other vulnerability factors, rural communities are engaged in a wide range of interlinked activities that can include agriculture, forestry, fishing, processing, trading, etc. Different activities can be categorised according to what they involve and where they occur. They may be undertaken on-farm or off-farm and might include farming, herding, hunting, gathering, handicrafts (e.g. weaving, carving), processing, petty trading or wage labour, etc. Depending on the location and size of rural communities, other non-farm activities are conducted such as masonry, carpentry, tourism, hospitality and transport services.

Smallholder agricultural practices, based on techniques developed from local knowledge and experience, are generally characterized by low external inputs, diversification in time and space, significant crop and wild species genetic variation, integration of crops and livestock, and water harvesting techniques (De Schutter, 2010; IAASTD, 2009). In the context of policies and efforts towards market integration, commercial/industrial resource use practices may also be incorporated within rural livelihoods. These, in contrast, are more likely to involve external knowledge and inputs, specialised monocultures of hybrid or genetically engineered crops and modern, capital intensive irrigation systems.

Local groups and organisations: these refer to associations of farmers, pastoralists, fishers, forest users, food processors or craft workers that are established to optimise their members' responses to agroecological conditions, market opportunities and public policy signals. In addition, we can also talk about communities developed in the context of NGO activity seeking to enhance local capacity for managing the social and financial resources required for fostering sustainable development processes. Examples of such groups are identified in Box 2.

Local groups are particularly important for providing a framework for consensus building, collecting, analysing and evaluating information and taking collective action such as co-ordinated management activities. Local groups and institutions can also provide the basis for the type of learning and innovation systems that enable small scale producers to identify solutions collectively and build strategies to cope with change (FAO, 2012). Other institutions may play a bridging role between various local groups and between local groups and higher level organisations. The success of agricultural innovation and technology adoption depends on institutional arrangements including political power.

Box 2 Institutions for sustainable rural development and food sovereignty



Community campaigning groups: to gain political recognition, fight for agrarian reform and win inclusion in policy-making fora and develop political capital.

Community co-operatives: allow people to benefit from economies of scale by bringing together their resources and experiences in production, processing or distribution.

Credit unions or rotating loan groups: community banks that can provide farmers with small loans to undertake investments in sustainable agriculture.

Farmer research groups: can facilitate community development by allowing smallholders to set the research agenda and providing an institutional setting to allow scientists to work within the complex dynamics of existing agroecosystems.

Farmer-to-farmer groups: spread knowledge and understanding of productivity enhancing and resource-conserving methods between local farmers.

Local consumer organisations: can stimulate the market for local agricultural products, allowing farmers to retain more income and consumers to buy their food more cheaply, by excluding intermediaries.

Local resource-management organisations: basis for community-led action in such areas as reforestation, irrigation management or soil and water conservation schemes.

Machinery circles: sharing the costs of owning machinery

Multi-stakeholder innovation platforms: promote learning and innovation competencies

Drawing on: (FAO, 2012, Woodgate, 2012)

Power and empowerment: There are many definitions of power and types of power. Rowlands (1997) distinguishes among: 'power over' – the type of coercive power that results in win-lose situations; 'power with' – associated with the mutual support and solidarity required to build political alliances and promote community interests; 'power to' – the agency we all possess, which allows us to make a difference in the world; and 'power within' – our own self-belief that allows us to hope for and believe in a better world for ourselves and our families. Empowerment is about building power 'within', 'with' and 'to', so that small-scale producers and rural communities can engage in political action and participate in state institutions in order to influence the design of public policies that create a favorable institutional framework for the development of sustainable agroecosystems and food sovereignty.

V – Rural communities in Southern and Eastern Mediterranean Countries

A significant number of the SEM countries have, in recent years, experienced and continue to experience significant economic and social change.

Over the last decades structural adjustment policies have sought to reduce public spending and promote market liberalization and integration, but while these policies resulted in significant economic growth, this was not proportional to the population growth rate and did not improve average living standards (OECD, 2011), generating further inequality. With the onset of the 2007-2008 banking crisis, compounded by the sovereign debt and the euro-zone crises in 2010 and 2011, and subsequent economic recession in the European Union and the USA, booming commodities markets began to slow and the dependence of regional growth to global economic

conditions was laid bare, resulting in a significant slowdown of the economic development rate in the SEMCs.

Under these circumstances numerous countries in the region have experienced political upheavals, leading to the “Arab Spring”, that have had and continue to have significant implications for their citizens, including the inhabitants of rural communities. Thus any characterization of rural communities and livelihoods must be treated with caution and accepted as being subject to rapid change.

1 Population and poverty

The Region has an overall population of 361 million people that has increased by more than 120 million in the last two decades (IFAD, 2010). About 161 million (45%) live in rural areas. Rural populations are still growing and according to a study reported in *Mediterra* (2009) they will continue to grow until 2020 by which time a further two million people will have been added to the total. However, the rate of growth is slower if compared to the growth of urban populations, although it should be noted that the overall demographic trend is influenced by the weight of populations in particular countries. Egypt, for example, with more than 81 million people of whom some 47 million live in rural areas, masks a more diffuse trend of rural depopulation.

Aggregate data show a decline in the number of poor and food insecure people in rural areas in recent decades. According to IFAD (2010 – see Box 3) the Region has seen a reduction in rural poverty from 32% in 1988 to 11.7% in 2008. In 2008 there were, however, still 6 million people living in extreme poverty (subsisting on less than US\$ 1.25/day) in the rural areas, which represent 40% of the total regional population experiencing this level of deprivation.

In some of the Region’s countries poverty increased during the 1990s: especially Algeria, Egypt, Morocco and Tunisia. A decline in Algeria’s industrial sector also led to an increase in social inequality.

The geographic distribution of poverty is characterized by significant variations depending on natural resource endowments, the presence or absence of social services, employment opportunities in accessible urban centres and, of course, the security situation. For example, 12% of the Region’s rural population live in the highlands and mountains, which are isolated and characterized by low levels of economic development (*Mediterra*, 2009). On the other hand, urban poverty is increasing and has now overtaken rural poverty rates. This is related to the massive migration phenomenon pushing poor rural people towards urban centres in the search for employment opportunities.

The global economic and financial crises, of the last ten years, influenced significantly economic and political stability in the region. The Region’s international trade decreased by 9% in 2009, the most important decline during the last 60 years (Benhammouda, 2010), while foreign direct investment has decreased by 50% and remittances and income from tourism have fallen between 5 and 8% since the crises set in (Hugon, 2010). The impacts in a number of the SEM countries are particularly notable (see Box 4).

Box 3

Incidence of rural poverty (percentage of rural people living on <US\$2/day)	
1988 – 32.7	
1998 – 30.7	
2008 – 11.7	
Incidence of extreme rural poverty (percentage of rural people living on <US\$1.25/day)	
1988 – 9.5	
1998 – 6.6	
2008 – 3.6	
Number of rural people in poverty (<US\$2/day)	
1988 – 41 million	
1998 – 44 million	
2008 – 19 million	
Numbers of rural people in extreme poverty (<US\$1.25/day)	
1988 – 12 million	
1998 – 10 million	
2008 – 6 million	
Rural people as percentage of those living in extreme poverty (<US\$1.25/day)	
1988 – 99.0	
1998 – 61.3	
2008 – 40.1	

Despite a significant improvement in food security in the SEM countries in recent decades, food insecurity still affects vulnerable groups, such as nomadic pastoralist communities and marginalized rural populations more generally. This situation is, of course, exacerbated during moments of political upheaval. During 2008 and 2009 there was an increase in the number of hungry people as a consequence of the food price hikes but also as a consequence of declining farming population, scarcity and deterioration of natural resources, and neglect of government policies (IFAD, 2010).

The “Arab Spring”, calling for social and political reforms, has increased the level of uncertainty and instability in the most affected countries, downsizing projections of economic growth (OECD, 2011).

Box 4 Impacts of the economic crisis of 2007-2008 in the Maghreb countries

- Tunisia: of the loss of 40,000 jobs in the manufacturing sector in 2008. The unemployment rate during 2007-2008 stabilized at 15% and recorded a small increase in 2009, mainly affecting those with a university degree (whose unemployment rate was 30%). The tourist sector was also affected and only improved in 2009-2010 due to the influx of Algerian tourists (1.5 million out of a total of 4 million). All these economic indicators explain the fall in Tunisia’s GDP growth rate, from 6.3% in 2007 to 4.6% in 2008 and 3.5% in 2009.
- Morocco: The economic growth rate dropped to 3.5% in 2010 as a consequence of the decline in the market value of phosphates, slow development of tourist revenues, weakened flows of remittances and a decrease in foreign direct investment. In the same year there was a deficit of 5.2% in the balance of payments. Morocco’s trade deficit has doubled over the last 20 years due to the explosion of its food and energy bills, whose prices have dramatically increased since 2007-2008. The worldwide economic and financial crisis has restrained the scope of public spending intervention in relation to the investment needed to implement different sectors’ plans (Green Plan, Industrial emergency, etc.). The National Pact for the industrial emergency, whose ambition was the creation of 400,000 jobs by 2015, has been reviewed and the target cut by almost 50% to 210,000.
- Algeria: the transition from the import substitution economic model promoted in the 1970s to one based on exports is taking place in a global economic situation characterised, in the year 2000, by relatively stable prices for hydrocarbons. This is why, even though the Algerian economy is not very diverse (hydrocarbons represent 90% of exports, with oil taxes amounting to 40% of State revenues) and there is a remarkable level of unemployment (10%), this country has been less affected by the financial crisis. Those effects have been ameliorated by public expenditure implemented within the framework of various plans under the general rubric of “economic revival”. The increases in the price of oil prices in the global market have been crucial for the country’s economic revival and have provided the basis for the redistribution function of the State in the years since 2000.

Source: Bessaoud, 2013

2. Rural community groups

Rural communities in the SEM countries are composed of numerous different groups and categories, and IFAD suggests distinguishing the major groups by livelihood systems as follows: small farmers, nomads and pastoralists, artisanal fishers, the landless and waged labourers (see Box 5). In addition, a number of important categories are also identified by personal characteristics such as women headed households, unemployed youth and displaced persons.

Box 5

Major groups defined by livelihood system

Small farmers

Tenants and smallholders practicing rain-fed agriculture on small farm plots are generally the poorest and most vulnerable groups of farmers. While there is insufficient data to aggregate their numbers across the region, they probably constitute the majority of farmers. In Morocco, for example, roughly 85 per cent of arable land lacks irrigation. Aside from rain-fed farmers, a considerable number of small farmers on irrigated land are also poor, due to their weak asset base. Most vulnerable of all, however, are farmers with insecure land tenure: those who farm as tenants or sharecroppers. The livelihoods of small farmers generally depend on a variety of resources including: rain-fed tree crops, cereals grown for household consumption (such as wheat) or animal feed (such as barley), and small livestock that enhance household nutrition and supplement crop income. In Egypt, for example, smallholder households typically have access to less than 1.5 ha of land and keep an average of one large and three small ruminants. They have to supplement their incomes from wage labour and internal migration, as their agricultural work provides, at best, only half of their staples.

Nomads and pastoralists

These groups depend on natural rangelands and are most prevalent in Algeria, Jordan, Morocco, Somalia, Djibouti, Sudan, Syria, Turkey and Yemen. Pastoralists in these countries typically keep a few camels and some small ruminants (sheep and goats) and reside/move in very arid zones. These include: (i) settled pastoralists who on average own around 50 animals; (ii) semi-nomads travelling limited distances with about 120 animals; and (iii) nomads with 200 or more animals who are part of extensive transhumance systems. Small Bedouin herders in Syria, for example, own a small ruminant herd of 50 to 100 sheep and/or goats as their major source of income. Some may derive additional income from other sources, such as working abroad or within the Badia rangelands for larger stock owners, or being involved in trade.

Artisanal fishers

Artisanal fishers can be broadly defined as the traditional fishers who exploit small-scale fisheries extending some 4 to 12 km from the shore. They operate with 5 to 10 metre boats, typically shared by small groups of four to seven members. The boats are usually open and single-deck, powered by small outboard engines. Artisanal fishers reside in small fishing communities located along more than 7,000 km of coastline in Yemen, Syria, Lebanon, Sudan, Egypt, Tunisia, Algeria and Morocco. These communities receive practically no social services and many live in destitution.

Landless and wage labourers

This group includes a growing number of agricultural and non-agricultural workers. Many are members of farm households with insufficient land or water resources to support all family members. Others have no land at all. In some areas there is a strong predominance of landless wage labourers over farmers, who make their living working for daily wages off-farm or on the farms of larger landowners. In Egypt, for example, the landless are usually engaged in daily wage labour in agriculture or construction, internal migration to urban areas, and petty trading. On average, they find work for about 10 days a month. They have insignificant numbers of livestock, usually only domestic fowl, which are used for home consumption but more frequently are sold when the need for cash is particularly acute. Rural households headed by wage earners tend to dominate the lowest expenditure groups. In Morocco, for example, the rural poor — landowning or not — rely more on wage income than the fruits of cultivating their own land. In Jordan, most small farm households rely on wage labour income to survive. In rural Egypt, labouring typically accounts for 85 per cent of household income among the poor.

Major groups defined by personal characteristics

Women-headed households

The number of households headed by women in the SEMC is increasing because of extensive male migration, the increased number of disabled males (due to conflict), widowhood and divorce. On average, these households tend to be considerably poorer and more vulnerable than households headed by men. In Turkey, for example, poverty rates are higher among households headed by women (32 per cent) than those headed by men (26.6 per cent). In the mid-1990s, woman-headed households constituted 5 to 20 per cent of all rural households in the Region. The percentage of woman-headed households was highest in Sudan, at 23.8 per cent, while in Egypt and Morocco it was 17 per cent. According to a recent study of the socio-economic characteristics of woman-headed households in Egypt, 62 per cent of women who head families are widows. The illiteracy rate for woman-headed families (73 per cent) is higher than the rate for the entire population of rural women (63.3 per cent). About 80.5 per cent of woman-headed households in rural Egypt are landless and it should be noted more generally that liberalization of the land-rental relationship has pushed some woman-headed tenants out of their agricultural landholdings.

Rural unemployed youth

As mentioned earlier, in a region with a very young population (58 per cent under age 25) estimates of youth unemployment are very high. Economic growth in recent years has not kept pace with the high population growth rates throughout most of the Region. The resulting rise in unemployment has particularly affected the young new entrants to the job market, especially in the rural areas. Unemployment figures for young women appear to be even higher. This segment of the population often has inadequate education and skills. In 2003, youth illiteracy was 17 per cent, 80% of whom were girls. According to the ILO, the youth unemployment rate in the Region stands at 25.6 per cent, which is the highest regional rate in the world. According to the same report, labour force participation rates for young people at just 39.7 per cent are lowest in the Middle East and North Africa compared with sub-Saharan Africa (65.4 per cent) and East Asia (73.2 per cent).

Displaced persons

Significant numbers of poor people have been displaced or live in post-conflict situations. The largest number of refugees in the Region today originates from Gaza and the West Bank, Somalia and Sudan. In addition, the region includes Yemeni returnee migrant workers, recent Iraqi refugees in Jordan, and Lebanese farmers whose farms were destroyed during the latest war with Israel. Most recently the Syrian civil war has resulted in more than two million people fleeing the country and more than 4 million becoming internally displaced, bringing the total to more than 30% of the national population. An estimated 19 per cent of the world's refugees and displaced persons emanate from the Middle East and North Africa. These people are probably among the poorest and most vulnerable population groups and constitute a significant proportion of the rural poor in the SEMC. The percentage of women and children in these groups is relatively higher than in more settled communities.

Source: Adapted from IFAD 2007

It is clear from the data presented in Box 5 that one group which requires particular mention across the Region is women, whose exclusion from the economic, political, civil and social life of rural communities is still marked. Women rarely benefit as much as men in terms of training, information, credit and extension services, and a significantly higher percentage is illiterate (in Morocco 62% of women against 39% of men). It has been estimated that if women received the same education as men, farm yields would rise by between 7-22% (J. Berdegue, 2005; J. Dixon

et al., 2001; Roseboom, 2007b). Women suffer from limited access to and control over land, with some reports suggesting that women account for just 5% of total landholders in Egypt (where 80.5% of women-headed households are landless) and Syria.

Women, in some areas are only expected to interact with female extension agents the number of whom is very limited. However, the trend is reversing thanks to the emergence of women graduates returning to their villages in countries such as Algeria, Egypt, Jordan, Morocco and Tunisia (IFAD, 2007).

3. Territories and livelihoods

In general, agriculture is practiced on small, frequently marginal and/or fragmented parcels of land (see Table 1 for the most recent data).

Groups are located in a variety of landscapes and with different population densities. While there is a concentration of communities along the coastlines and major urban centres, other communities are located in desert oases, mountains and steppe areas. This implies marked differences in the availability of resources, services, presence/lack of institutions and infrastructures, urban employment opportunities, and security, all of which influence the possibilities and pace of development of their livelihoods.

Table 1 – Farm structure in Mediterranean countries

Morocco (1996)	2 million agricultural entrepreneurs, 70% with land holdings below 5 ha
Tunisia (2004-2005)	516,000 enterprises, 53% with access to less than 5 ha
Algeria (2001)	1.2 million enterprises with average farm size of 4,7 ha
Egypt (2000)	3.7 millions farms mostly under 2 ha
Turkey (2000)	3 millions farms 25% less than 5 ha
Albania (1996)	450,000 farms with an average size of 1,7 ha

Source: *Mediterra 2009*

Dixon and Gulliver (2001) identified eight main farming systems in the region, according to the specificities of regional territories, such as natural resources or the availability of infrastructure and services:

- irrigated: small-scale irrigation sub-systems represent a crucial factor in the livelihoods of smallholders in arid and remote mountain areas;
- *highland mixed*: where most of the rural communities are located but occupying only 7% of the total land available, hence with high poverty levels, distant markets, poor infrastructures and significant natural resource degradation;
- *rain-fed mixed*, characterized by high population density (living on only 2% of the available land) and lower poverty rates thanks to off-farm income generating activities derived from seasonal labour and migration;
- *dryland mixed*, with larger sized farms but higher risks of drought and high food insecurity, where poverty is widespread among smallholders;
- *pastoral*, with mainly sheep and goats but also some cattle and camels, carried out over large areas of semiarid steppe, characterised by low population densities, with more densely populated areas around irrigated settlements. These are linked to other farming systems through movement and sale of animals. Poverty is widespread;

- *coastal artisanal fishing*, artisanal fishers living along the coasts combining income from the sale of fish with small-scale crop and livestock production, accounting for about 1 million people living on an area of around 11 million ha;
- *sparse (Arid)*, covering more than 60 percent of the region and including vast desert zones, where poverty is low and population pressure limited. It includes about 4 million people concentrated in oases and irrigation schemes (Tunisia, Algeria, Morocco and Libya) who produce dates, fodder and vegetables and have about 2.7 million cattle. Sparse agriculture and herding coexist with boundaries set by climatic conditions;
- *urban-based*, a small population of urban residents engaging in small-scale production of horticultural and livestock products.

Table 2 indicates the weight of different systems in terms of area and population, and indicates the predominant livelihood activities and the incidence of poverty.

Table 2 - Major Farming Systems in the Middle East and North Africa

Farming Systems	Land Area (% of region)	Agric. Popn. (% of region)	Principal Livelihoods	Prevalence of Poverty
Irrigated	2	17	Fruits, vegetables, cash crops	Moderate
Highland Mixed	7	30	Cereals, legumes, sheep, off-farm work	Extensive
Rainfed Mixed	2	18	Tree crops, cereals, legumes, off-farm work	Moderate (for small farmers)
Dryland Mixed	4	14	Cereals, sheep, off-farm work	Extensive (for small farmers)
Pastoral	23	9	Sheep, goats, barley, off-farm work	Extensive (for small herders)
Sparse (Arid)	62	5	Camels, sheep, off-farm work	Limited
Coastal Artisanal Fishing	1	1	Fishing, off-farm work	Moderate
Urban Based	<1	6	Horticulture, poultry, off-farm work	Limited

Source: FAO data and expert knowledge.

Note: Prevalence of poverty refers to number in poverty, not depth of poverty, and is a relative assessment for this region.

Source: Dixon and Gulliver (2001)

VI – Problems analysis

Small rural communities account for a significant proportion of the population of the Southern and Eastern Mediterranean countries, and they are spread over a vast area. Their productivity, economies and social wellbeing are important in terms of maintaining vibrant communities that, through food production and economic diversification, can counterbalance the attraction of rural-urban migration, which is seen to result in the shift of poverty from rural to urban areas. However,

a range of environmental, social and political issues related to the geography, history and ecology of the region, affect smallholders' productive capacity and wellbeing in critical ways.

1. Bio-physical and socio-economic challenges

Bio-physical and socio-economic constraints represent big challenges for the productive activities of these communities. Their livelihoods are strongly reliant on access to natural resources like agricultural land, pastures, forests, water bodies and flows, but the entire region has always suffered from resource scarcity, especially water and land (see Box 6). The Region has insufficient land for cultivating the staple crops required to meet the increasing demand of a growing population (Breisinger *et al.*, 2010). The current situation, involving natural resources degradation and climate change, with their unpredictable and irregular paths, is posing additional challenges. Production risks are increased for rural communities, frequently based in more remote territories, such as mountain and pastoral areas, and more exposed to phenomena such as droughts or floods.

Box 6

The entire region is characterized by scarcity of cultivable land (accounting for just 9% of the total, compared to 12% globally). Scarcity is exacerbated by land degradation due to deforestation, over-cultivation urbanisation and fragmentation. *FAOSTAT, Near East & North Africa (NENA), 2003.*

Water is also a very scarce resource and in vast areas the rainfall is below 300mm per year or is unpredictable and irregular. Water shortages can quickly become droughts, leading to increased fire risks, desertification, and changes in tourism patterns (IPCC, 2007).

The hotter and drier conditions brought on by global warming are likely to impact areas not usually at risk from erosion, salinisation, fire hazards and, ultimately, desertification, especially where inappropriate management practices and production systems are employed (IPCC, 2007).

Farming activities are also affected by farm sizes. According to World Bank data the availability of arable land (hectares per person) in the Region declined from 0.45 ha in 1961 to 0.14 ha in 2009, due to population growth, sub-divisions linked to inheritance, from unclear laws that reflect the overlapping of ex-colonial laws, land nationalization processes and tribal regimes, which have determined the multiplicity and complexity of land rights (AUC-ECA-AfDB, 2010) and urban encroachment and land grabbing. Rural communities have often lost rights to manage forests, pastures, and common lands, or their ownership is not officially recognized, discouraging investments that could increase their productivity and favour natural resource conservation practices (Devex, 2013).

Although indicators highlight that poverty in rural areas has decreased in recent decades, a general weakness in terms of infrastructure and services is reported in all SEM countries, preventing the creation and reinforcement of livelihood opportunities. The poor quality of roads, communication technologies, education, access to credit, agricultural research, extension services, storage facilities, etc., has hampered smallholders' access to markets, posing threats to incentive, to people's capacity to innovate and hindering their competitiveness (De Schutter, 2011). The enhancement of information and human capital are increasingly needed due to the emerging need to conserve limited resources and fragile agroecosystems, to create skills in non-farm sectors, and to adjust to market requirements shaped by local and regional demand, thus implying modified practices and patterns of production (IFAD, 2007).

Public investments in agriculture and rural areas have decreased since the disengagement of the state following structural adjustment in the 90s and this gap has not been filled by the private sector because of the marginalised status of rural areas and the perception of higher risk (Mediterra, 2009). Supporting services are very limited and often inadequate. For instance, agricultural extension processes, where still present, are mainly controlled by governments and operate under budgetary constraints and lack of adequate skills, with a consequent deterioration in their quality. They struggle to reach rural communities scattered in vast areas and they are often based on top-down processes (IFAD, 2007) that leave no room for developing local learning and innovation competences and are insensitive to local specificities and sustainability needs.

2. Rural livelihood opportunities

Rural economies are characterised by low levels of diversification: agriculture, tourism, remittances and income generated by foreign companies delocalised and based on low-skill labour, with low salaries and low technological input, are the main sources of economic wealth (Mediterra, 2009).

The population growth rate has not been accompanied by an equivalent economic growth. A high percentage of youngsters is ready to enter the job market (in the year 2010 alone there were between 300 and 400 thousand newly economically active people on the labour market in Morocco and between 30 and 40 thousand in Tunisia), more than 50% of whom are under the age of 25 (IFAD, 2010). Poverty, exclusion from development, and migration flows have been the most striking indicators of the crisis experienced by local economies, which have been unable to provide employment and income to support the livelihoods of the growing numbers of the potentially economically active young population, leading to significant migration flows towards urban areas (see Box 7). The massive exodus from rural areas causes further impoverishment of rural communities (lower services provision, less infrastructure investment, and economic decline). However, in some contexts, especially in countries like Algeria and Morocco, urban unemployment is determining a phenomenon of “counter urbanization”, with the return of young people to their communities of origin, and the formation of new or the growth of existing settlements in rural areas (Mediterra, 2009).

Box 7

The unemployment rate in the SEMCs, in 2011, has been calculated, by the International Labour Organisation, close to 10%. It particularly affected young people with a diploma, whose unemployment rate has reached 23.6% in Algeria, 20% in Tunisia (800,000 unemployed) and 30% in Morocco (World Bank, 2012). Rural unemployment in the Region, however, is likely to have been underestimated for two reasons: first, what is called “disguised unemployment or underemployment” either as a consequence of family and especially women’s labour on small farms invariably being unpaid or, as a result of involvement in the informal sector where unskilled labour is very poorly rewarded. The second reason is the mass migration of the rural poor towards the urban centres, thus inflating urban unemployment rates: what IFAD has called the “transfer of poverty from rural to urban areas” (2007).

Migration towards urban centres is massive, as young people looking for jobs try to escape the lack of opportunity and hardship of rural lives, but what they find is mainly very precarious livelihood conditions with very limited job and income opportunities. Most urban centres are unprepared to receive this influx leading to informal settlements and uncontrolled urban expansion onto agricultural land, environmental pollution, higher crime rates, unemployment, inadequate infrastructure and a subsequent fuelling of tensions (Mediterra, 2008).

Agriculture, though, is still the main activity on which rural communities base their livelihoods. In well served, sub-urban and irrigated areas, agriculture is still providing good opportunities to small farmers.

Strong support is needed from research and extension services for promoting crop diversification as well as sustainable intensification of cultivation, such as in horticulture, incentivising smallholder farmers, to invest their land and labour power and generate good incomes. At the same time, governments should invest in developing the commercial cultivation of under-utilised or minor species and crops, strongly linked to the territories and knowledge of small rural actors (e.g. medicinal and culinary herbs).

However, large communities' needs and expectations, in particular of those based in rain-fed and pastoral areas, are not currently satisfied by agriculture. This is confirmed by trends showing a decrease in agricultural workers in many countries such as Lebanon, Libya, Israel, Turkey, Morocco, Palestine, and Jordan (Mediterra 2009). This situation is clearly portrayed in Table 3, which takes the case of Turkey.

Table 3 Agricultural and non-agricultural employment in Turkey 1990-2006

Year %	Turkey			Rural areas*		
	Agriculture	Non-agriculture	Total	Agriculture	Non-agriculture	Total
2003	7 165	13 982	21 147	6 687	3 173	9 860
%	33.88	66.12	100	67.82	32.18	100
2000	7 769	13 811	21 580	7 349	3 128	10 477
%	36.00	64.00	100	70.14	29.86	100
1995	9 080	11 506	20 586	8 635	2 559	11 194
%	44.11	55.89	100	77.14	22.86	100
1990	8 691	9 848	18 539	8 308	2 515	10 823
%	46.88	53.12	100	76.76	23.24	100

* Villages of less than 20,000 inhabitants are considered rural.

Source: SIS, Household and employment survey (2003) and Elci (2008).

Source: *Mediterra*, 2009

The increasing of unemployment records in rural areas indicates a general difficulty of the non-farm economy to provide incomes and jobs (see Fig.1). The construction sector, especially in Egypt and Algeria, has been a major source of attraction to urban centers, although the situation has deteriorated as the global economic slowdown as continued (Mediterra, 2009). Other sectors such as manufacturing and tourism, considered important for the diversification and strengthening of rural economies for their linkages to agriculture and local territories, still lag behind and need to be supported.

The lack of job opportunities, consequently, implies people migration towards urban centers or abroad. This, in addition of creating potential discomforts in urban areas, can have negative impacts on the vitality of local communities, determining loss of human and social capital necessary to foster rural development.

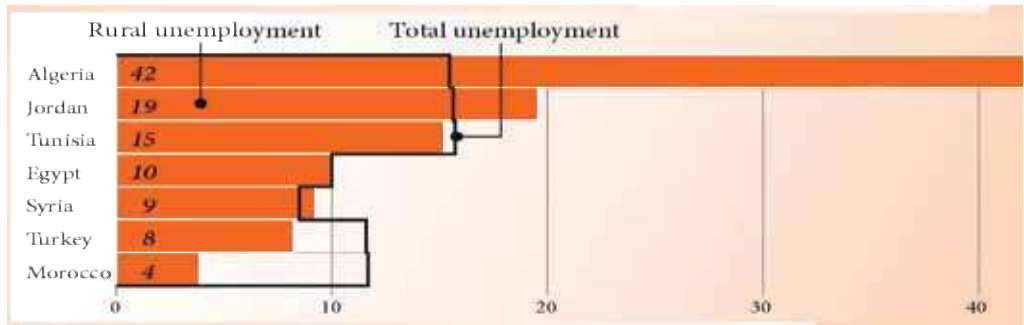


Figure 1. Rural and total unemployment rates in the Mediterranean. As % of the rural and total economically active population

Source: Adapted from Radwan (2007) according to national surveys in Mediterra 2009

3. Communities' social assets

The presence of local networks, community based organizations and institutions is the key for empowering rural communities. These are important structures that can bridge and link these communities with external environments, providing important economic and social services, and filling, at least in part, the existing gap with urban areas.

Producer organizations, such as associations and cooperatives, have an important presence in the region and data show that in some countries figures are increasing. Morocco, in 2006, registered 250 producers' associations and groups, and 6,000 cooperatives. Algeria had 1,300 professional associations and over 800 service cooperatives. Egypt had 5,717 cooperatives in 2002 (Mediterra, 2008). The majority deal with issues related to agricultural production and water management for irrigation purposes. Their role is very important in terms of ensuring food security and sustaining local economies. For example, in Tunisia cooperatives significantly influence the cereal crop market, with their annual business turn-over standing at 190m dinars (around 146m US\$) (ESMED Network, 2011). However, these organizations frequently appear to depend on governmental authorities in terms of technical and managerial capacities, and have often acted as implementers of government policy, rather than conforming the vital two-way link between farmers and the private sector or government (World Bank, 2014).

New forms of rural organizations have also appeared in the last years, pushed by different factors. Within the context of decentralization and local development processes in the Maghreb countries, for instance, citizens have started to mobilize and organized themselves around common interests or needs, to produce, deliver services, and protect ecological and cultural values, etc. Organizations cover specific territories and communities. In Algeria cooperatives have been set up within a governmental program to facilitate distribution of food and provision of veterinarian and training services to pastoral people in steppe zones. In Morocco and Tunisia, communities have been organized in networks for promoting participatory management of territories to reduce natural resource degradation or promote local development strategies. The presence of new elites in rural areas, represented by those attending training programmes, young people looking for jobs and retired experts (e.g. extension officers and researchers), has favoured the establishment of new organizations promoting traditional products, organic farming, tourist activities, agro-processing plants, etc. (Bessaoud, 2008, 2009).

Governments are also taking important steps towards decentralizing their functions and facilitating local development processes. In Egypt's Fayoum Governorate Farmer Field Schools were adapted to local agro-ecosystems and operated as community networks, proving much more successful in building local human capital in agriculture. Now, after a decade of experience,

the government has decided to extend the program to other areas as part of its long-term Strategy of Sustainable Agriculture Development applied by the Ministry of Agriculture & Land Reclamation (MALR). In Morocco more than 40,000 local development agencies (most of them in rural areas and the outskirts of the largest cities) have been established to promote literacy campaigns, schooling projects for girls, programmes to bring water and electricity to villages, and more generally to promote connections and fight social exclusion by means of fostering income generation activities (ESMED Network, 2011). Similar agencies have been set up in Algeria and Tunisia, where important programmes have also been implemented in mountain areas prone to land degradation and poverty (Bessaoud and Petit, 2009).

However, in most cases a number of problems prevent the efficient functioning of these new rural organizations: while well intentioned, they are often dictated by official programmes and projects that lack the necessary human, financial and material capacities; while incomplete and immature decentralization processes limit their functions. (Bessaoud, 2008). Self-organised communities have found it hard to promote endogenous development due to the high level of bureaucracy and centralisation that continue to characterise this region's governments. At the same time the quality of governance is low, due to the lack of participation, rule of law (especially in land tenure issues), transparency, equity, consensus orientation, inclusiveness, and accountability (IAASTD, 2009). IFAD (2007) also highlights the fact that women are often underrepresented in the boards of rural associations and cooperatives. Nonetheless, there is an encouraging trend showing an increasing number of women's groups and associations at different levels (national and local), which contribute to spreading awareness and information concerning several aspects of interest to them (rights, technology, environment, education, etc.).

Some examples of rural organizations for delivering rural finance services to small communities come from IFAD experience and denote a variety of approaches and challenges. IFAD have promoted partnership arrangements with specific bodies, charitable foundations, small NGOs and rural institutions in countries like Morocco, Egypt, Syria and Yemen, succeeding in providing access to credit for very poor communities. Significant results have been achieved, sustaining the establishment of local women's savings and credit associations in West Bank and Gaza, Syria and Sudan. Nevertheless, the lessons learned from these experiences highlight a number of challenges threatening these processes. These include: widely dispersed populations; absence of credit culture; lack of managerial capacity at all levels; limited availability of performance data for practitioners, lenders and supervisory agencies; governmental preference for integrated rather than stand-alone rural finance programmes; and limited availability of wholesale credit funding (IFAD, 2006).

VII –Policy needs

Perhaps the most important issues identified by this paper is the importance of political and governance environments conducive to the establishment and development of rural community institutions, together with appropriate policies to enable stakeholders to take actions leading to sound development and investment choices. Existing policies have often failed to address: context specific problems; smallholders' specific needs; and inclusiveness and equity in the access to property, resources, and credit. This is clearly the case for land and water, where traditional rights can be unclear and differentiated across countries, communities and social groups. Limited access to information prevents smallholders from taking advantage of the market like other stronger players (commercial farmers, multi-nationals, etc.). Well intentioned policies to address low agricultural productivity and poor marketing, have often favoured large-scale producers operating in more favourable areas. Moreover, policies providing public goods and services, such as healthcare, education and infrastructure, are usually more favourable to urban people, leaving smallholder communities behind, restricting food sovereignty and failing to address food security

for the most marginalised. There is still the need for better designed policies in guaranteeing smallholders a full role in debate and decision-making, allowing them better representation in political bodies at different levels.

There is also a need for policies capable of addressing impending challenges like climate change, natural resource scarcity, and the loss of important agrobiodiversity. Policies need to target vulnerable groups and support rural community organizations, such as producer and consumer associations, cooperatives, and other formal and informal groups, which are essential tools for rural communities' development, especially in building effective "smallholder-oriented value chains" (IFPRI, 2011).

In the light of the trends and deficiencies mentioned above, the SEM Region has witnessed the emergence of rural development policies targeting improvements in living conditions, focusing on infrastructure; linkages between farming and non-farming activities; diversification of activities to support agricultural employment; protection of natural resources; strengthening the role of rural organizations that can successfully claim rights, establish responsibilities, reduce transaction costs, and facilitate the circulation of knowledge and information (Bessaoud et al, 2009). Such policies, and a better coordination among them, are crucial for smallholders' capacity and opportunities for development and also to support and encourage innovation and learning competence that can contribute to greater food sovereignty and reduce food insecurity.

VIII - Research needs

In the SEM countries the general situation of research presents broad margins for improvement: in terms of GNP only 0.2% is invested in rather than the recommended 2% (IAASTD, 2009). Moreover, there is a significant mismatch between the orientation of national and international research agendas and the types of research that would be most helpful to small farmers. This gap needs to be filled immediately as agricultural research has the greatest impact on poverty and agricultural productivity (De Schutter, 2010). Research should be more focused on the real needs of rural communities and of their small producers, more sensitive to their local ecological conditions and "receptive to local/traditional knowledge" (IFAD, 2009) aiming at developing more appropriate agroecological practices. More should be done to increase smallholders' resilience and productivity and to incorporate their indigenous/traditional knowledge into development processes. The existing trends towards decentralization require important investigation into the local and national institutional arrangements needed for supporting the establishment of ecologically and culturally appropriate local development processes.

After the political leadership was overthrown in Tunisia in January 2011, Arabic and Maghrebi civil societies have increased their expectations concerning the activities of the political decision-makers to solve problems such as unemployment, purchasing power, social equity and better governance of public affairs. Current political upheavals ("Arab spring") are the result of processes linked to profound changes experienced by the Arabic and Maghrebi societies, both political and social. Rural and farming communities in these countries have witnessed an unprecedented demographic expansion with migration towards urban centres causing the "urban sprawl", lack of growth in the rural areas and difficulties in the creation of economic activities for income generation and favouring employment, insufficient rural services that have hampered well-being and cultural progress. The sudden appearance of the civil society, not heralded by research, in the public domain poses question to the academic research. It is requesting to strengthen research programmes linked to increase knowledge of rural communities, of factors and causes at the basis of their evolution and profound changes. Those programmes, underpinned by considering the results obtained in the domain of social and cultural anthropology of the rural and farming communities of the Mediterranean region should, on one side, question the relevance

of agricultural and rural public policies, and on the other side, recognize an increased level of interest to the impacts of the those policies on the communities.

1. Creating Knowledge on Sustainable Agroecosystems (SA) and Natural Resource Management (NRM) experiences.

Sustainable Agroecosystems and Natural Resource Management are priorities in the SEM countries. These practices can ensure the conservation and protection of fragile rural environments and communities who often suffer from the externalities of economic development in the urban centres and so-called core nations. Experience generated over many years of the Sustainable Agriculture programme at the IAMB has already catalogued several positive experiences in the SEM countries (Lamberti, op.cit). Elsewhere, research has contributed to the development of technical measures for land management, soil and water conservation, soil fertility management, pest and disease management, etc. Frequently, programmes have been established to promote Integrated Pest Management (IPM), watershed management, and the conservation of critical natural capital. It is important to investigate how these technologies have been adopted and adapted to the benefit of small-scale producers in order to identify and understand both bottlenecks and catalytic factors in sustainable development processes.

2. Researching smallholder agroecosystems and technologies

Research has to orient investigations in the light of smallholder agroecosystem specificities and local needs or opportunities, while maintaining an agroecological approach that is consistent with long-term local potential (Gliessman, 2000; De Schutter, 2010). This includes the improvement of key technologies and practices, to increase agroecosystem productivity and resilience; the use of ecological processes, minimizing the use of external inputs and non-renewable energy. The study of small/medium scale post-harvest agro-processing technologies, with low operating costs, locally developed bio-pesticides and cultural practices will be essential.

3. Investigating local knowledge and institutions

Research should strengthen understanding of local knowledge and institutions, the product of a constant adaptation of local communities to specific agro-ecosystem conditions. Different studies and experiences worldwide (FAO, 2012; Pretty, 2003; Critchley, 1999), and in SEM countries too (Lamberti, op.cit; Lamberti *et al.*, 2010) show the important role that local communities have in innovation processes and development, designing sustainable practices and establishing local groups that facilitate sustainable management of natural resources and agroecosystem productivity. Traditional practices, institutions and knowledge have also been neglected and frequently lost to inappropriate and unsustainable modernization processes, yet they frequently can represent important cultural and social assets for securing livelihoods, building food sovereignty and maintaining the sustainable management of fragile environments. An example is the Agdal, a traditional institution for forest management in the High Atlas of Morocco that for a long time has contributed to the protection of sustainable patterns of forest resource use by village communities, by strengthening social-ecological system resilience and adaptability (Auclair *et al.*, 2011).

4. Research on value chains and non-farm sector development with added value for Rural Communities (RCs)

Research should be also be oriented towards sectors where market opportunities exist, not only in farming, but also at other levels in the value chain, looking for linkages among rural communities' actors and appropriate external players (De Schutter, 2011). Sectors like fruit crops and vegetables offer good opportunities in irrigated areas, where smallholder productivity is

higher and a lot of labour is required. In particular, locally valued species and varieties, often neglected by commercially oriented research should be identified and developed in the context of integrated production systems. In more marginal areas, spices, Mediterranean herb crops (such as rosemary, saffron and argan (*Argania spinosa* L.) and ecological and cultural tourism offer real opportunities for added value (Mediterra, 2009). The role and potential of smallholders should be analyzed at each level of the value chain: as suppliers of inputs, processors of products, or providers of other services, such as certification, marketing and training. Research into how more equitable linkages (embedded services, contracts, etc.) can be established between small-scale producers and more powerful actors along the value chain also needs attention.

5. Studies for supporting service decentralization processes and rural communities' empowerment

Research has to contribute to identifying and analyzing solutions for strengthening local institutions and organizations in consideration of a set of structural and organizational limits, such as marginalization, poor infrastructure, weak services, imperfect and unstable markets, natural resources access and control, which restrain the livelihood opportunities of rural communities and smallholders. The trend towards decentralization should drive research activities through the analysis of the most appropriate institutional arrangements for facilitating communities' participation and empowerment. Examples include: studying local governance systems for services innovation and development (research, technical assistance, credit, natural resources management, etc.) based on the decentralization of responsibilities and active participation of local actors; studying small rural producers' land tenure systems and looking for opportunities to extend their rights over the management of important resources such as water; studying positive externalities linked to the maintenance of rural communities as custodians of the environment and biodiversity.

IX – Final remarks

This work has highlighted the highly heterogeneous peculiarities of the Southern and Eastern Mediterranean Countries, a characteristic that is precious from the cultural and ecological point of view (Barthel *et al.*, 2013) but also the source of many vulnerabilities from the point of view of designing integrated regional rural development policies. And this has led to marked social and economic disparities.

About 48% of the population of the SEMCs lives in rural areas, where poverty is still concentrated despite a growing urbanization (especially along the coasts). Agriculture continues to be the main activity but is not the sole contributor to livelihood sustainability, rising incomes or food security. As data provided by IFAD in 2007 show, considering the percentage of economically active people engaged in agriculture in the region (37.8%) and the contribution of agriculture to regional GDP (12.6%) it can be seen that labour productivity is still low. One of the reasons is the reduction of public investment in rural areas that has not been compensated for by a stronger engagement of the private sector. The latter is hampered by several obstacles, among which the most important are poor rural infrastructure, poor access to credit, limited rural services like extension, education, and training to enhance smallholders' capabilities, and imperfect market mechanisms. Engagement in non-farm activities would offer smallholders more opportunities and reduce households' vulnerability to shocks and crises. At the same time, however, we have also pointed out that increasing labour productivity requires capital investments and associated energy costs that may not be sustainable in the long run.

The SEM countries are faced with major challenges, among which scarcity and depletion of natural resources are critical. Access to and use of water and land are at risk, as a consequence of demographic pressure, marginalisation, and gaps in policy frameworks, and will be aggravated

by climate change. They need access to technology and markets, and their role and potentialities should be analyzed at each level of the value chain. Small rural communities need to take action in the management of natural resources to guarantee their sustainable use. And in this they need to be assisted by better targeted policies defining clear and equitable sets of rules.

Empowering rural people and institutions is also important for holding local governments and government agencies to account with respect to the performance of policy measures and transparency of policy processes. The process of smallholder and rural community empowerment implies a set of pre-conditions such as political space for institutional development and the facilitation of constructive interaction among different interests (OECD, 2012).

All these issues affecting smallholders' productivity and posing obstacles to rural development have highlighted the importance of agroecology as an important approach to generating sustainable, long-term solutions. As stressed by UNCTAD (2013), this approach has proved its efficiency in increasing agricultural productivity by promoting cultivation practices that conserve the ecosystem: low external input techniques, where biodiversity is carefully managed favouring the distribution of more resilient crops (IFAD, 2013), labour intensive practices where diversification of land uses helps to cope with climate changes, where smallholders' livelihoods are improved. This improvement is synonymous with increased incomes that can drive smallholder communities out of food insecurity and towards greater food sovereignty, and out of poverty. In fact, more income is usually spent in the local markets, contributing to create demand for non-agricultural products and conferring dynamism and non-farm employment opportunities in their rural areas (UNCTAD, 2013; Wiggins *et al.*, 2013; De Schutter, 2010) helping to slow down population migration to urban centres and with it poverty.

According to Gonzalez de Molina (2013), while agroecology is increasingly accepted as an important approach to dealing with food insecurity and promoting sustainable development, very few studies have paid significant attention to the politics of food sovereignty. The majority of practical agroecological experiences do not move beyond the local sphere; they are generally based on farms or occasionally in rural communities, where participatory research, design and action for sustainable rural development are developed. At this level, however, there is no significant challenge to the hegemony of the corporate food regime and its 'global food security' discourse. In order to mount a sustained challenge, and realise their counter-hegemonic potential, agroecological experiences and the goal of food sovereignty require appropriate institutional arrangements in terms of political power and appropriate public policies.

BIBLIOGRAPHY

- Alcadi R., Mathur S, Rémy P., 2009.** Research and Innovation for smallholder farmers in the context of climate change. Discussion paper for Round Table 3. IFAD, Rome, Italy.
- Altieri M. A., 2009.** "Agroecology, Small Farms, and Food Sovereignty". Monthly Review, Volume 61, Issue 03 (July-August).
- Altieri M. A., 2008.** "Small farmers as a Planetary Ecological Asset: Five Key Reasons Why We Should Support the Revitalisation of Small Farms in the Global South". Third World Network, Penang, Malaysia.
- Altieri M. A., 1995.** Agroecology: The Science Of Sustainable Agriculture. Westview Press.
- Alvarez-Coque J. M. G., 2012.** Agriculture in North Africa: A Chance for Development. Policy Brief, pp.1-7. The German Marshall Fund of the United States, Washington DC.
- Aklilu P., 2009.** Quelles réponses au mal-développement agricole ? Analyse des politiques agricoles et rurales passées et présentes. Options méditerranéennes B 64: pp.51-86
- Amin S., 2011.** Food sovereignty: A struggle for convergence in diversity. In Food movements unite! Strategies to transform our food systems, ed. E. Holt-Giménez, xi-xviii. Oakland, CA: Food First Books.
- Auclair L., Baudot P., Genin D., Romagny B., Simenel R., 2011.** Patrimony for Resilience: Evidence from the Forest Agdal in the Moroccan High Atlas Mountains, Ecology and Society 16 (4): 24 <http://dx.doi.org/10.5751/ES-04429-160424>
- Gale J., Jones J., Pretty W., Sutherland, et al., 2009.** Reaping the benefits: Science and the sustainable intensification of global agriculture. RS Policy document. London: The Royal Society.

- Barthel S., Crumley C., Svedin U., 2013.** 'Bio-cultural refugia—Safeguarding diversity of practices for food security and biodiversity', *Global Environmental Change* **23** 1142–1152
- Beddington J., 2011.** Foresight. The future of food and farming. Final Project Report. London: The Government Office for Science.
- Berdegué J. A., 2005.** Pro-poor innovation systems. International Fund for Agricultural Development (IFAD), Rome.
- Bertini C., Glickman D., 2008.** Renewing American leadership in the fight against global hunger and poverty. The Chicago Initiative on Global Agricultural Development. Chicago Council on Global Affairs. http://www.thechicagocouncil.org/UserFiles/File/GlobalAgDevelopment/Report/gadp_final_report.pdf.
- Bessaoud O., 2013.** « Aux origines paysannes et rurales des bouleversements politiques en Afrique Du Nord: l'exception Algérienne », in *Maghreb-Machrek*, N. 215, 2013.
- Bessaoud O., Petit M., 2009.** « Mediterranean Rural Territories », *New Medit* n.3/2009, CIHEAM-IAMB, 2009, Bari, pp.4-11.
- Bessaoud O., 2008.** Les organisations rurales au Maghreb -0 Leur role dans le developement : un esai d'evaluation, *Economie Rurale* 303-304-305 Janvier-May 2008
- Bessaoud O. 2006.** "La gouvernance rurale en Méditerranée: tendances et nouveaux défis", *Les notes d'analyse du Ciheam*, 14, July 2006.
- Bird K., Hulme D., Moore K., Shepherd A., 2002.** Chronic Poverty and Remote Rural Areas. CPRC Working Paper No 13. Chronic Poverty Research Centre, UK.
- Blue Plan, 2008.** The Blue Plan's sustainable development outlook for the Mediterranean. Blue Plan, Sophia Antipolis, France.
- Chambers, R., 2010.** "Paradigms, Poverty and Adaptive Pluralism", IDS Working Paper 344, Brighton, UK.
- Chambers R., Conway G.R., 1991.** Sustainable Rural Livelihoods: Practical Concepts for the 21st Century. Institute of Development Studies DP 296.
- Conforti P., 2010.** Looking ahead in world food and agriculture. Food and Agriculture Organization. <http://www.fao.org/docrep/014/i2280e/i2280e00.htm>
- Conway G., 2011.** "On Being A Smallholder", Conference on New Directions for Smallholder Agriculture, 24-25 January, 2011, Rome, IFAD.
- Conway G., 1997.** The Doubly Green Revolution. Oxford, UK: Penguin Books.
- Conyers D., 2003.** Guidelines on social analysis for rural area development planning, FAO, Rome <http://www.fao.org/docrep/T1660E/T1660E00.htm>
- Critchley W., 2006.** Working With Farmer Innovators- a practical guide. CTA, Aj Wageningen.
- Critchley W., 1999.** Promoting farmer innovation – Harnessing local environmental knowledge in East Africa, UNDP-SIDA
- De Schutter O., 2011.** "Agroecology and the right to food". Report presented at the 16th Session of the United Nations Human Rights Council [A/HRC/16/49]. March 8.
- Dixon J., Gulliver A., Gibbon D., 2001.** Farming Systems and Poverty: Improving Farmer Livelihoods in a Changing World. Food and Agriculture Organization/World Bank, Washington DC.
- Eastwood R., Lipton M., Newell A., 2009.** "Farm size" in *Handbook of Agricultural Economics*, Volume 4. Elsevier, Amsterdam
- Ellis F., 2000.** Rural Livelihoods, Diversity and Poverty Reduction Policies: Uganda, Tanzania, Malawi and Kenya, ICRISAT.
- Ellis F., 1993.** Peasant Economics: farm households and agrarian development. 2nd edition, Cambridge University Press, Cambridge.
- ESMED Network, 2011.** The Social Economy in the Mediterranean. CEPES, Madrid.
- European Economic and Social Committee, 2011.** Rural Development and Employment in the Euro-Mediterranean Region. Brussels.
- FAO, 2012.** Good Practices in Building Innovative Rural Institutions to Increase Food Security, FAO, Rome.
- FAO, 2011.** The state of food insecurity in the world: How does international price volatility affect domestic economies and food security? <http://www.fao.org/docrep/014/i2330e/i2330e.pdf>
- FAO, 2010.** Characterization of small farmers in Asia and the Pacific. APCAS/10/28. FAO, Rome.
- FAO, 2008.** Climate Change and Food Security: A Framework Document. FAO, Rome.
- FAO, 2006.** The Role of Agriculture and Rural Development in Revitalizing Abandoned/ Depopulated Areas. FAO, Rome.
- FAO, 2002.** "Land and Agriculture". FAO, Rome.
- Forum for Food Sovereignty, 2007.** Declaration of Nyéléni. Nyéléni Village, Sélingué, Mali, 27 February, 2007. Available at: <http://www.nyeleni.org/spip.php?article290>, accessed 29/05/13).
- Gliessman S.R., 2007.** Agroecology : the ecology of sustainable food systems. 2nd edition. CRC Press, Boca Raton.

- Gliessman S.R., 2000.** Agroecology. Ecological Processes in Sustainable Agriculture. CRC Press, Boca Raton, Florida.
- Gliessman S.R., 1997.** Sustainable agriculture : an agroecological perspective. In: International Short Course on Agroecology: reader : Berkeley, California, June 16-25, 1997 - Berkeley : University of California, Center for Biological Control, pp.45-57.
- Halpern D., 2005.** *Social Capital*, Cambridge Polity.
- Hazell P., 2011.** "Five Big Questions about Five Hundred Million Small Farms", Conference on New Directions for Smallholder Agriculture, 24-25 January, 2011, Rome, IFAD.
- Hazell P., Poulton C., Wiggins S., Dorward A., 2007.** The future of small farms for poverty reduction and growth, Policy Brief 75, IFPRI, Washington.
- Herren R.H., 2011.** Innovations in Understanding Complex Systems. in *State of the World 2011: Innovations that Nourish the Planet*, Worldwatch Institute Report on Progress Toward a Sustainable Society, W.W. Norton & Company; New York & London, first edition, pp.166-168.
- Holt-Giménez E., Altieri M.A., 2013.** Agroecology, Food Sovereignty, and the New Green Revolution, *Agroecology and Sustainable Food Systems*, 37:1, 90-102
- IAASTD, 2009.** (International Assessment of Agricultural Knowledge, Science and Technology for Development) . Agriculture at a crossroads. Washington, DC: Island Press.
- IFAD, 2013.** Smallholders, food security, and the environment, IFAD.
- IFAD, 2011.** Proceedings of the Conference on New Directions for Smallholder Agriculture, Rome.
- IFAD, 2010.** Rural Poverty Report 2011. IFAD, Rome.
- IFAD, 2007.** The status of rural poverty in the Near East and North Africa, IFAD, Rome.
- IFAD, 2006.** Rural Finance in the Near East and North Africa, IFAD, Rome.
- IFPRI, 2011.** Policies, Institutions and Market to strengthen Food Security and Incomes for the Rural Poor, CGIAR Research Program 2. IFPRI.
- IPCC, 2007a.** Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribute of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Martin Parry, O.F. Canziani, J.P. Palutikof., P.J. van der Linden and C.E.
- ISTAT, 2010.** Statistics on Rural Development and Agriculture Household Income. ISTAT, Rome.
- Lamberti L., El Bilali H., Belsanti V., 2011.** "Contribution of small-scale farmer innovations to sustainable agriculture". In: Fifth International Consumer Sciences Research Conference - Consumer 2011- "Consumer behaviour for a sustainable future", July 18th - 20th, 2011 - University of Bonn, Germany.
- Lamberti L., El Bilali H., Belsanti V., (eds) 2010.** Smallholders and Sustainable Agriculture – Workshop proceedings, CIHEAM-Bari & Italian Ministry for Foreign Affairs - Coopearazione Italiana allo Sviluppo.
- McMichael P., 2009.** A food regime genealogy. *Journal of Peasant Studies* 36:139–169.
- Mediterra, 2009.** Rethinking rural development in the Mediterranean. International Centre for Advanced Mediterranean Agronomic Studies. – Paris: Presses de Sciences Po, 2009.
- Mediterra, 2008.** The Future of Agriculture and Food in Mediterranean Countries International Centre for Advanced Mediterranean Agronomic Studies. – Paris: Presses de Sciences Po, 2008, pp 275-298.
- Montaigne E., Bessaoud O., 2009.** Quelles réponses au mal-développement agricole ? Analyse des politiques agricoles et rurales passées et présentes. *Options méditerranéennes B* 64: pp.51-86
- Murphy S., 2010.** Changing perspectives: Small-scale farmers, markets and globalization. working paper, Hivos Knowledge Programme, The Hague, The Netherlands, pp 6-46.
- OECD, 2012.** Empowerment of poor rural people through initiatives in agriculture and natural resource management, Paris, 2012.
- OECD, 2011.** Opportunities and challenges in the Mena Region, Paris, 2011.
- OECD, 2006.** The new rural paradigm. Policies and governance, Paris, 2006.
- Pretty J., 2008.** Agricultural sustainability: concepts, principles and evidence. *Phil. Trans. Royal Society of London B*, 363 (1491), 447-466.
- Pretty J., Noble A. D., Bossio D., Dixon J., 2006.** "Resource-Conserving Agriculture Increases Yields in Developing Countries", *Environmental Science and Technology*, 40:4, 2006, pp.1114-1119.
- Pretty J., 2008.** "Social Capital and the Collective Management of Resources" in *Science* 302, 1912-1915, American Association for the Advancement of Science, Washington DC.
- Pretty, J. N., 1995.** "Regenerating Agriculture. Policies and Practice for Sustainability and Self-Reliance". Joseph Henry Press, Washington DC.
- Putnam Robert D., 1993.** Making democracy work. Civic traditions in modern Italy. Princeton.
- Reardon T., Delgado C., Matlon P., 1992.** "Determinants and effects of income diversification amongst farm households in Burkina Faso," *Journal of Development Studies*, 28 (January 1992), pp. 264-296.
- Roseboom J., 2012.** Creating an Enabling Environment for Agricultural Innovation, Module 6, in *Agricultural Innovation Systems- An Investment Sourcebook*, The World Bank; Washington, D.C.

- Rosset P., 1999.** The Multiple Functions and Benefits of Small Farm Agriculture in the Context of Global Trade Negotiations. Institute for Food and Development Policy, CA, USA.
- Rowlands J. 1997.** Questioning Empowerment: Working with Women in Honduras. Oxfam: Oxford.
- Sevilla Guzmán E., Woodgate G., 2013.** Agroecology: Foundations in Agrarian Social Thought and Sociological Theory, *Agroecology and Sustainable Food Systems*, 37:1, 32-44.
- Sevilla Guzmán E., Woodgate G., 1997.** Sustainable rural development: From industrial agriculture to agroecology. In *The international handbook of environmental sociology*, eds. M. Redcliff and G. Woodgate, 93–94. Cheltenham, UK: Edward Elgar.
- Scoones I., Thompson J., 2009.** Farmer First Revisited – Innovation for Agricultural Research and Development. Practical Action Publishing, London.
- South African Government, 2000.** The Integrated Sustainable Rural Development Strategy (ISRDS).
- The Montpellier Panel, 2013.** Sustainable Intensification: A New Paradigm for African Agriculture, London.
- UNCTAD, 2013.** Wake up before it is too late, United Nations, New York, 2013.
- UNESCAP/UNDP/ADB, 2007.** Access to Basic Services for the Poor: The Importance of Good Governance. Asia-Pacific MDG Study Series, Bangkok, 2007.
- United Nations, 2007.** Rural Households' Livelihood and Well-Being. United Nations, New York and Geneva, 2007.
- Wiggins S., Keats S., 2013.** Smallholder agriculture's contribution to better nutrition, ODI, London.
- WOCAT, 2007.** "Where the land is greener – case studies and analysis of soil and water conservation initiatives worldwide", edited by Hanspeter Liniger and William Critchley, Bern, 2007.
- Woodgate G., 2012.** Governance and Institutions for Sustainable Rural Development. Lessons held in the distance course "Sustainable agriculture innovation systems for small-scale farmers", academic year 2012, organised by CIHEAM-MAIB.
- World Bank, 2014.** Sector Brief – Agricultural and rural development in Mena. World Bank, Washington DC.
- World Bank, 2012.** Adaptation to a changing climate in the Arab countries. The World Bank, Washington DC.
- World Bank, 2010.** Poor Places, Thriving People: How the Middle East and North Africa Can Rise Above Spatial Disparities. MENA Development Report, World Bank, Washington DC.
- World Bank, 2009.** Improving Food Security in Arab Countries. World Bank, Washington DC.
- World Bank, 2007.** World Development Report (WDR) 2008. Agriculture for Development. The International Bank for Reconstruction and Development / The World Bank, Washington, DC.
- World Bank, 2006.** Enhancing Agricultural Innovation: How to Go Beyond the Strengthening of Research Systems. The International Bank for Reconstruction and Development (IBRD) / The World Bank (WB); Washington, DC.

Notes

- 1 World Food Summit definition of food security (1996): *"Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life."*
- 2 Via Campesina, the largest and most influential global peasant and small-farmer organization, has introduced food sovereignty as an alternative to the concept of global food security. It is "the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems, putting the aspirations and needs of those who produce, distribute and consume food at the heart of food systems and policies rather than the demands of markets and corporations" (Forum for Food Sovereignty, 2007).
- 3 Over the last decades approaches to research and development have promoted the transfer of standardised/universal knowledge and inputs, fixed technology packages with "pre-set" goals, and where local people were considered beneficiaries rather than actors (Chambers, 2010) contributing to phenomena like the Green revolution-transfer of research and technology packages to promote development through increased production- benefiting farmers having access to them and in favourable areas, disregarding biodiversity, with intensive use of fertilizers and pesticides having a negative impact on the environment.
- 4 Agroecology "promotes the ecological management of biological systems through collective forms of social action, [employing] systemic strategies [focused on] local endogenous potential encoded within knowledge systems ... that demonstrate and promote both ecological and cultural diversity" (Sevilla, Guzmán and Woodgate 1997, 93–94).