



A look at integrated approaches to food and nutrition security: working towards better design and implementation

Background study

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1. Introduction

According to the 2015 Millennium Development Goals report, about 795 million people are undernourished worldwide – almost 200 million less than in 1990 (UN, 2015b). However, this progress is unevenly distributed, with India and China accounting for the largest share, whereas the total number of malnourished people in Sub-Saharan Africa has actually increased due to population growth (FAO et al., 2015). Hence, a great challenge lies ahead. This challenge is amplified by a rising world population and the global, but unequally distributed, impacts of climate change. In the coming decades, more food needs to be produced using less resources (land, water, and energy), in a global economic context of volatile commodity prices, high food and energy prices, rising unemployment and economic stagnation in the developed world. Achieving food and nutrition security in all its facets requires that these challenges are tackled together.

This was also one of the main conclusions of the consultation on Dutch food security policy organized by the Food and Business Knowledge Platform (F&BKP) and implemented by The Broker in the summer of 2014. The report concludes that: 'To achieve maximum impact on food and nutrition security an integrated approach is required at all levels (local, regional and international) to avoid a situation in which each stakeholder focuses within their own niche without understanding the complexity of the overall system and therefore being less effective in transforming it' (Final Report on Dutch Food Security Consultation, September 2014). The consultation suggested that for projects to achieve systemic change, four substantive and organizational aspects need to be integrated: governance levels, stakeholders, sectors and policy domains (F&BKP, 2014).

The importance of applying integrated approaches to food and nutrition security is captured by the concept of food security in itself. According to the Food and Agriculture Organization of the United Nations (FAO, 2008), food and nutrition security 'exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life'. This definition encompasses production-related aspects of availability, but also the economic, political and environmental aspects of access, utilization, and stability.¹ Combining all these aspects of food security implies that multiple interventions should target multiple economic sectors (such as agriculture, health, water, energy, infrastructure, and finance) at the same time and that policymakers, funders, and development organizations integrate relevant policy domains (such as those related to social, economic and financial affairs, gender, education, and human security), while additionally ensuring coherence at different levels (local, regional, national and international) and connecting relevant stakeholders (like decision-makers, scientists, practitioners, businesses and citizens).

¹ The first dimension relates to the amount of food that is available (influencing factors are food production, food stocks and food trade). Food access refers to whether or not an individual or a household is able to obtain adequate food (influencing factors include income, markets and food prices). Food utilization relates to the body making the most of various nutrients in the food (influencing factors include food diversity, food safety and knowledge of nutrition). Food stability refers to when the first three dimensions are satisfied over time (influencing factors are weather conditions, political stability and economic factors such as unemployment) (FAO, 2008).

As such an approach is too all-encompassing for any single organization to achieve what organizations, institutions and other actors in development currently do is integrate these aspects partially through a variety of 'integrated approaches'. This reflects a general ambition to go beyond working in separate 'silos', in which separate dimensions of food security are tackled without addressing their systemic linkages to other dimensions. Enhancing food production, for example, can be done with or without taking into account the depletion and renewal of natural resources. Fundamentally, such integrated approaches are unique to a problem, scale, and social and ecological context, which is why many variations exist in practice. This means that rather than speaking of 'the' integrated approach to food and nutrition security it is a discussion of integrated approaches, plural. What these approaches share is an understanding that the multi-dimensionality of food security requires the integration of objectives and the inclusion of relevant stakeholders within interventions.

What is needed now is more systematic knowledge on how integrated approaches are actually being implemented and whether or not such projects are effective in achieving food and nutrition stability. For this purpose, The Broker, commissioned by F&BKP, conducted a systematic mapping of available projects on food and nutrition security that (claim to) adopt an integrated approach. In this study, we examine the practical implications of adopting integrated approaches to food and nutrition security and draw lessons for how to improve their design and implementation. Guiding questions were: What exactly constitutes an integrated approach? What kind of projects adopt an integrated approach? Which dimensions and aspects do these projects integrate? And do these projects meet their own expectations in terms of pursuing systemic change?

For the study we used a core and, therefore, open definition of integrated approaches to food and nutrition security. We view integrated approaches as the coordination of efforts across different areas of work (e.g. agriculture, water management, nutrition education etc.) and interests (e.g. increasing production, reducing poverty, managing natural resources, etc.). The rationale for integrating these efforts is that their combination will increase their effectiveness and, thereby, the sustainability of the impact.

2. Study design

The information used in this study is drawn from a literature review, online survey and expert interviews. The literature review covered a broad range of scientific publications as well as reports from programmes, initiatives, and projects that adopt integrated approaches in the field of food and nutrition security. The online survey was conducted to investigate integrated interventions in practice. In order to obtain more in-depth knowledge about the pros and cons of adopting integrated approaches to the issue of food and nutrition security, and to contextualize our initial findings as the project progressed, interviews were conducted with experts involved in integrated interventions on food and nutrition security. For details of each activity, please refer to Appendixes I to IV.

3. What is an integrated approach?

Despite the increasing recognition of its importance, there is no clear definition of 'integrated approach'. While many development interventions claim to be integrated, what is understood to be integrated is different in each intervention. For example, the IFAD 'Participatory Integrated Watershed Management Project in Gambia' (2004–2012) integrates the participatory management of water resources with increased agricultural production (IFAD, 2014), while the USAID-funded 'Integrated Food Security Project' in Bolivia (2009–2014) addresses malnutrition through increased production of wool and honey, by connecting producers to markets to increase incomes, and by introducing energy-efficient wood stoves to improve health through cleaner technology and environmental sustainability through decreased energy use (Abt Associates, 2012). A World Bank integrated project aimed at improving the nutrition of smallholder farmers in Uganda (2013–2017) combines promoting the cultivation of nutrition rich crops with improving nutrition care practices (World Bank, nd). All of these projects combine dimensions of food security (availability, access, utilization, stability) in different ways. The first focusing more on food availability and stability, the second on increasing availability and access, and the third on food availability and utilization.

This section presents the findings of the literature review. In Section 3.1 we provide an overview of the conceptual development of various integrated approaches from 1995 to 2015. Section 3.2 maps these approaches in a framework and identifies four core approaches. Section 3.3 describes these core approaches and presents the guiding principles and a number of tools for their implementation, comparing them to highlight their differences and commonalities.

3.1 Conceptualizing integrated approaches: from 1995-2015

In November 1995, the second meeting of the Conference of Parties (COP), consisting of 196 states, reached a consensus to adopt an ecosystem approach as the primary framework for action under the Convention on Biological Diversity (CBD, 2004). The ecosystem approach has been the central principle in the implementation of the CBD ever since. Although a central concept for the Convention, it has remained difficult to define this approach in a simple manner. It was not until the fifth meeting of the COP in 1998 that a description of the ecosystem approach, five points on operational guidance and twelve application principles were finally endorsed (CBD, 2004).

In 1998, the FAO defined an integrated approach to the planning and management of land resources as 'the active participation of stakeholders at national, provincial, and local levels in the process of planning and decision making; and the integration of technical, institutional, legal and socio-economic aspects' (FAO, 1998). The guiding approaches proposed in this framework are to integrate information systems, involve multi-stakeholders at different levels of land planning and management, integrate land use policy across sectors, and apply an ecosystem approach (FAO, 1998).

In January 1999, the World Bank launched the Comprehensive Development Framework (CDF) to address the increasingly intertwined challenges faced by development practitioners (Maxwell & Conway, 2000). The CDF calls for a holistic long-term approach that integrated social, economic and political dimensions; ownership by a country to formulate its own development strategy; partnerships with shared objectives between

donors and receiving countries; and an orientation towards results (Hanna et al., 1999). The CDF is a classic example of multi-sectoral planning (Maxwell & Conway, 2000). Maxwell & Conway (2000) further conclude that 'there are strong arguments for new approaches to planning, approaches in which disciplinary perspectives, actors, and sectors behave in a more integrated (or holistic) manner and in which targets are used to monitor and drive performance'.

In September 1999, the CGIAR workshop reached the Bilderberg consensus of integrated natural resources management (INRM). According to specialists, INRM refers to the 'responsible and broad-based management of the land, water, forest and biological resources base (including genes) needed to sustain agricultural productivity and avert degradation of potential productivity' (CGIAR CDC, 1999). INRM integrates multiple disciplines, spans spatial and temporal scales, and involves multiple stakeholders in planning and implementation. INRM requires adaptive management that involves a learning process to adapt methodologies and practices to the changing context. Sayer and Campbell (2001) summarize INRM as: 'The world is becoming more integrated, and integration emerges as the most important concept in the INRM approach: there is a need to integrate across disciplines, across scales, across stakeholders, and across components'². However, Lal et al. (2001) pointed out that, at that time, INRM lacked a systematic methodology guide and tool box.

Since 2000, the value chain approach has gained increasing attention globally. A great deal of work has been done using the value chain approach. In 2007, the German Development Institute published a report that aimed at reaching a common understanding of value chain strategies for pro-poor growth (Altenburg, 2007). In 2008, USAID issued a few briefing papers presenting the framework and key elements of the approach based on its earlier work in 2006 (USAID, 2008a; 2008b). In 2007 and 2010, the World Bank published two reports in an attempt to provide a framework and tools to guide the value chain approach (Subramanian, 2007; Webber & Labaste, 2010). The most recent publication on this approach was by FAO in 2014 in an attempt to provide guiding principles for sustainable food value chain development (FAO, 2014). The value chain approach is used as a tool for small and medium enterprise (SME) development, with new methods for linking SME suppliers and service providers to the value chains of lead processors and markets. This approach is especially important in agriculture to link small farmers with modern value chains so that they benefit from the globalization of markets at local, national and regional levels (Webber & Labaste, 2010) and add value to local value chains.

At the 2010 Hague Conference on agriculture, food security and climate change, FAO called for climate smart agriculture (CSA). According to FAO, CSA is an integrative approach to addressing the interlinked challenges of food security and climate change through the three dimensions of sustainable development: economic – sustainably increasing agricultural productivity to support equitable increases in farm incomes, food security and development; social – adapting and building the resilience of agriculture and food security systems to climate change at multiple levels; and environmental – reducing greenhouse gas (GHG) emissions from agriculture (including crops, livestock and fisheries) (FAO, 2013b). CSA is not a new agricultural system, nor is it a set of practices; it is a way to guide the changes needed in agricultural systems, given the necessity to jointly address food security and climate change. CSA has close links with

² Components here means the key components of an ecosystem (Lal et al., 2001).

the concept of sustainable intensification, which has been fully developed by FAO for crop production and is now being extended to other sectors and to a food chain approach.

In the *Climate-Smart Agriculture Sourcebook* (FAO, 2013b), FAO recommends the adoption of a landscape approach to achieve a gradual transition to CSA. According to FAO (2013d), 'in a landscape approach, the management of production systems and natural resources covers an area large enough to produce vital ecosystem services, but small enough to be managed by the people using the land which is producing those services'. CSA requires cross-sectoral planning and implementation, and integration across multiple administrative levels (local, subnational, national and international).

In June 2011, FAO organized an international expert meeting on a territorial perspective on food security policies and strategies. During the meeting, a consensus was reached that a territorial approach to food security policies can constitute a valuable framework for addressing food insecurity and inequality. Based on this consensus, FAO has worked together with the Organisation for Economic Co-operation and Development (OECD) and the United Nations Capital Development Fund (UNCDF) to develop an operational framework to mainstream the territorial approach. It was recognized that the territorial approach could contribute to policy decision making and planning, that it is more inclusive than other many approaches and closer to the needs of the local communities, and that it can help address important challenges. According to Cistulli (2015), the territorial approach 'proposes a systemic method that maps the diversity of the local socioeconomic dynamics, understands the root causes of food insecurity and poverty, assesses the diversity of response capacities to policy reforms and shocks, and ultimately reduces the risk of policy failure and improves the allocation of scarce resources'. The territorial approach focuses on intangible factors (such as human capital and knowledge) and relational and network factors (such as cooperation, partnerships, local culture, local vocations and communication networks). It adopts a bottom-up approach by involving partners and stakeholders in determining the strengths and weaknesses of their location, as well as opportunities for development (Cistulli, 2015).

In March 2015, CGIAR organized an international conference on 'Integrated systems research for sustainable intensification in smallholder agriculture' in Nigeria. During the conference, the systems approach was defined as: '...encompassing the full range of intervention points from soil-plant-water relationships to markets and value chains. It will integrate social and biophysical sciences with the use of both local knowledge and big data to understand and solve the complex problems affecting lives and livelihoods in these systems' (Atta-Krah, 2015). Participants in the conference called for system analysis at multiple scales with the direct engagement of multi-stakeholders. Furthermore, it was recognized that a clearly defined methodology guide and tool box are crucial for the implementation of a system analysis.

In 2015, the European Commission called for a comprehensive food-systems approach to shed light on its vision for global food security for 2030 (Maggio et al., 2015). Maggio et al. (2015) argue that it is important to develop a more balanced and demand-driven food system that focuses on tackling food insecurity, while at the same time taking the challenges and opportunities arising from future global markets into account. They further recommend: integrating different EU policies to work towards a 'food-system' approach; integrating the urban context into the European Food and Nutrition Security

Policy Framework and working with municipalities and local authorities on urban food systems; recognizing the crucial role of demand-side dynamics in shaping future food systems; and promoting innovation in food systems.

Furthermore, the EU's biggest research and innovation programme, Horizon 2020, clearly demands applicants to adopt a multi-actor approach (Oost, 2014), which aims at more demand-driven innovation through the genuine and sufficient involvement of various actors at all stages of the project (such as farmers, farmers' groups, fishers, fishers' groups, advisors, and enterprises, etc.). At 'all stages' of the project means from planning and experiments, to execution and the dissemination and demonstration of results. According to Oost (2014), the multi-actor approach is more than a strong dissemination requirement or what a broad stakeholders' board can deliver – it should have sufficient quantity and quality of knowledge exchange activities and a clear role for the different actors. In this way, the approach should generate innovative solutions that are more likely to be applied due to the cross-fertilization of ideas between actors, co-creation and the generation of co-ownership for eventual results.

The Global Environment Fund (GEF) adopts integrated approaches in combating land degradation (Bakarr et al., 2014), including integrated ecosystem management and sustainable land management. Integrated ecosystem management implements the ecosystem approach, as adopted by the Convention on Biological Diversity (CBD), while sustainable land management implements the landscape approach.

So, it can be seen that there are many types of integrated approaches and no universal definition exists. Reeves and Milledge (2014: 1) point out in their policy brief on integrated approaches to the Sustainable Development Goals (SDGs) that:

Integration means balancing the three dimensions of sustainable development (environmental, social, economic) whilst also systematically addressing 'interlinkages' among the SDGs, and across sectors, policy areas, place and time. It also means coherence across the SDGs and other governance frameworks.

Hence, it appears that perhaps a general consensus is emerging on what an integrated approach might entail.

3.2 A framework for mapping integrated approaches

The literature review shows that there is no universal definition of an integrated approach, but that a general consensus is shared. 'Integrated approach' can be used as a general term, which is interchangeable with terms such as systems approach, holistic approach and comprehensive approach. In this context, an integrated approach usually indicates the integration of the three dimensions of sustainable development (environmental, social, and economic). The survey questionnaire originally included 12 integrated approaches (see Appendix V for the list of excluded approaches). However, a closer look at some of the initiatives identified during the course of this study led to the identification of four core approaches: the ecosystem approach, landscape approach, value chain approach, and territorial approach. Although each initiative studied had a different name, investigation revealed that the approaches adopted were usually one of these four core approaches. For example, as mentioned in Section 3.1, the ecosystem approach is adopted by FAO's initiative 'Integrated approach to the planning and

management of land resources’ as well as GEF’s initiative to ‘Combat land degradation’. More importantly, terms such as stakeholder, actor, level, scale, sector, and discipline appear in all of the initiatives described in Section 3.1. Hence, it appears that these are the building blocks for integration. In other words, these are the elements to ‘integrate’.

Accordingly, we have categorized all of the terms based on their scope and mapped them in Figure 1. The circle on the left represents the planning phase of an integrated intervention. The four core approaches function as a conceptual framework with a set of principles that provide guidance for implementation. In practice, once an integrated approach is chosen for an intervention, further implementation requires the selection (or design) of methodological tools and models. The diamond shape on the right shows the building blocks of integration during the implementation of an intervention, namely: stakeholders,³ disciplines³, sectors⁴, and scales.

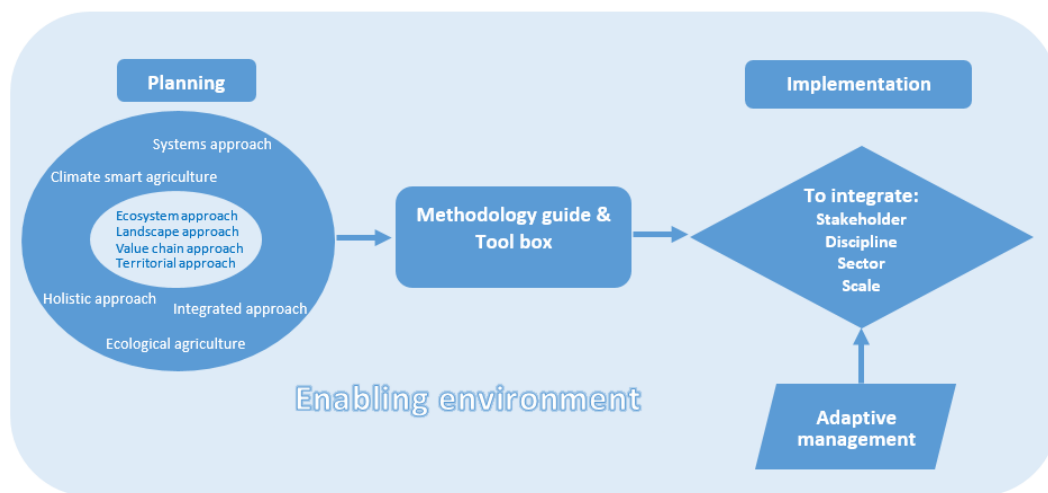


Figure 1. Mapping the different approaches

Integrating stakeholders means that people from different organizations relevant to the intervention collaborate and cooperate in order to reach a sustainable outcome. For instance, the involvement of smallholders in the planning process not only combines their tacit knowledge with the scientific expertise of experts, but also integrates their goals, wishes and needs into the intervention. The integration of disciplines means that different disciplines work together to create new knowledge by integrating expertise and methodologies. Sectoral integration combines different areas of work that are related to the three dimensions of sustainable development (environmental, social, and economic) as well as to cross-cutting areas. Examples of the areas of work used in the survey

³ Although there are differences, the terms ‘multi-disciplinary’ and ‘inter-disciplinary’ are often used interchangeably in the literature. Multi-disciplinary refers to different disciplines working together but maintaining the separation of their disciplines. Inter-disciplinary refers to different disciplines working together to create new knowledge by integrating knowledge and methods from each discipline.

⁴ In many cases, the term ‘multi-sectoral’ is used interchangeably with ‘cross-sectoral’ and ‘inter-sectoral’. Harris and Drimie (2012) proposed a continuum of integration, namely, from more to less integration: trans-sectoral, inter-sectoral, multi-sectoral, and sectoral. However, they admitted that their representation was not definitive and that the terms are often used differently. Although cross-sectoral is not included in their representation, it is, however, used often throughout their article.

questionnaire are: environmental dimension (e.g. natural resource management, climate change, disaster risk management and ecosystem management); economic dimension (e.g. agriculture, forestry, agro-industry, food access, income, market access and value chains); social dimension (e.g. food safety, food quality, governance, health and sanitation); and cross-cutting areas (e.g. gender and youth). The integration of scales means combining action across levels from local to global scales. Among all of the building blocks, multi-stakeholder is mentioned the most. As integration implies to integrate across sectors, disciplines, or scales (from plot to global scales) in varying compositions, an integrated approach, by definition, should be multi-stakeholder.

As integrated approaches to food and nutrition security inherently recognize the complexity of this issue, any intervention that adopts an integrated approach also needs adaptive management. Adaptive management is a concept originating from a variety of perspectives (such as business, experimental science, systems theory, and industrial ecology) (Williams & Brown, 2012) and is put forward as a way of managing natural resources in the face of uncertainty (Rist et al., 2013). According to Walters and Holling (1990), adaptive management is learning by doing and adapting based on what is learnt. In the context of food and nutrition security this indicates that adaptive management takes into account what is uncertain as well as what is known about the processes that influence natural resource management over time, as well as the influence of management on changes in natural resources. Its objective is to reduce uncertainty and, therefore, improve management by understanding management effects (Williams & Brown, 2012).

In addition, to deal with complex systems, management must be organized to promote active and conscious individual and social learning (Sayer & Campbell, 2001). This is incorporated in the following six steps of an adaptive management cycle (see Figure 2). It is important to note that stakeholder participation is central to the process and for successful management (Rist et al., 2013). Furthermore, objectives play a critical role in evaluating performance, reducing uncertainty, and improving management over time (Williams & Brown, 2012).

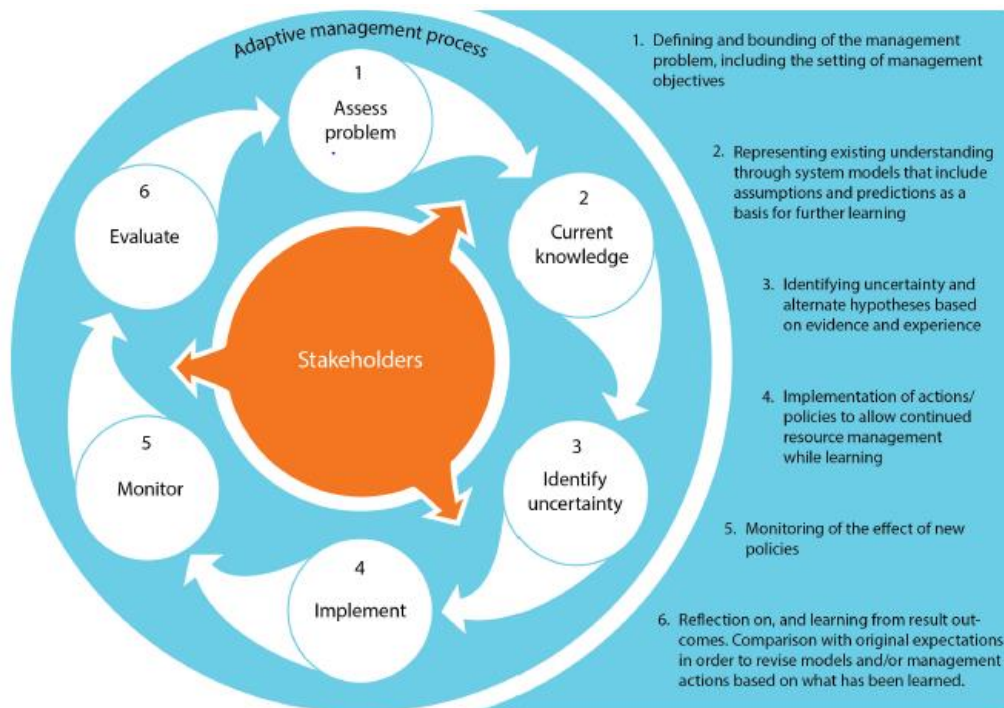


Figure 2. The adaptive management process

Source: Rist et al., 2013

Finally, an enabling environment is very important for an integrated intervention to take place effectively and forms the last part of our framework. An enabling environment here means an environment in which institutions are strong and where plenty of knowledge and ability to enforce agreements exist (Sayer et al., 2008). Moreover, it refers to an environment in which there are appropriate supportive policies, institutions, and governance, appropriate and available financing, and the capacity to measure and evaluate if objectives have been reached (Minang et al., 2015). Contributing to an enabling environment can be part of an intervention, for instance, when integrating international or national policy. To create an enabling environment then becomes one of the outcomes of the intervention.

3.3 Four core integrated approaches

In the following section, four core types of integrated approaches are described, their guiding principles presented, and some tools or models that support their implementation given as a snapshot. As these approaches are complex frameworks that cannot be simply presented, readers are referred to the documents that our description relies on for a more comprehensive understanding. In the conclusion of this section a short comparison of these four approaches is presented in the context of how integrated approaches relate to the process of intervention planning and design.

Ecosystem approach

According to the CBD's web-based sourcebook⁵, an ecosystem approach is 'a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way'. An ecosystem approach aims to achieve the three objectives of the Convention: conservation, sustainable use, and the fair and equitable sharing of the benefits that arise from the utilization of genetic resources. This approach is 'based on the application of appropriate scientific methodologies on levels of biological organization, which encompass the essential structure, processes, functions and interactions among organisms and their environment'. The approach recognizes that humans with their cultural diversity are an integral component of many ecosystems (CBD, 2004). The term 'ecosystem' means 'a dynamic complex of plant, animal and microorganism communities and their non-living environment interacting as a functional unit' (CBD, 2004).

There are 12 complementary and interlinked principles that guide the implementation of the ecosystem approach. Paraphrased here for brevity, these are (CBD, 2004).

1. The objectives of management of land, water, and living resources are a matter of societal choice. Both cultural and biological diversity are central components of the ecosystem approach.
2. Management should be decentralized to the lowest appropriate level. Management should involve all stakeholders and balance local interests with the wider public interest.
3. Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems. When necessary, new arrangements of organization for institutions involved in decision-making may be required.
4. Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem-management programme should (a) reduce market distortions that adversely affect biological diversity; (b) align incentives to promote biodiversity conservation and sustainable use; (c) internalize costs and benefits in the given ecosystem to the extent feasible.
5. The conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.
6. Ecosystems must be managed within the limits of their functioning.
7. The ecosystem approach should be undertaken at the spatial and temporal scale(s) appropriate to the objectives.
8. Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term.
9. Management must recognize that change is inevitable. Ecosystems' inherent dynamics of change (in terms of species composition and population abundance), in combination with a complex of uncertainties caused by human action, indicate that management should adapt to changes.

⁵ <https://www.cbd.int/ecosystem/>

10. The ecosystem approach should seek the appropriate balance between, and integration of, the conservation and use of biological diversity.
11. The ecosystem approach should consider all forms of relevant information, including scientific, indigenous and local knowledge, innovations and practices. Information from all sources is critical to arriving at effective ecosystem management strategies.
12. The ecosystem approach should involve all relevant sectors of society and scientific disciplines at the local, national, regional and international level, as appropriate.

In applying these 12 principles, five points are proposed for operational guidance (CBD, 2004):

1. Focus on the functional relationships and processes within ecosystems: It is important to understand (a) ecosystem resilience and the effects of biodiversity loss (species and genetic levels) and habitat fragmentation; (b) the underlying causes of biodiversity loss; and (c) the determinants of local biological diversity in management decisions.
2. Enhance benefit-sharing: Benefits that flow from the array of functions provided by biological diversity at the ecosystem level provide the basis of human environmental security and sustainability. The ecosystem approach seeks that the benefits derived from these functions are maintained or restored. This requires capacity building, the proper valuation of ecosystem goods and services, the removal of perverse incentives that devalue ecosystem goods and services, and consistency with the provisions of the CDB.
3. Use adaptive management practices: Ecosystem processes and functions are complex and variable. This requires management to be a learning process that helps to adapt methodologies and practices to the ways in which these systems are being managed and monitored. Ecosystem management needs to recognize the diversity of social and cultural factors affecting natural-resource use.
4. Carry out management actions at the scale appropriate for the issue being addressed, with decentralization to the lowest level, as appropriate: The understanding of the scale at which these issues are linked to functional ecosystems should define the appropriate level for management decisions and actions.
5. Ensure inter-sectoral cooperation: The ecosystem approach should be fully taken into account in developing and reviewing national biodiversity strategies and action plans. There is also a need to integrate the ecosystem approach into agriculture, fisheries, forestry and other production systems that have an effect on biodiversity. The management of natural resources according to the ecosystem approach calls for increased inter-sectoral communication and cooperation at a range of levels (by government ministries, management agencies, etc.).

The web-based ecosystem approach sourcebook⁶ published on the CBD's website provides a broad range of tools and approaches. These tools are categorized into: public participation (which is divided into six themes: workshop-based methods, community-based methods, methods for stakeholder consultation, local community approaches, social analysis and conflict management methods); education and awareness (which

⁶ <https://www.cbd.int/ecosystem/sourcebook/tools/>

consists of tools for communication, education, networks, and moral confrontation); governance law and policy (which consists of governance tools, legislation and treaties, assessment techniques, litigation and enforcement, and policy development, planning and reform); management and incentives (which consists of business management tools, environmental accounting, adaptive management, practical management techniques, practical skills, conservation enterprises/diversification, market pressure and incentives); data monitoring and modelling (which consists of data collection, monitoring methods, modelling, and hindcasting); protected areas and land use policy (which consists of protected/managed areas, land use policy, managed/protected species, restoration, and ex-situ protection); cross-sectoral research and working (which lists several ways in which cross-sectoral working can be used in interventions); and indicators (which lists several tools such as the logical framework approach and SMART indicators).

Landscape approach

Landscape approaches originate from ecosystem-based, natural resource and biodiversity conservation initiatives. As the name indicates, the use of land is a central point of departure for development strategies, which centre on sustainably combining agriculture, forestry, and other competing uses of natural resources (Minang et al., 2015). The central role of humans in ecological systems, so called 'social-ecological systems', is acknowledged by the term ecosystem services, which gives food production a similar importance to soil health, combating land degradation, and the sustainable use of aquifers. Climate change adaptation and mitigation plays a central role in its 'holistic' development planning. In the context of food and nutrition security, this means that its approach to development is to deal with the increased pressure of future global population growth on biodiversity through its emphasis on the multifunctional nature of ecosystems on a landscape scale while making ecosystem services available to their current occupants (Sayer et al., 2013). Landscape approaches have no fixed scale on which they operate; rather a scale is chosen according to the specific context and social-ecological system. Consequently, there is no consensus on how a landscape approach works in practice. However, according to Freeman et al. (2015), five principles can be distinguished that characterize landscape approaches.

1. **Multifunctionality:** which refers to achieving multiple objectives at the same time, in this case both social and ecological. To achieve this it is necessary to choose realistic objectives, rather than assume win-win situations. This means recognizing trade-offs and making a choice between primary and secondary objectives.
2. **Transdisciplinarity:** which seeks to achieve synergies by combining disciplines. In research it means asking questions that cross disciplines, for project implementation and refers to addressing cross-sectoral objectives, using multi-stakeholder processes.
3. **Participation:** which is about including stakeholders that are affected by an initiative as well as those that have an interest in its outcomes. Effective participation processes need enabling factors such as a neutral facilitator trusted by all stakeholders or boundary institutions. Buy-in by major stakeholders is required, however, they should not be able to impose their views over those of marginalized stakeholders. Common concern is a good entry point for generating such interest and buy-in.

4. Complexity: which denotes the challenge of dealing with a system that is seen as an emergent whole, rather than the sum of its parts. Each change to part of the landscape system composed of its social and ecological aspects influences other parts of the system.
5. Sustainability: which is divided into two main operationalized perspectives, one that views sustainability as the persistence of the change of an initiative, while the other includes the ability to adapt to future change for stronger project outcomes.

Operational guidance and tools such as action research, social learning, adaptive management, consultation, engagement, devolution, and future scenarios development are further described by Freeman et al. (2015) to guide this process. Additionally, Minang et al. (2015) propose what they describe as 'landscape democracy', an inclusive governance system based on the landscape scale and the system improvement methodology to guide stakeholder inclusion and process-based management. Sayer et al. (2013), whose influential paper describing the ten principles of the landscape approach were among those analysed and categorized by Freeman et al. (2015), also list multiple tools for dealing with these abovementioned challenges, namely: adaptive management, multidisciplinary landscape assessment, proactive conciliation, participatory GIS, multiple resource assessment and management, social network mapping, theories of change, games, participatory modelling and resilience assessment.

Territorial approach

Territorial approaches originate from rural development initiatives, which is why they strongly emphasize poverty, inequality, food security and nutrition (Cleary, 2003; Janvry & Sadoulet, 2007). The starting assumption is that all regions have development potential, contrasting with the assumption that urban areas should be the priority as engines of economic growth. Territorial approaches reason that, as poverty and hunger are most often concentrated among the same population groups in the same geographical areas, territory-specific development policies are called for (Cistulli et al., 2014). Additionally, many of the rural-based poor structure their livelihoods around natural resource based production, like farming, fishing or logging. So, in order to capitalize on an area's strengths, factor in its weaknesses, and ensure that policies are sustainable and owned by the local community, negotiation, consensus-building and conflict resolution take a prominent place in this approach. Inclusive decision-making processes based on local formal and informal organizations and networks allow policies to be made on the basis of local (community) preferences and knowledge, which in many cases allows locally-based products and services to drive development and can allow other policies, such as social protection initiatives, to be more effectively designed based on the local situation. According to Cistulli (2015), this process allows rural spaces to become competitive and dynamic, rather than passive and on the receiving end of supply-driven policies.

At its second international expert meeting on the territorial approach in December 2013, a FAO working group formulated the following six principles of territorial approaches:

1. Flexibility and adaptability
2. Development at the grass-root level
3. Being practical

4. Being dynamic
5. Considering the social and economic construct of territories
6. Basing decisions on local knowledge.

Two main types of tools were identified as necessary for implementation: analytical tools for evidence-based decision making, which focus on identifying the comparative advantages and potential of a territory, and consultation and/or negotiation processes, which are based on the principles of credibility, legitimacy and salience (being relevant to the people) (FAO, 2013c).

The following '4I-model' was proposed by the FAO working group (2013c), focusing on four interrelated dimensions of the territorial approach:

1. Information generation and collection for territorial approaches, referring to tools and approaches that can help describe and analyse dimensions and assets of rural areas for their development policies and strategies
2. Innovation both social and technological, referring to 'hard' innovation such as infrastructure, and 'soft' innovation in terms of knowledge transfer, which can lead to new governance mechanisms, policy changes, and new strategies through learning and social innovation processes
3. Institutional development and territorial governance, referring to multi-level governance systems that are conducive to territorial policies, bridging local socioeconomic dynamics with national policies and institutional structures
4. Inclusiveness or disclosure of markets and decision-making process of concerned stakeholders, referring to the integration of lagging rural areas with leading urban areas, connecting people and places, providing rural services, creating rural employment and enhancing opportunities for all

The analytical tools used to identify the comparative advantages and potential of a territory, as well as those used for consultations and negotiation processes, vary according to the territory concerned and intended strategy. 'Territorial analysis' can, for instance, include researching livelihood strategies, political linkages, social stratification, population dynamics and soil coverage (Cleary, 2003). Some guidance and handbooks have been developed specifically for a territorial approach and mainly focus on combining analysis with participatory negotiation processes, for example, from a rights-based perspective (Sarmiento et al., 2008), on integrating gender (Sisto & Groppo, 2012), and dialogue-centred (Hatcher, 2009; Lundy et al., 2005).

Value chain approach

Value chain approaches in the context of food and nutrition security focus on connecting food producers to food consumers. It involves the integration of activities and areas of work vertically, between different levels at which organizations and actors collaborate to varying degrees (Kolavalli et al., 2015). The concept originates from supply chain thinking, used to describe the various 'links' from the raw input of a product until the end product that reaches the consumer. Value chains were originally conceived as the reverse process, starting from value created by demand. In addition, 'value' refers to the value that is added at each step in the process, like processing foods to comply with standards for export on the international market (Hawkes & Ruel, 2011). A value chain typically consists of producers, processors, distributors and consumers. Value chain approaches working for food and nutrition security reason that

increased food and nutrition security comes from increased income, especially at the farmer and local market level, as well as increased production, so focus on the availability and access aspects of food security (Microlinks, 2015).

FAO outlines ten principles for sustainable food value chain development, which are divided into three phases: measuring performance (1, 2, 3), understanding performance (4, 5, 6), and improving performance (7, 8, 9, 10). According to these principles, inclusive value chains should be (FAO, 2014):

1. Economically sustainable, meaning that they should provide greater profits and incomes, more jobs, increased tax revenue and increased food supply
2. Socially sustainable, meaning that they should generate additional value that benefits large numbers of poor households through wages/income, that is equitably distributed along the chain and has no socially unacceptable impacts (i.e. child labour, unhealthy work conditions, etc.)
3. Environmentally sustainable, meaning that they create additional value without permanently depleting natural resources
4. Dynamic systems based, meaning that their analysis starts from the principle that every actor and activity in the chain is either directly or indirectly linked; moreover a holistic understanding of the value chain should be developed in relation to other systems, such as the market, political system, the natural environment and farming system
5. Governance-centred, meaning that analysis and strategy development must take into account the fact that the behavioural change of economic actors in the value chain is accomplished through institutions that provide the right incentives, presenting the appropriate outcomes as win-win for both small and large actors in the chain
6. End-market driven, meaning that value chain development strategies should start by identifying and quantifying the opportunities in the envisioned end-market
7. Vision/strategy driven, meaning that they should be built around a vision that is realistic, quantified as much as possible, and acceptable to stakeholders; the vision should encompass economic, social and environmental objectives, align with national development plans, while the strategy built on this vision should be targeted at the right stakeholders and a set of upgrading activities through which large impact can be achieved in terms of growth, poverty reduction and greenness
8. Upgrading focused, meaning that they should increase either profitability, social impact, or reduce the environmental impact of the value chain, or combine these aspects, for instance, by improving technology such as seeds, organization through, for instance, bulk purchasing, and institutions through improved seed laws, etc.
9. Scalable, meaning that they should aim to achieve transformational change that is replicable and based on realistic assumptions, which implies that they should aim to increase the profitability of the majority of actors in the chain
10. Multilateral, meaning that they encompass the coordinated and collaborative efforts of the private sector as the driver of the process and the public sector, donors, and civil society as its facilitators

Thirteen tools to guide the process of designing a value chain intervention are outlined by Webber and Labaste (2010), who discuss strategies from prioritizing value chains using comparative analysis to monitoring achievements in value chain performance. A selection of guides and handbooks is also presented on USAID's Microlinks website, which also lists hundreds of tools for end-market analysis, participatory value chain design, the portfolio approach for risk management, and so forth.⁷ Being focused on markets, profit and scalability, the value chain approach shares many tools with the business sector, in some cases adapted for development purposes. Porter's Five Forces, for example, is a tool to guide value chain selection that analyses five interactive factors that are critical for an industry to remain competitive; these are: the threat of substitutes, the bargaining power of suppliers, the threat of new entrants, and the bargaining power of buyers, which all interact with the fifth factor, rivalry among existing competitors.⁸

Comparing the four approaches

As the resources for the tools and methodologies used for the analysis, design, implementation, monitoring and evaluation processes of these approaches are in the hundreds, discussing them in detail here is outside the scope of this investigation. However, what should be noted is that many tools are actually shared, meaning that they can be used for the purposes of several or all of these approaches. Adaptive management, for instance, is mentioned in the ecosystem, landscape and territorial approaches, as it is widely recognized as useful in dealing with complex problems. While social learning, consultation and engagement, which are mentioned in the landscape approach, are all participatory tools that have similar methodologies as territorial analysis in the territorial approach.

To provide some insight into what differentiates these approaches it is necessary to understand how they relate to the intervention planning process. Here, the problem to be addressed (in this case food and nutrition security) always comes first. Next, a project is bound to a context, which delimits the available options and defines the dimensions of the problem. Third comes the selection of tools and methodologies to analyse and address the problem in its specific context. This includes (but is not limited to) various tools for analysing a context (e.g. quantitative market-analysis or participative stakeholder meetings); tools to give guidance to education (e.g. when introducing new technologies or to inform target groups about nutrition); or tools to structure governance processes (e.g. for local resource management or food cooperatives). An integrated approach is an overarching framework that can guide its user in the choice of these tools and methodologies, but does not dictate how an intervention is implemented or prescribe what tools are chosen.

However, which integrated approach is chosen in an intervention can shed light on what trade-offs are likely to be made, based on their underlying rationales. The ecosystem and landscape approaches, for instance, were both designed to bridge the gap between development and conservation objectives, but have a different perspective on the importance of rural areas than a territorial approach, which aims to decrease the inequalities between such territories and urban areas. In this way choosing a specific

⁷ <https://www.microlinks.org/good-practice-center/value-chain-wiki/overview-value-chain-resources>

⁸ <https://www.microlinks.org/good-practice-center/value-chain-wiki/porters-five-forces>

type of integrated approach usually aligns with defining a strategy based on an organization's priorities and core motivations. If scalability and profitability are deemed a priority, as in a market-based approach, choosing to focus on value chains is an obvious choice. Yet the division between 'critical environmental dependencies that threaten the survival of the value chain' and 'environmental impacts that do not pose an immediate threat to the survival of the chain but that should ideally be addressed gradually over time', under FAO's environmental sustainability guidelines for value chains, is unlikely to satisfy those who hope to pair conservation with development (FAO, 2014). If the conservation of biodiversity is prioritized, the logical choices are either a landscape or ecosystem approach, which both aim to bridge this gap. Differences between these two are less obvious, but apparent in their name. Landscapes are clearly social constructs, while ecosystems are defined through ecological investigation (Naveh, 2012). Although both approaches focus on the provision of ecosystem services, an anthropogenic view of natural resources and delimiting boundaries of an intervention in ecological or social terms will make a difference in implementation and effect. Likewise, for projects adopting a territorial approach, the balance in priorities is likely to tilt towards alleviating hunger, poverty and inequality through economic development.

4. How does integration work in practice?

This section presents the findings of the online survey, in which we investigated how interventions that adopt integrated approaches are implemented. For this purpose, we defined an integrated approach as 'one in which efforts are coordinated across different areas of work and interests [and] the rationale for integrating these efforts is that their combination will increase their effectiveness and thereby the sustainability of the impact'. Effectiveness then refers to 'the extent to which the development intervention's objectives were achieved, or are expected to be achieved, taking into account their relative importance', while sustainability refers to the 'continuation of benefits from a development intervention after major development assistance has been completed', as well as the 'probability of continued long-term benefits' and the 'resilience to risk of the net benefit flows over time' (OECD 2002). It should be noted that the survey targeted integrated interventions for food and nutrition security and, therefore, our survey responses come from a targeted group of communities. This implies that our findings do not necessarily speak for all integrated interventions. For more information on the survey design and questionnaire see Appendixes I and II.

4.1 The nature of integrated interventions

To get a better understanding of what type of organizations most commonly adopt an integrated approach, we asked respondents about their affiliation. The results are shown in Figure 3. The first impression is of a seemingly even distribution between academic institutes (22%), government bodies (21%), and private companies (22%), with only NGOs being slightly more (34%) involved in integrated interventions. However, a closer look at the services delivered by private companies reveals that only 2 out of 20 private companies are social entrepreneurs engaged in business. The rest are private consulting companies that provide advisory services. This reduces the percentage of private companies involvement from 22% to 1%.

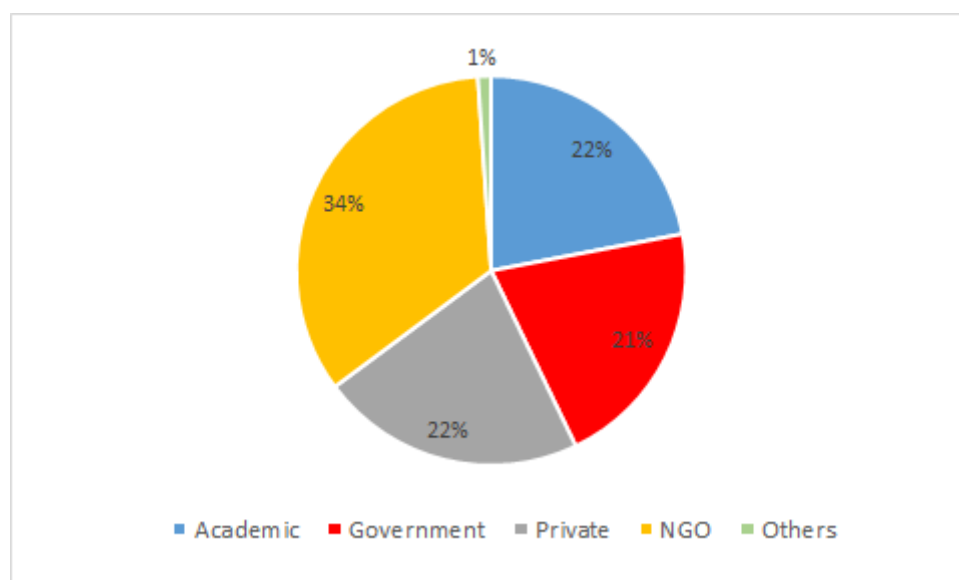


Figure 3. Survey results: respondents' affiliation

Most of the integrated projects in which our respondents are involved take longer than two years to implement. This is shown in Figure 4, which shows the reported duration of interventions (one per respondent). About a quarter of interventions last 2–3 years, followed by interventions lasting 3–5 years. Combining these figures, we see that 65% of interventions run for 2–5 years. The remaining 35% are split between less than 2 years and longer than 5 years. As integrated interventions tend to address complex issues, it seems logical that they require a longer period to operate. However, a longer period also involves higher costs, which requires more funding.

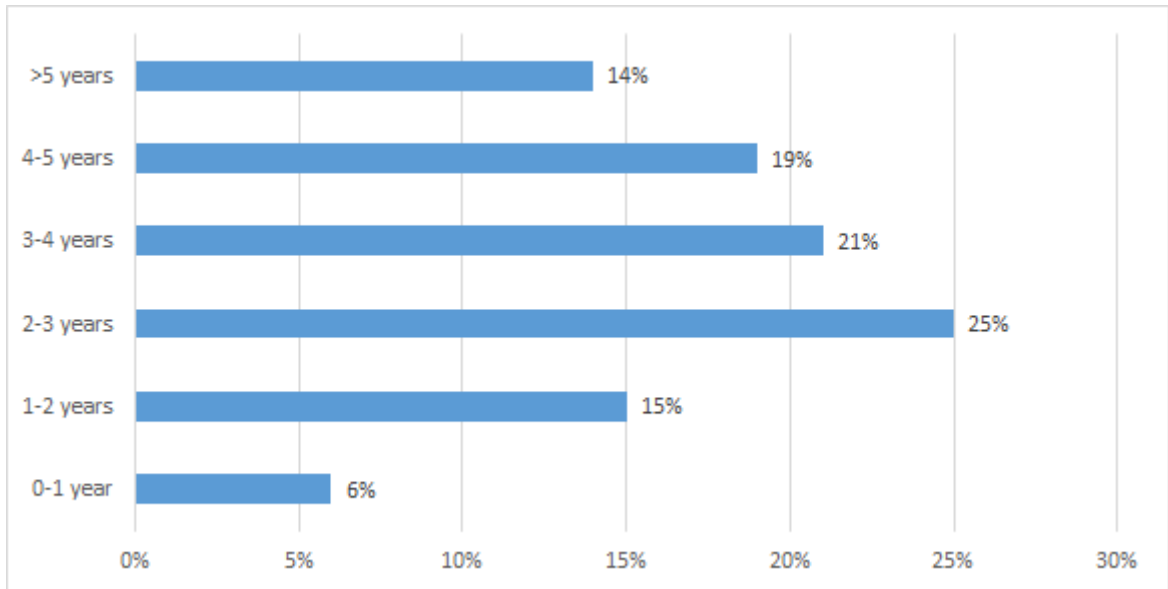


Figure 4. Survey results: duration of interventions

We also asked respondents about the outputs of their projects, which we grouped into 7 different categories. Figure 5 shows the outputs of integrated interventions. We see that 66% of the interventions provide training to local communities or partners. These trainings are on a wide range of skills, including agricultural production and marketing, as well as awareness raising on topics such as sustainability and women’s empowerment. As the evaluation and impact assessment of interventions is acknowledged as necessary to attain maximum impacts and an important tool for achieving sustainability, we see that 49% of interventions have included assessment tools in their deliverable outputs.

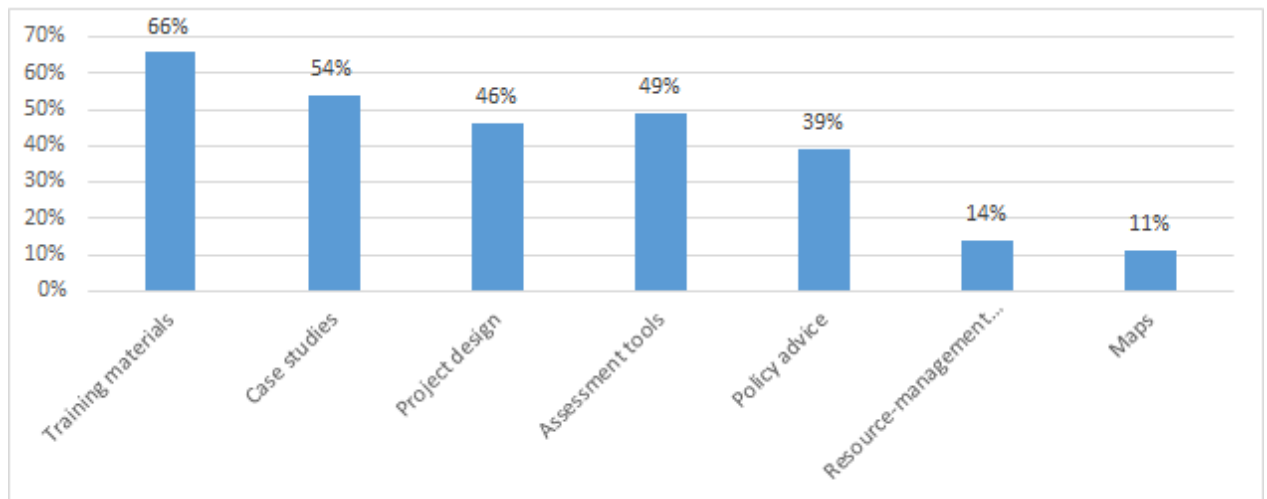


Figure 5. Intervention output

4.2 What do the interventions integrate?

In order to assess why interventions are being referred to as ‘integrated’, we asked respondents to specify why their interventions can be considered integrated in terms of the four elements (organization, area of work, discipline and level). As answers to this question were multiple choice, our analysis is three-fold. First, we look at each component separately, namely, we present the percentages of each component nominated by survey respondents (see Figure 6). Second, we look at different combinations of the components, either by integrating three elements (see Figure 7) or two elements (see Figure 8).

Figure 6 shows the percentage of each integration component selected by survey respondents. We see that about 75% of the interventions are collaborations between organizations (stakeholders) and 65% are collaborations between areas of work (sectors). Collaboration between disciplines accounts for 67% and collaboration across levels for 77%. Figure 6 also shows the percentages of different types of organizations that are involved under each integration component. Academic bodies are mostly involved in interventions across disciplines and levels while NGOs are mostly involved in interventions spanning different organizations (stakeholders) and areas of work (sectors).

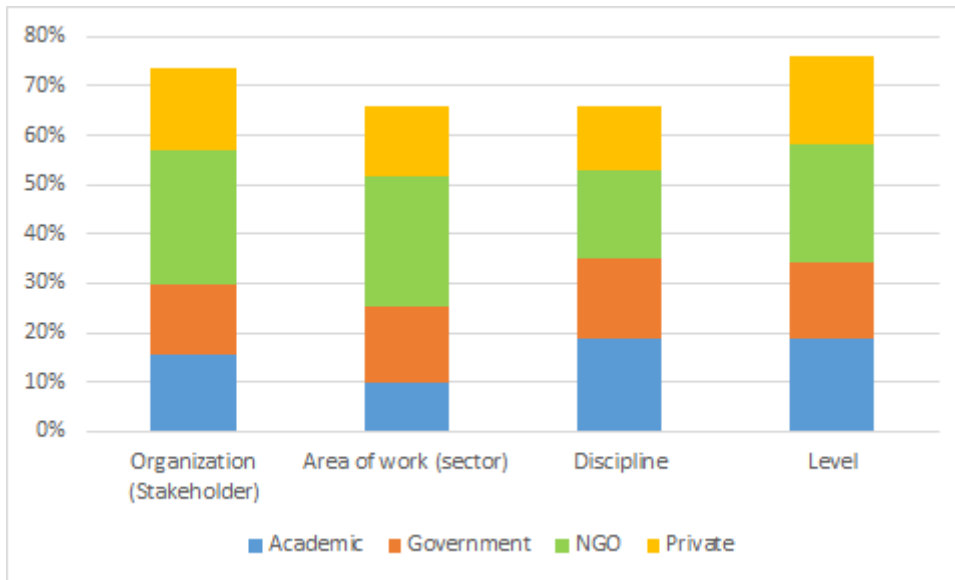


Figure 6. Integration components of projects (%)

Figure 7 presents the findings of projects that combine three components of integration (24 projects). Of the projects that combine three elements, the combination of organization (stakeholder), discipline, and level accounts for the highest percentage (33%, 8 projects), which is followed by the combination of area of work (sector), discipline and level (29%, 7 projects). The combination of organization, area of work, and level has the lowest percentage (17%, 4 projects), implying that not many projects are aimed at simultaneously integrating stakeholders and areas of work across different administrative levels.

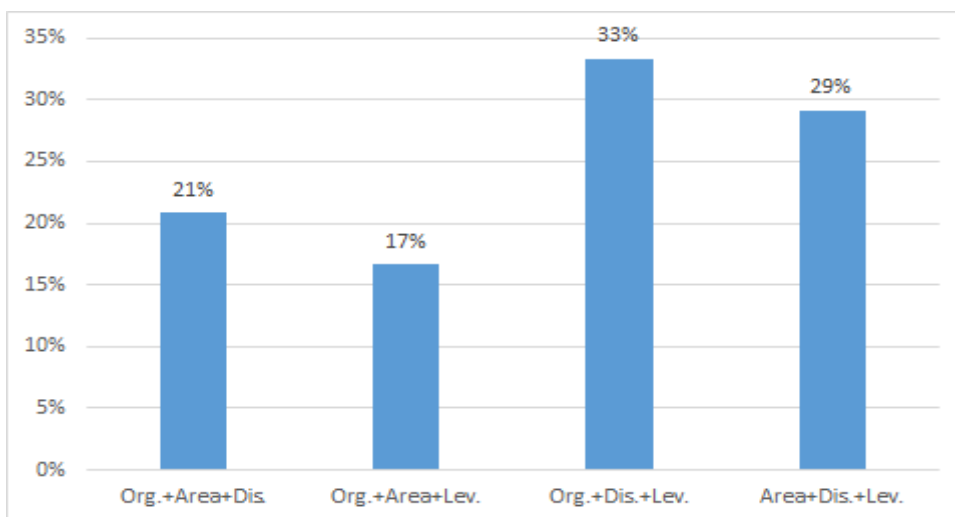


Figure 7. Projects with 3 components of integration

Figure 8 presents the findings for projects combining two components of integration (28 projects). Of the projects that combine two components, the combination of organization and level has the highest percentage (32%, 9 projects), followed by the combination of organization and area of work (25%, 7 projects). The combination of organization and discipline has the lowest percentage (11%, 3 projects).

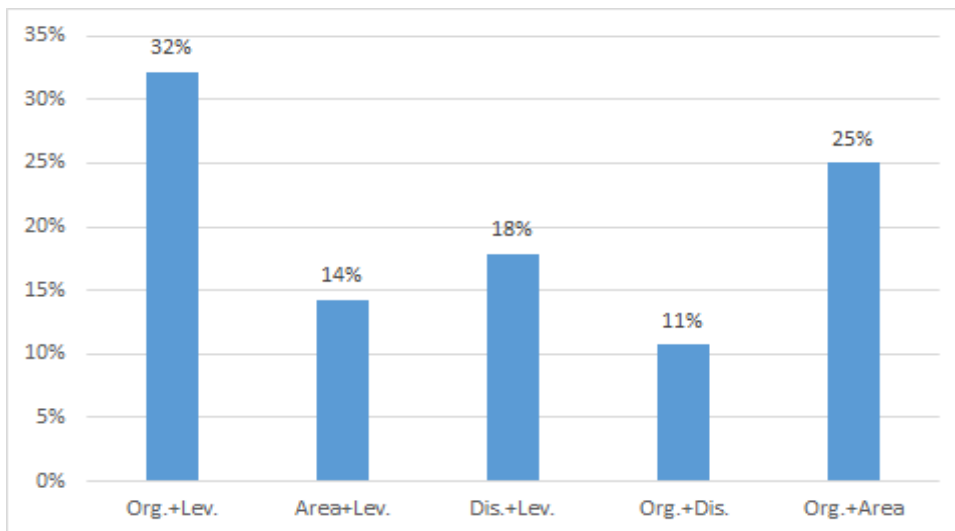


Figure 8. Projects with 2 components of integration

4.3 Priority areas

The survey also attempted to identify the policy areas that integrated interventions prioritize. The priority areas are grouped into four categories: primary sectors, environmental dimension, economic dimension, and cross-cutting areas. Figures 9–16 present the findings in this regard.

Figure 9 shows the findings on priority primary sectors (agriculture, fisheries, forestry, pastoralism, seed systems and food availability). Most interventions consider agriculture and food availability a high priority, followed by seed systems. Only a relatively small amount of interventions list fisheries, pastoralism and forestry as high priority.

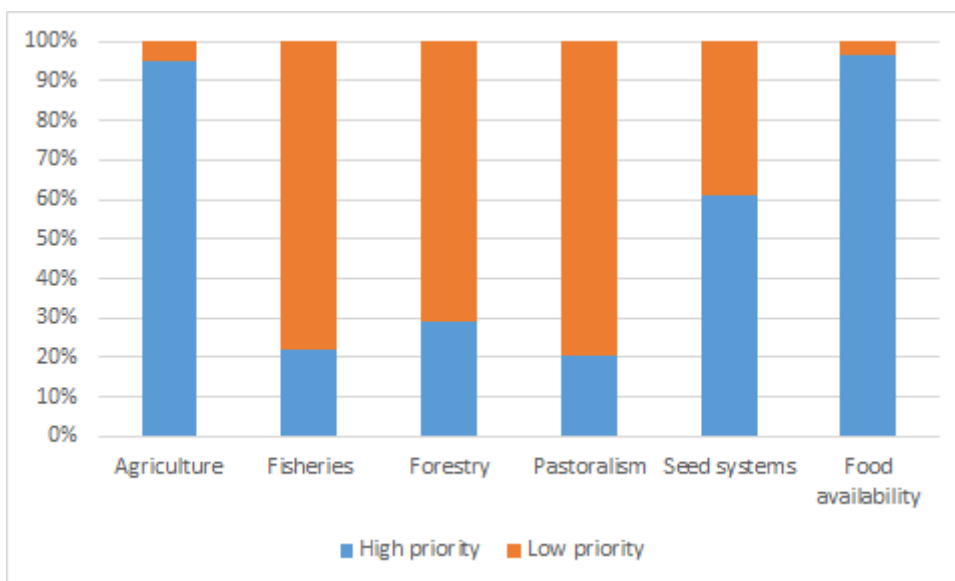


Figure 9. Priority areas among primary sectors

Figure 10 provides an overview of the primacy sector priority areas disaggregated by the core integrated approaches (ecosystem approach, landscape approach, and territorial approach) based on our survey results. There are 12 projects that adopt the ecosystem approach, 9 that adopt the landscape approach, and 7 that adopt the territorial approach. We have chosen only to focus on these core approaches, as we did not provide definitions of all of the approaches listed in the survey questionnaire. We will reflect on this again in Section 7 of this report. The value chain approach is excluded from this analysis as it was not originally listed in the survey questionnaire⁹. The percentages in Figure 10 are the percentage of projects that consider these areas highly important.

We see that for all 28 projects that adopt the three approaches showed in Figure 10, agriculture and food availability are highly important. This is logical given that our survey canvased projects targeting food and nutrition security. It should be noted that the objectives of each project determine the approach to be adopted and not the other way around. Nonetheless, Figure 10 could be looked at from another angle – it presents the differences between each approach in terms of priority areas. For example, when forestry is considered a highly important objective by a project, it is very likely that an ecosystem approach will be chosen. In other words, an ecosystem approach tends to solve problems when forestry plays an important role. However, we are fully aware that these findings are based on a small sample of projects and should not be seen as a general conclusion regarding ecosystem approaches.

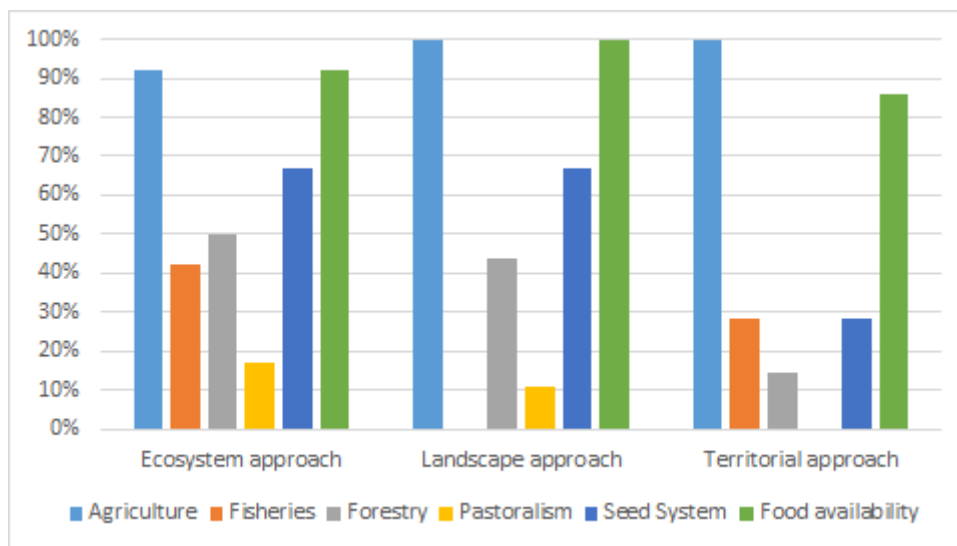


Figure 10. Priority primary sectors by type of approach

Figure 11 shows the priority areas with respect to the environmental dimension. We see that water management, natural resources management, and climate change adaptation and mitigation are considered highly important, followed by soil health, ecosystem

⁹ At the beginning of this study, we decided not to investigate the value chain approach as it has been frequently adopted and studied in a broad array of development and research projects. However, we have come to realize that the value chain approach is important and should be considered as one of the four core approaches to integration. A detailed description of this approach is, therefore, provided in Section 3.4.

management and biodiversity. Disaster risk management and energy are considered less important than other priority areas.

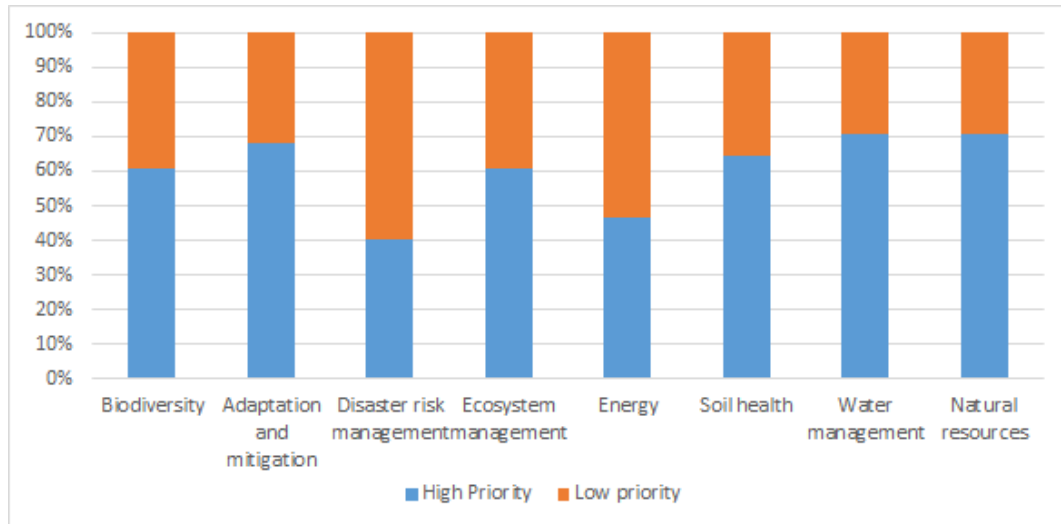


Figure 11. Priority environmental areas

Figure 12 again disaggregates these findings by the core integrated approaches based on our survey results (i.e. Figure 12 is based on 28 projects that adopt the approaches shown in the figure). We see that projects that consider biodiversity very important tend to adopt the territorial approach, while projects that consider climate change adaptation and mitigation and ecosystems very important tend to adopt ecosystem or landscape approaches. Moreover, ecosystem and landscape approaches are chosen to solve problems when water management is considered important. When soil health is an objective of a project, a landscape approach is generally chosen to solve the problem. However, again, these findings are based on a small sample of projects from our survey responses and should not be seen as general conclusions.

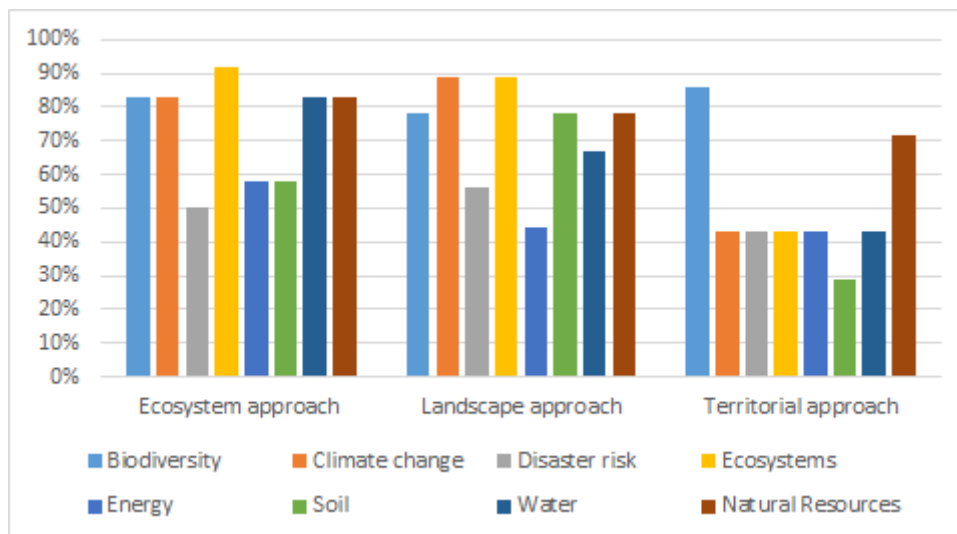


Figure 12. Environmental priorities by type of approach

Figure 13 shows the priority areas in the economic dimension. In this dimension, income, employment and secure livelihoods are considered highly important by many interventions, followed by food access, market access and value chain development. Although relatively few interventions consider financial inclusion and infrastructure development highly important, the percentages are larger than 50%, indicating the importance of these two areas. All in all, projects can be considered very much integrated in the economic dimension.

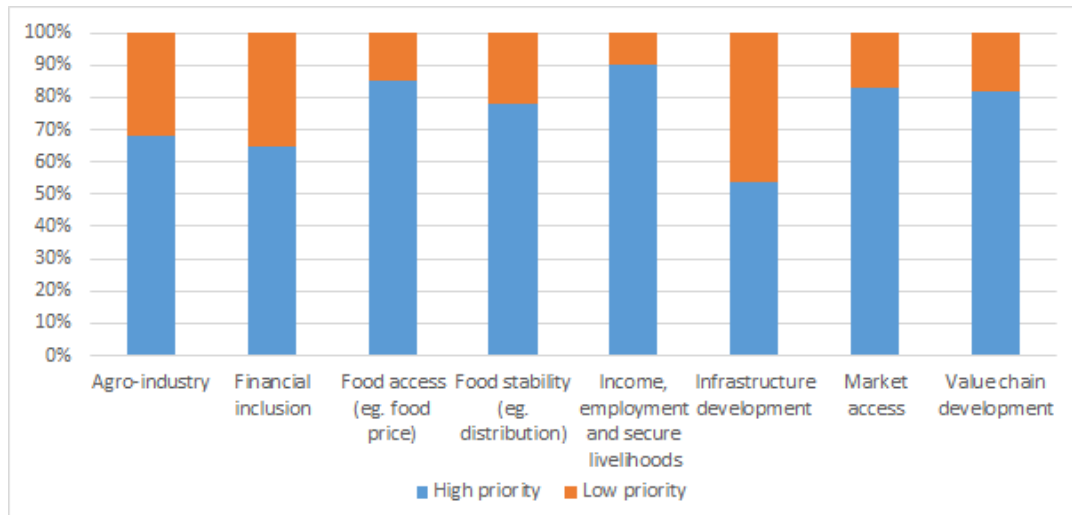


Figure 13. Priority economic areas

Figure 14 shows what different core approaches consider highly important in terms of economic priorities (that is to say, Figure 14 is based on 28 projects that adopt the approaches shown in the figure). We see that when a project considers food access, income, and market access highly important, a landscape approach is very likely adopted. Projects that consider financial inclusion and infrastructure to be highly important are also likely to adopt a landscape approach. However, we are fully aware that these findings are based on a small sample of projects from our survey responses and should not be seen as a general conclusion.

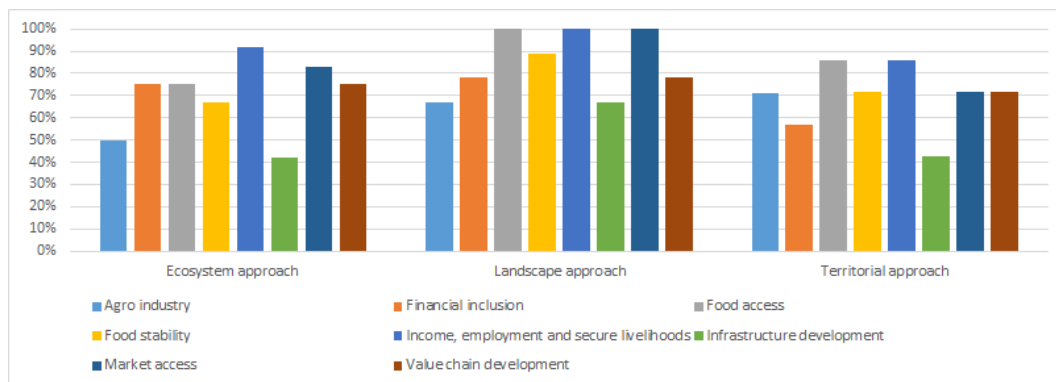


Figure 14. Economic priorities by type of approach

Figure 15 shows the priority cross-cutting areas. We see that food quality and education and training are considered highly important, followed by gender issues, food safety and governance. Conflict resolution, social protection, and reproductive, child and maternal health are considered less important than other cross-cutting areas.

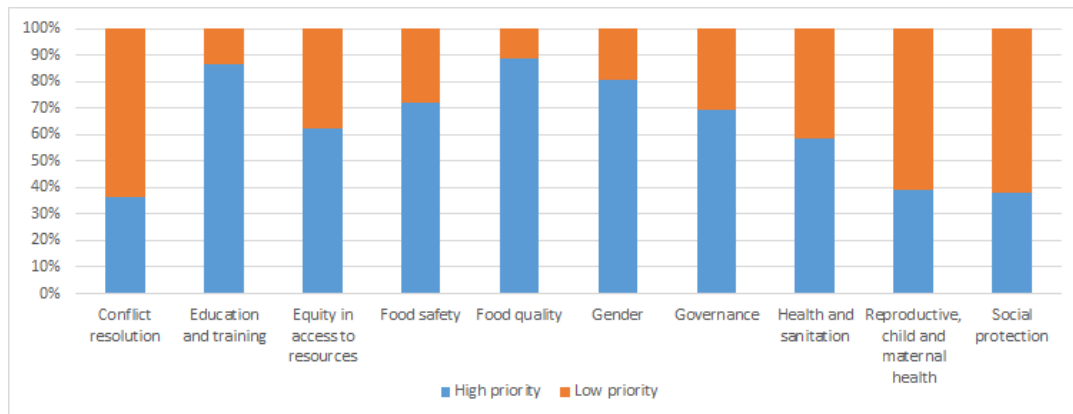


Figure 15. Priority cross-cutting areas

Figure 16 disaggregates these findings again by the core approaches (i.e. Figure 16 is based on 28 projects that adopt the approaches shown in the figure). When projects consider food quality highly important, the landscape approach is likely to be chosen. Moreover, a landscape approach is also favoured by projects that consider education and training, food safety, and governance highly important. We see that projects that adopt an ecosystem approach have more balance between the different priority areas than projects that adopt landscape and territorial approaches. However, again, these findings are based on a small sample of projects from our survey responses and should not be seen as general conclusions.

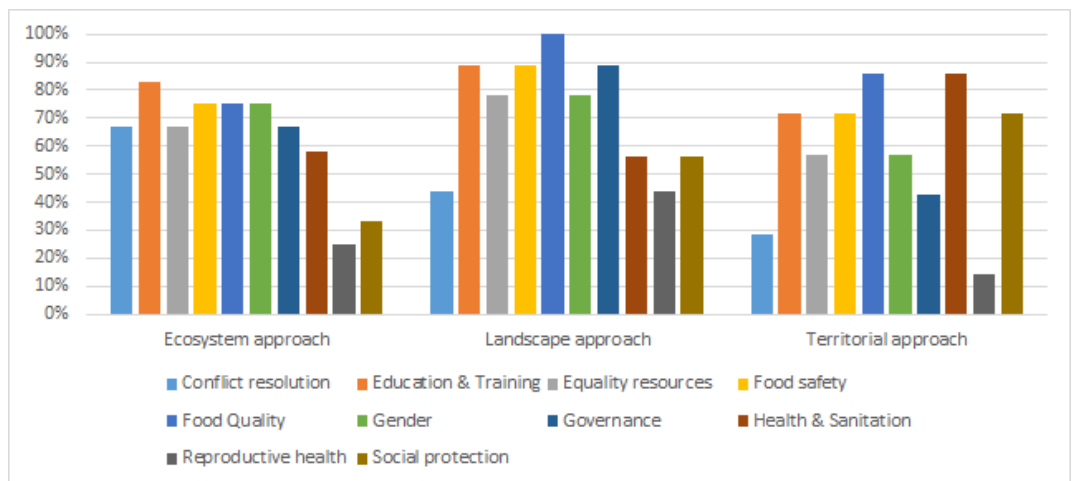


Figure 16. Priority cross-cutting areas by type of approach

Figure 17 shows the geographical focus of integrated interventions. We see that about 60% of the interventions reported by our respondents focus on African countries, followed by a dual focus on both African and Asian countries. Interventions focusing on European countries are all on Eastern European countries. There are more NGOs

involved in interventions focusing on African countries, while there are more government bodies involved in interventions focusing on Asian countries.

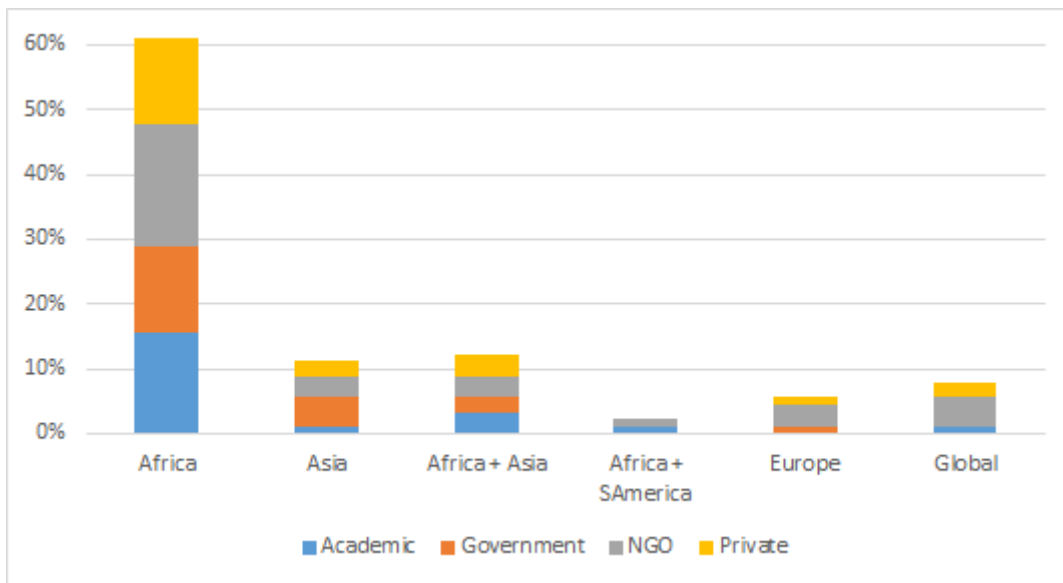


Figure 17. Geographical focus areas by organization type

5. Lessons learnt from applying integrated approaches

This section will discuss the lessons learnt, as reported by our respondents through survey questions 11a, b and c. In addition, five interviews were conducted to contextualize the answers from our survey sample, three of which are described in Section 5.2. Section 5.3 discusses how bottlenecks and disadvantages are experienced by intervention managers and participants.

5.1 Reasons for adopting an integrated approach

The advantages of adopting integrated approaches are investigated by survey question 11b. Responses to this question can be summarized by saying that: (1) issues such as food and nutrition security are best tackled effectively by integrated approaches because (2) the synergy brought about by such integration enables (3) greater impact and sustainability. Responses centred on two aspects of integration and stated that aligning multiple objectives within the dimensions of food and nutrition security produces benefits, while on the other hand emphasizing that bringing together knowledge, expertise and resources adds great value.

Thus, it was commonly acknowledged among respondents that food and nutrition insecurity is a complex problem and that integration through a variety of approaches provides an effective response to addressing such complexity. As one respondent engaged in planting trees to restore degraded agroecosystems, mitigate climate change and produce nutritious fruit, nuts, leaves and wood noted:

Integrated programmes are the only way to effectively address the interacting set of complex economic, social and environmental problems behind food insecurity, hunger, poverty, malnutrition, land degradation, loss of biodiversity and climate change.

The synergy brought about by integration is thus assumed to more than just the simple sum of its parts. Interaction between organizations (stakeholders), working areas (sectors), disciplines and levels (scales) allows different stakeholders to share knowledge and information, combine expertise and competences, and generate innovative approaches. Within such a setting, if sufficiently funded and well designed, planned and managed, interventions that adopt integrated approaches can generate a high level of impact that is balanced between social, economic and environmental dimensions and that will eventually lead to sustainability. Yet what our sample shows in section 5.3 is that many difficulties are still experienced on the way to this ideal.

Box1: Effective change through integration: two examples from the literature study

Example 1. GTZ Integrated Food Security Programme, Malawi 1997–2004

The Integrated Food Security Programme (IFSP) in Malawi was a multi-sector intervention in one of Malawi's most vulnerable regions. The intervention was spread over 185 villages, covering about 40,000 households. It focused on improving three aspects of food security: availability, accessibility and utilization. Interventions were planned over multiple sectors, which included health services, clean water delivery, family planning, income generation, and enhanced food preparation. The project design was based on the 1996 three-pronged definition of food security as developed by the World Food Summit of that year, as well as Malawi's multi-sectoral national Poverty Alleviation Programme (PAP) and, finally, Malawi's National Plan of Action for Nutrition, which aimed to integrate nutrition objectives in food security programming (Webb, 2011).

The programme's 2004 evaluation reported that the intervention had achieved its objectives (DeGabriele, 2004) and a later study in 2010 reported that many of the gains identified in the initial evaluation had been sustained (Webb, 2011). Successes reported were: positive changes in food security (measured by outcomes across multiple sectors); changed thinking and behaviours at the community level (which persisted a decade later); and new approaches to tackling food insecurity adopted by the public sector locally and nationally. Furthermore, the IFSP principles on food and nutrition security were embedded in national policies (Webb, 2011). This project was also examined in an Overseas Development Institute (ODI) review of four types of integrated programming, which concluded that the evidence of improvements in food availability and access was stronger than the evidence of decreasing malnutrition, based on self-reporting of these improvements. It did note that, in the IFSP, stunting has decreased by 20% and severe stunting by 16%; child wasting has also improved, but malnutrition remains a problem in the district (Holmes et al., 2013).

Example 2. Sahel Integrated Lowland Ecosystem Management Project, Burkina Faso 2004–2010

The Sahel Integrated Lowland Ecosystem Management (SILEM) Project, designed under a country pilot partnership between the government of Burkina Faso, the World Bank and the Global Environment Facility (GEF), adopted an ecosystem approach, which is further specified as 'Integrated Ecosystem Management (IEM)'. SILEM was a five-year pilot demonstration project on using an integrated approach to address natural resource degradation, linked to a 15-year community-based rural development programme that covered 302 communes across the country. The project was designed to mainstream environmental concerns into the poverty agenda. As it was envisioned as a demand-driven community-managed project, its approach was based mainly on participatory land use planning to address livelihood needs and priorities at the village level (Apel, 2011). SILEM targeted selected watersheds and combated land degradation to manage land, water and forest resources with local communities of farmers and herders (GEF, 2014). Additionally, 160 villages benefited from a Local Investment Fund as part of the intervention, resulting in 3,000 micro projects aimed at: land protection and restoration or the conservation of water and soil; reforestation and forest resource management; the improvement of livestock production; the promotion of plant production; support for fishing; and research activities (World Bank, 2011). The impacts of the intervention were

measured through an end-of-programme evaluation. Positive trends for plant and insect diversity, soil organic content, and grass and tree biomass were reported in three out of four project sites in five years. However the data was not robust enough to allow for conclusions on SILEM's impact on conservation, biological diversity and the rehabilitation of soil resources. A separate economic assessment by the Ministry of Agriculture, however, did note that the project contributed to the productivity of natural resources, increasing agriculture revenues and restoring degraded land and biodiversity (World Bank, 2011). The institutional support given by the project also allowed for the creation of Village Watershed Management Committees and increased the awareness and commitment of local institutions, village organizations and resource users to biodiversity conservation and natural resource management. Additionally, an unexpected outcome was a decrease in conflict over land use due to the creation of pasture zones and cattle routes, which were later translated into written contracts and institutionalized by local authorities (World Bank, 2011).

5.2 Findings from the interviews – three cases

In order to contextualize our findings from the survey, five additional interviews were conducted on the challenges of, and lessons learnt from, working in an integrated manner. The summarized findings from three of these are presented here; the findings from the other two interviews are not presented due to lack of example projects and duplication of experiences.

Case 1. The Interdisciplinary Research and Education Fund

Dr Maja Slingerland from Wageningen University and Research Centre was interviewed to discuss her experiences on the implementation of interdisciplinary research. Dr Slingerland has been involved in three interdisciplinary research programmes funded by the Interdisciplinary Research and Education Fund (INREF). According to INREF (2010), interdisciplinarity is defined as 'collaborative work between scientists, each from different disciplines, each with its own concepts, methods and epistemology, working together on the same research question, mutually influencing each other and needing some shared concepts and methodologies'. Through years of learning by doing, INREF-funded programmes not only integrate the results of different disciplinary research, but also develop a common conceptual framework at the start of a research programme.

Dr Slingerland considers the programme steering group (or the programme manager) to be very important for the success of interdisciplinary research programmes. The interdisciplinary direction of the programme can only be assured when the steering group emphasizes its monitoring of the project's direction. Regular meetings are important in this regard, to keep track of everyone's understanding of the issues. Moreover, a good programme manager should be able to involve and keep team members active, which requires sound communication and managerial skills. Being involved in an interdisciplinary research team not only requires scientific expertise, but, according to Dr Slingerland: 'A scientific researcher should [...] be able to communicate among different stakeholders but also negotiate without compromising its scientific backbone'. Researchers should also be open-minded, have respect for other disciplines, and be committed to interdisciplinary collaboration. Yet challenges remain, difficulties still exist regarding: the integration of the results of the individual PhD studies at the

programme level and recognition of interdisciplinary researchers by their home university, where monodisciplinary research often dominates.

Case 2. Flying Food – a public-private partnership on sustainable food for BoP consumers

Coordinated by TNO, the ICCO Cooperation, and BoP Inc, and sponsored by the Dutch Ministry of Foreign Affairs within the framework of Sustainable Entrepreneurship and Food Security (FDOV), the project 'Flying Food' targets cricket rearing in Kenya and Uganda, including processing and market-based value chain development. Flying Food is a public-private partnership involving government parties, industry, NGOs, and knowledge institutions, with partners covering the entire value chain. TNO project coordinators Erwin Beckers and Mathilde Miedema were interviewed to share their experiences in this integrated intervention. Their experience focuses on the 'pioneer gap', project plan and design, and project coordination.

The pioneer gap refers to the fact that few investors are willing to invest in companies targeting the poor, and even fewer are willing to invest at the early (or pioneering) stages of the creation of a new business (Koh et al., 2012). As the project focuses on value chain development, risk management is crucial. According to Erwin and Mathilde, the preparation phase for the project is very important in this regard and should be included in the project budget. For Flying Food, this would include target country selection, visits to countries with experience in insect production and consumption (such as Thailand), and looking for interested partners (both Dutch and local). Including such preparation costs in the budget of FDOVs tender would have made the project more attractive to businesses. Context analysis is important, time intensive and costly. Criteria for selecting target countries include that people should be accustomed to eating insects, malnutrition should be present, the country should have reasonable infrastructure and enthusiastic partners, and it should be politically stable. When the cost of such preparation is not included in the budget, the risks for all partners increase. With regards to project coordination in such value chain projects, expectation management is key. Keeping all partners on board is difficult, as they expect to see profits in the short term, which do not always materialize. In this light, it is important to invest in Internet facilities to make sure communication with African partners goes smoothly.

Case 3. Roundtable on Sustainable Palm Oil (RSPO) – a multi-stakeholder initiative

Over the last 10 years, Oxfam Novib has been one of the main drivers of the Roundtable on Sustainable Palm Oil (RSPO), a multi-stakeholder initiative involving stakeholders ranging from communities, multinationals, governments to investors. RSPO aims to bring stakeholders together to create a standard for sustainable palm oil production. To date, RSPO has 2,536 registered members; 12.1 million metric tonnes of sustainable palm oil, accounting for 20% of global palm oil; and certification of over 3 million hectares of oil palm plantations in 9 countries. Johan Verburg, senior advisor at Oxfam Novib and member of the Board of Governors of RSPO, was interviewed about his 10 years of experiences in RSPO.

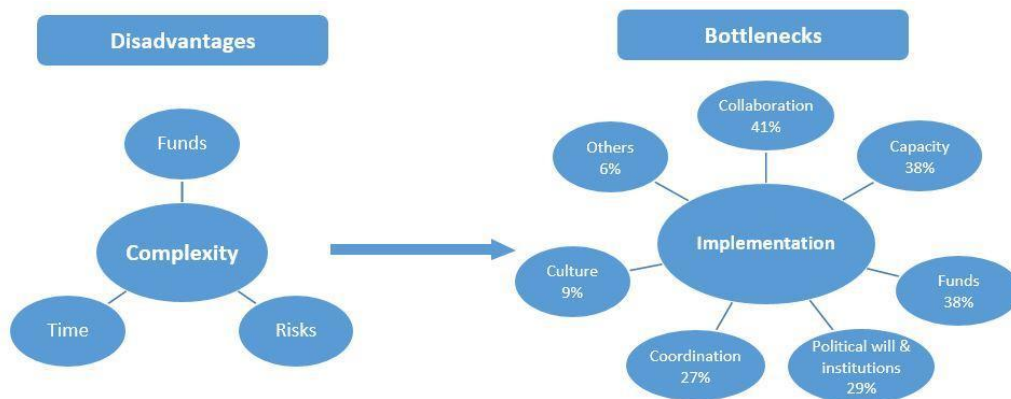
According to Johan, to solve complex problems related to social-ecological systems (often called wicked problems) one needs to take an integrated approach that involves multiple stakeholders to reach sustainability. However, collaboration between NGOs focusing on integrating different dimensions of sustainability is a challenge. To manage

such complexity, according to Johan, it is important, firstly, that a theory of change is well defined, so that the impacts that the project intends to achieve are clearly understood. Moreover, not only the intended impact, but also the organization's role in shaping the impact should be evaluated. Secondly, in order to achieve systemic change, a project should engage and be complementary with other interventions to help the government build institutions. Thirdly, the flexibility and learning by doing attitude of stakeholders involved in a project ensures effective collaboration between organizations. Critical skills for ensuring effective stakeholder collaboration are: patience, diplomacy, networking skills, understanding the context, thinking out of the box, negotiation skills, innovativeness, a learning attitude, creativity, flexibility, and being communicative, transparent, and accountable. Moreover, a complaint mechanism that allows feedback loops is important to keep collaboration on track.

5.3 Disadvantages and bottlenecks

From the response to questions about the disadvantages and bottlenecks involved in adopting integrated approaches (survey questions 11a and 11c), we can tell that the implementation of integrated interventions is still suboptimal. In this report, disadvantages are understood as inherent characteristics of interventions adopting integrated approaches, while bottlenecks are difficulties experienced during project implementation. However, we are aware that disadvantages and bottlenecks can overlap. Our analysis translates the list of disadvantages and bottlenecks into a group of key factors that affect the optimal implementation of the integrated intervention. These key factors are given in figure 18.

Figure 18. Key factors affecting optimal implementation of integrated interventions



Disadvantages

As mentioned earlier, the advantage of adopting an integrated approach is that it is designed to be applied to complex problems by bringing together expertise, skills and information from different organizations and disciplines. However, the involvement of numerous organizations and sectors at different levels leads to increasing complexity in terms of the management process. Respondents pointed out that it can be difficult to identify relevant actors and linkages between key factors. With multiple objectives, it is also difficult to set priorities. Moreover, some objectives compete with each other; for example, one respondent wrote: 'It was difficult to equally address productivity and

nutrition diversity in our project. Farmers sometimes opt for cash crops instead of crops that provide nutrition diversity.'

Thirty-eight percent (38%) of the respondents indicated that it is time consuming to implement an integrated intervention. First of all, it takes time to pursue relevant stakeholders to participate. And, once a team is built, it takes time for the team to understand the complexity and speak 'the same language'. The decision-making process becomes longer and progress is slow due to competing interests between stakeholders. Face-to-face meetings are difficult to arrange to build a quick consensus on how to move forward and it takes time to get information from partners. As it is time consuming, an integrated intervention requires a long term commitment from all stakeholders and it is difficult to show quick results. Furthermore, respondents reported that even more time is needed to scale up successful integrated interventions.

Thirty-eight percent (38%) of respondents indicated that an integrated intervention is very costly. Many integrated interventions are facing financial constraints and some are forced to stop due to lack of funds. The fact that these interventions are time consuming indicates that they need long-term investment. Moreover, funding mechanisms are generally organized per sector and not geared to inter-sectoral collaboration. Therefore, it is difficult for integrated interventions to receive sector-oriented funds. Furthermore, respondents report that it is difficult to get financial support from African national and local governments.

In summary, an integrated intervention is complex, time consuming and costly. These characteristics imply that implementing an integrated intervention has a greater risk of failure than say a sectoral intervention, as its aims are more ambitious. The greater the number of food security dimensions involved, the greater dependence on the context in which a project is applied. The fact that risks are higher also means that it is difficult to convince potential investors, such as development funders, that a proposed project has a greater claim to sustainability than say a more familiar sectoral project. Moreover, factors such as weather conditions (flood), diseases, and political instability increase the risks involved in implementation¹⁰. This is also shown by the fact that respondents view the complexity of projects as unpredictable.

Bottlenecks

The bottlenecks listed by all respondents can be categorized into two groups – working together and an enabling environment – with six key factors. Working together means collaboration between organizations, coordination of the collaboration, and sufficient capacity on the part of the organizations involved. An enabling environment requires institutional support, adequate funding, and cultural adaptation.

In relation to working together, 41% of respondents indicated that the collaboration between organizations, partners, stakeholders, and disciplines is challenging. Collaboration is a multi-stakeholder process. Through collaboration, stakeholders negotiate their roles and budgets, as well as adjust their expectations. However, our survey respondents indicated that it is difficult to work in an interdisciplinary team when people think in mono-disciplinary terms. Many pointed out that it is difficult to adopt the same working method for people from different organizations. The collaborators must

¹⁰ These factors also apply to projects that adopt approaches other than integrated approaches.

have a continued interest in, and commitment to, the joint action. However, partners can be hindered by different (external) priorities, which can delay decision-making. Furthermore, competing interests or priorities between partners can lead to internal conflict, which takes time to resolve. It is, therefore, important to reach consensus among partners to make sure that everyone understands issues in the same way and shares the same objectives. Moreover, information (data) sharing is sometimes difficult and it can take a long time to gather all of the information needed. However, sensible synergies can only be delivered once a common understanding is reached and information and expertise are shared.

Twenty-seven percent (27%) of respondents indicated that coordination of an integrated intervention is one of the most important factors affecting optimal implementation. Due to the involvement of multiple organizations, lines of communication coexist. Many factors and linkages need to be taken into consideration. Survey respondents pointed out that top-notch coordination is lacking and should ideally be initiated at a high level. A strong and effective leadership is able to bring cohesion to a team and ensure that the team stays focused on the objectives so that the intervention heads in the right direction. Such leadership is able to keep partners on board by adequately managing their expectations, negotiating to resolve internal conflicts in interests and priorities, and making sure that sensible forms of integration translate into a concrete plan of action.

Lastly, 38% of respondents cited capacity of the participating organizations as very important to the success of an integrated intervention. The expert knowledge, managerial skills, experience, and financial resources of participating organizations are essential to design and implement integrated interventions. Some respondents indicated that they have had to provide training to their partner organizations to secure effective collaboration. Some respondents noted that their technical partners have no experience working interdisciplinarily (or multi-sectorally) and are not used to thinking about post-project sustainability. Not all stakeholders possess managerial skills, such as communication and negotiation skills, which are essential to the progress of decision-making. Moreover, technical capacity, such as cross-cutting knowledge, is important when working with complexity. To ensure effective collaboration, stakeholders need to be open, flexible, and diplomatic, have negotiation skills, and be innovative. Additionally, the capacity of participating organizations to plan and design the integrated intervention is very important. A well-designed intervention keeps in mind the sustainability of the intervention and the possibility of scaling up.

In relation to enabling environment, 29% of respondents indicated that a lack of strong political will and high-level interest, in combination with inadequate institutional support affects the optimal implementation of an integrated intervention. Institutional support is required to ensure that there is an effective institutional framework that fosters better policy options for tackling food insecurity at national and local levels. Conflicting policies from different ministries, overlapping organizational mandates, and administrative bureaucracy affect effective collaboration and contribute to slow progress. As mentioned earlier in the report, the sector-specific resource flows create difficulties when working cross-sectorally. In addition, quite some respondents reflected that there is no sustainable withdrawal plan and policy brief to guide (local) governments in institutionalizing the implementation of an integrated approach. To ensure that the impacts of joint efforts are backed by significant resources, interventions should be mainstreamed into institutional frameworks to foster better

policy options. Moreover, as mentioned earlier in this report, sector-specific objectives can dominate other objectives when an integrated intervention is funded by sector-specific resources. For example, in an integrated intervention that is funded by a programme that mainly targets productivity growth, other objectives such as promoting nutrition and gender issues can suffer.

Tied to institutional support is adequate funding. As mentioned earlier, implementing an integrated approach is costly and many respondents said that their intervention is facing financial constraints and may be forced to stop due to lack of resources, which indicates limited political commitment at the national (high level) and local government levels. Many respondents pointed out that the lack of cooperation from authorities and bureaucratic procedures has affected the optimal implementation of their intervention.

Finally, 9% of respondents found cultural barriers to be a bottleneck when implementing an integrated intervention. For example, there are social and cultural barriers to integrating women into productive sectors, while it is also difficult to reach adolescents or early married girls. Additionally, the capture of development resources by local elites and men was reported as a hurdle to participation by people from poor and marginalized groups and by women.

6. Discussion and conclusion

The need to achieve systemic change for food and nutrition security is broadly acknowledged. Integrated approaches present a possible solution. Yet implementing an integrated approach in practice is not without challenges, as the survey found that it is difficult to implement long-term collaboration across organizations, sectors, disciplines and scales, and often constraining contextual factors are not taken into account a priori. Coping and thriving under such circumstances requires a sound awareness of how the various dimensions of food security and nutrition are linked, how interventions impact on each other, and how collaboration across organizations and scales can take form to be most effective.

6.1 Limitations of the study

This study aimed to shed light on the various integrated approaches that pass in review. We started broadly by categorizing the various approaches found in the literature. On the basis of this brief literature review, we developed the survey. The survey was largely based on a survey developed by FAO (FAO, 2013a). Due to time constraints (the need to send out the survey before the summer holiday period started), we developed the thematic priorities on the four dimensions (primary sectors, environment, economic and cross-cutting) through an inductive method (i.e. we checked on what issues various projects focused on), rather than a deductive method based on the conceptual framework that we later developed. Not grounding the survey in a comprehensive literature review was a major shortcoming of the study for several reasons.

First, we categorized many approaches that, although mentioned in the project documents, were not all relevant. Second, we missed the value chain approach, as this was not mentioned frequently in the project documents that we collected for the first check. When we conducted the broader literature review we realized this was an omission. Third, respondents were able to list more than one approach, making it difficult to demarcate between the various approaches as many approaches overlapped. Although this cannot be avoided entirely (in fact, in some approaches, such as the landscape approach, there is no agreement on the definition), this affected the ability to interpret the survey findings. Fourth, we did not list definitions of the approaches as our assumption was that respondents would be familiar with the type of integrated approach used in their intervention. This proved to be more complex later due to a lack of clarity on approach definitions and the overlap between approaches. We have provided definitions of all of the approaches listed in the survey questionnaire in the Glossary (except for the definitions of the four core integrated approaches, which are described in Section 3.3).

Nevertheless, starting our survey openly with broad definitions of the integrated approaches, and enabling respondents to list how they themselves label the approach adopted in their projects, did reveal that these labels are ambiguous. In our view, this mainly stems from the fact that projects have often not developed an a priori theory of change outlining how different dimensions are related and how their initiative is expected to impact on all. Although the survey has not given us a better understanding of the nature of the various approaches, it has fuelled one of our main conclusions that, among the practitioners working on food and nutrition security, creating such an understanding is very important. We, therefore, see our study as an initial inventory of

the pitfalls and bottlenecks of adopting an integrated approach in practice and propose that further research be conducted on how the lack of a prior vision and practical challenges impact on the effectiveness of integrated projects.

When we realized that the survey did not provide adequate information as to the nature of integrated projects, we conducted additional interviews, which gave us relevant information about the practical challenges of adopting an integrated approach. These interviews improved our understanding of the various bottlenecks and disadvantages reported in the survey.

6.2 Discussion and conclusion

An important aim of the survey was to investigate what practitioners mean when they refer to integrated approaches. This exercise served to map the various approaches (see Figure 1) and provided an overview of which organizations adopt which approaches. When we briefly browsed an initial selection of the literature in order to design the survey, our first impression was that a universal definition of an integrated approach to food and nutrition security is lacking. As the basic meaning of integration is the act or process of uniting different things, any combination of different things could be called integration. Later, when we conducted a more thorough literature study and analysed the survey results, we searched for answers to questions, such as what does integration mean and how do integrated approaches reach a high impact. In other words, what to integrate and how to integrate?

It seems that our literature study and survey results have answered the questions as to what to integrate. Our mapping of the different approaches has resulted in four components of integration, namely, stakeholders, sectors, disciplines, and levels (see Figure 1). Meanwhile, our survey results show that most of the interventions surveyed choose the integration of levels and organizations (stakeholders). We also found that academic bodies are mostly involved in discipline and level integration, while NGOs are mostly involved in stakeholder collaboration and sector integration. Moreover, it is important that objectives are integrated as well.

Although we have found an answer to the question of what is integrated, an answer to how to integrate remains elusive. While we admit that the survey questionnaire did not cover issues such as the methodology of the intervention, the literature review was also unable to provide a clear answer. While Reeves and Milledge (2014) point out in their policy brief that integrated approaches to the SDGs need to systematically address interlinkages among the SDGs, Lal et al. (2001) had already stressed that INRM lacked a systematic methodology guide and tool box some 13 years earlier. Even assuming that the four core integrated approaches, namely, ecosystem approach, landscape approach, territorial approach, and value chain approach, are relatively well defined compared to other approaches, with the numerous tools and models under each core approach, there is a lack of a systematic overview of all tools on board, not to mention that everyone claims that their tool is the best.

Additionally, as the problem and context are guiding for an intervention, actual differences between approaches in implementation can at times be minimal. Likewise, two interventions choosing to apply the same integrated approach can vary considerably due to differences in the context, problem and related choice of methodology. The framework for an integrated approach can give guidance when

planning or implementing an intervention, but priorities are set between the social-ecological context and the implementing organization. As win-win situations in terms of balancing conservation and development goals are rare (Dahlberg & Burlando, 2009; McShane et al., 2011) – especially in the case of a complex systemic problem such as food and nutrition security – the choice of an approach suggests certain priorities and trade-offs. Hence, to advance the discussion on what differentiates integrated approaches in their implementation these trade-offs should be made explicit during the formulation of a theory of change and in project evaluation.

Moreover, both our literature review and the lessons learnt from our survey show that there is a gap between planning and implementation – how integration is designed or defined in planning is not necessarily implemented in practice. It seems obvious then that the evaluation of tools, in other words, the evaluation of integrated interventions, is beset. In this context, the adoption of a theory of change creates an honest picture of the steps required to reach the desired synergy resulting from integration. It provides an opportunity for stakeholders to assess what they can influence, what impact they can have, and whether or not it is realistic to expect to reach their goal with the time and resources they have available.

Even though we have not been able to answer whether or not projects fulfil their expectations, we can see that many projects do experience similar problems along the way. Being able to address them would be one step towards integrated projects being able to fulfil their expectations. As we have seen in the lessons learnt section of this study, collaboration between organizations designed to work towards different aims is difficult. Many problems arise during implementation that are related to expectation management, reaching consensus, resolving conflict, and the alignment of values, strategies, visions, goals and working methods between stakeholders. Similar bottlenecks are reported in surveys of integrated landscape initiatives and include limited stakeholder participation, lack of involvement of the private sector (Estrada-Carmona et al., 2014), and difficulties related to coordinating stakeholders, building trust, reducing conflict, and assembling key actors (Milder et al., 2013). Next to organizational constraints, respondents also reported constraints related to the institutional and political context, such as a lack of high-level support for integrated initiatives, lack of understanding and will on the part of decision makers, lack of cooperation by authorities, and a lack of (adequate) funding.

Such constraints impede the effectiveness of integrated projects. Similar constraints were reported in other studies, which cited a lack of political commitment and insufficient support from government entities (Harris & Drimie, 2012; Sayer et al., 2014; FAO, 2013d), as well as a lack of integrated policy and sector-based funding instruments (Kissinger, 2014; Milder et al., 2013; Estrada-Carmona et al., 2014). This has led da Silva et al. (2011) to advocate for laws that can enforce such commitment, following the example of Brazil's Fome Zero programme.

Evidence from both the literature review and survey suggest that, on the one hand the right capacity and management approach for integrated interventions is lacking, while, on the other hand, organizations implementing integrated interventions struggle with a policy environment that is not conducive to integration. On top of this, some interventions are not properly attuned to the sociocultural context of their implementation, which is detrimental to the implementation of any type of project. In

the following section we outline some tools, skills and strategies that we deem crucial to working in integrated interventions in complex and uncertain environments.

7. Recommendations

Our study revealed three main challenges that hinder the effectiveness of integrated projects aimed at guaranteeing food and nutrition security. First, there is a discrepancy between ambition and practice due to lack of a priori contextual knowledge about complex local social-ecological systems. Second, projects lack specialized capacity to manage integrated collaborative efforts, resulting in challenges concerning conflicting goals, time constraints, and difficulties with communication and working methods between partners. Third, an enabling environment that facilitates integrated strategies is generally lacking, marked by a lack of institutional support (such as integrated policy instruments), funding, understanding and support among policy-makers, and cooperation from authorities.

On the basis of our analysis of these challenges, we have formulated several recommendations for practitioners, policy-makers and funders on project, organizational and national levels and identified several areas for follow up research.

7.1 Conduct further research

A clear finding of this study was that much remains unknown about integrated approaches. Accordingly, as a follow up to this study we recommend the following:

- **Conduct research on how to integrate:** This study focused on investigating the building blocks of integrated approaches, i.e. what to integrate. We recommend that a follow-up study be conducted to investigate how to integrate different areas, to provide a systematic overview of methodologies and tools used in initiatives applying the four core integrated approaches.
- **Evaluate integrated interventions:** The impacts of combined efforts by multiple organizations to solve complex problems such as food and nutrition security are uncertain. Hence, we recommend the urgent evaluation of integrated interventions. Further research should focus on how the lack of an a priori vision and practical challenges impact on the effectiveness of integrated projects and what trade-offs are made in integrated interventions between different objectives of interventions.
- **Link academics with practitioners for a two-way exchange of information and experiences:** In addition to more research, we recommend that there be more interactions between development interventions and research projects. Experiences from development practitioners should be synthesized with knowledge from academic researchers in order to increase the impact of interventions using integrated approaches.

7.2 Invest in proper project planning and implementation

To improve cooperation between multiple stakeholders, and to enhance the institutional environment by being more attractive to potential funders, investors and partners, the risks involved in adopting an integrated approach should be better mitigated and an effective pathway to achieve the desired impact chosen. One way to achieve this is to develop a sound project design based on an understanding of how to link theory to practice. Such a context analysis should be part of a theory of change (cf. Brouwers, 2013; Valters, 2015), which requires organizations to explicitly state how they will

achieve change and how they view sustainability in this context. A systematic approach to dealing with the uncertainty of complex problems, where contexts constantly adapt and re-order, is adaptive management. It allows organizations to deal more appropriately with situations that have no clear cut solutions and guaranteed routes, and when the effects of combined interventions are uncertain. In this way, instead of attempting to avoid risks that are inherent in complex integrated projects, organizations can engage in risk management (Hummelbrunner & Jones, 2013; UNEP, 2012; Moore, 2009). Therefore, in order to develop an effective integrated project design, we recommend that practitioners of integrated projects:

- Invest in defining a clear theory of change: The theory of change should outline how various aspects of food security, nutrition, and other relevant aspects are connected, and how the project will improve this situation by discussing what will be integrated and how the integration of these aspects will be more effective than approaching them separately. The theory of change should clearly define what is meant by sustainability and be developed with the stakeholders involved.
- Develop a clear strategy on how various stakeholders will be included in the project: In this light a stakeholder analysis, including a mapping of the local political economy as well as constraints related to gender and culture, should be part of the theory of change, and should be conducted repeatedly throughout the project to inform it and the process of adaptive management.
- Plan for sustainable withdrawal as part of a project's theory of change: Projects should not collapse when (international) funding halts, especially when dealing with an issue like food security and nutrition. The production of policy briefs that support local governments in the institutionalization of integrated approaches to food and nutrition security could be one way of preparing for this; the inclusion of private entrepreneurs from the planning phase and throughout the project is another.
- Practice adaptive management: Adaptive management should be practised as an inclusive learn-by-doing process, whereby project objectives are adjusted on the basis of project progression and stakeholder input in order to deal with changing contexts, long term engagement, and extensive stakeholder involvement, while being careful to monitor policy effects.

7.3 Invest in capacity building

The complexity inherent in integrated projects, especially those on a large scale, involving both government and non-government organizations, requires specialized management capacity to coordinate work across disciplines, sectors and scales. Facilitators are needed to build bridges, prevent and resolve conflicts, build trust, identify common interests, and show leadership (Harris & Drimie, 2012; Garrett & Natalicchio, 2011; Gulati et al., 2012). Differences in outlook, motivation and goals across stakeholders can hamper the effectiveness of a project. This type of intensive management is also crucial if management is to be adaptive, as this works best with decision-making power close to the ground. Yet the aim of many integrated initiatives to eventually become multi-scale means that such management is also needed in networked governance structures, for which continued political support is crucial, as without it coordination can prove ineffective (Harris & Drimie, 2012). Therefore, we make the following recommendations for organizations working with integrated approaches:

- Invest in strategic management capacity: To manage integrated interventions across sectors, stakeholders, disciplines and scales, managers need skills in strategic management including the skill to broker agreements, build relationships and resolve conflicts, as well as sensitivity to the concerns of various stakeholders and disciplines.
- Invest in technical capacity: Partners in integrated interventions need strong technical capacity in the various sectors and disciplines being integrated, including relevant multidisciplinary expertise, the skill to understand the content and the ability to co-create solutions.
- Invest in brokering knowledge to create political will and support for integrated policies and initiatives: This includes sustained advocacy and the formulation of policy briefs that can translate experiential knowledge to support the institutionalization of project practices.

7.4 Create an enabling environment

An enabling environment – meaning institutional support, adequate funding, and a favourable local context – is paramount to the success of integrated initiatives. To achieve systemic change a broad consensus among stakeholders is needed as well as long-term political support through integrated policy domains and funding instruments. Rather than attempting the top-down management of integrated policies, the role of governments should be to balance interactions between groups (Wilson et al., 2006). Networked governance, is the preferred arrangement for multi-scale collaboration between stakeholders from different sectors. In networked governance, responsibilities are decentralized and management is collaborative and adaptive. Trust, reciprocity, common rules, norms, sanctions and connectedness in institutions or social capital is what ensures that such governance thrives (Pretty & Ward, 2001). For this, dedicated institutional brokers are needed to provide incentives to invest in trust and relationship building, create bridges across various groups, broker and ensure the appropriate flow and control of information, and take into account the various group dynamics, motivations, asymmetries and perspectives in order to build trust, facilitate collaboration, resolve conflict and identify opportunities (Huppé et al., 2012). In order to increase the effectiveness of integrated projects in achieving systemic change, we make the following recommendations for policy-makers:

- Develop multi-sectoral funding instruments: Integrated interventions need multi-sectoral funding instruments, which can be developed by linking policy domains to form nexuses (i.e. water, energy, food).
- Develop evaluation mechanisms: Evaluation mechanisms that capture the effects of integrated initiatives, especially in relation to their expected synergies, are needed, which requires flexibility with respect to the practice of adaptive management. Such mechanisms should take care to measure the impact of scattered projects, and account for the goals of the various project partners.
- Ensure the institutionalization of integrated food and nutrition security goals: In order to secure a long-term stable environment, institutionalize integrated food and nutrition security goals, for instance, by enacting laws enforcing the right to food.
- Invest in institutional brokering organizations: Institutional brokering organizations can mediate and facilitate collaborative efforts in the decentralized multi-level governance networks necessary for integrated

strategies to work on a larger scale. Such organizations should take special care that the governance process is not hijacked by dominant stakeholder groups, that co-management does not lead to inadequate policy making, and that the benefits of such a process of networked governance do not outweigh the costs.

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Appendix I. Study design

Literature study

We started the study with the collection and analysis of the existing literature dealing with integrated approaches to food and nutrition security. We canvassed scientific literature on the theoretical underpinnings of integrated approaches to food security as well as practitioners' reports from programmes, initiatives and projects that adopt an integrated approach in the field of food and nutrition security.

The documents were categorized into project documents, evaluation reports, scientific articles, case studies, and literature on collaboration and integration from organizational science. These categories were then used to divide up the literature into three parts: general literature, an inventory of integrated projects, and evaluation reports and case studies. A first scan of the literature was used to inform the design of the survey questionnaire. Types of approaches, topics, and keywords were drawn from reports to create an overview of the most commonly used terms, topics and objectives in integrated projects. These were used to generate a number of integrated approaches that respondents could select in the survey questionnaire, as well as four categories with commonly used 'areas of work' or sectors.

For the final literature study, a total of 167 documents were analysed, some collected by ourselves (128 documents) and some provided by survey respondents (39 documents). The literature collection consisted of 66 general documents (scientific articles, reports, discussion papers and digital papers or websites), 29 evaluation reports and case studies, and 33 project documents. In the survey, respondents were also asked whether they could be contacted for further information on their projects, which added a further 39 project documents to the literature collected.

Online survey

Parallel to the literature collection, we developed and conducted an online survey in order to inventory programmes, initiatives and projects that intend to adopt or have adopted an integrated approach. The questionnaire was sent to partners of the platform and online communities in international development¹¹. A questionnaire was designed and sent at the beginning of the study (see Appendix II). For the design of this questionnaire, we used the inventory analysis of the literature, as well as an exemplary questionnaire developed by FAO and partners on landscape approaches (FAO, 2013a).

The survey included 11 questions, some of a practical nature and others substantive. The survey was designed to collect information on the organizational features of the programmes, the terminology used to describe the integration approaches, and the different aspects of food security that are integrated within the programmes. In addition, we also asked respondents about the advantages and disadvantages of using an integrated approach to food and nutrition security, as well as problems they have encountered in carrying out their projects.

¹¹ These communities are: Platform for Africa – European Partnership in Agricultural Research for Development Phase II (PAEPARD II); FARA network; Food for Cities (FAO).

The survey was sent out in July 2015. By the end of September 2015, we had received 93 responses, of which 87 were valid. The initiatives submitted by the respondents were screened to ensure that they complied with our open definition.

Interviews

In order to obtain more in-depth knowledge about the pros and cons of adopting an integrated approach to food security and to contextualize our initial findings as the project progressed, we conducted five interviews with experts on food security who are involved in integrated programmes.

We approached 12 experts for interviews: 4 from academia and/or research institutes, 3 from private companies or foundations of private companies, 2 from non-governmental organizations, and 3 from government bodies. Of these, 5 experts responded and accepted the interview request (3 researchers, 1 representative from an NGO and 1 government representative).

Interview questions are listed in Appendix III.

Appendix II. Survey questionnaire

Survey questionnaire of integrated approaches to food security and nutrition

Welcome to the 'Integrated Approaches to Food Security and Nutrition' survey.

The aim of this e-survey is to collect information on experiences and lessons learned on integrated approaches applied by policy, research and development initiatives (projects, programmes, activities, and interventions) focusing on food and nutrition security (FNS). Results of this survey will be used as one of the inputs to the planned scoping study aiming at a more in-depth inventory of these initiatives.

There are multiple definitions of integrated approaches, developed by different organizations, institutions, and others stakeholders involved in FNS activities. For the purpose of this survey we use an open definition of the concept:

An integrated approach to enhance FNS is one in which efforts are coordinated across different areas of work and interests. The rationale for integrating these efforts is that their combination will increase their effectiveness and thereby the sustainability of the impact. Examples of such an approach could be landscape approach, territorial approach, cross-sector approach, transdisciplinary approach, etc.

Implementation of this survey and the planned scoping study are inspired by one of the conclusions of the consultation on the Dutch food security policy that the Food & Business Knowledge Platform facilitated in the summer of 2014: the acknowledgement of the importance of applying integrated approaches for structural and systemic changes to achieve food and nutrition security. The objective of the scoping study is to provide an overview of FNS initiatives that applied an integrated approach, and to share experiences and lessons learned in developing and using these approaches. This survey is a first step in preparation to the scoping study.

This survey contains 11 questions (mainly multiple choice) and should take about 15 minutes to complete.

We thank you for your time and valuable input.

If you would like any further information, please contact Le Chen (le@thebrokeronline.eu) or Rojan Bolling (rojan@thebrokeronline.eu).

1. Your contact-details

1a. Name:

1b. Email address:

1c. Phone number:

1d. Job title/role:

2. Details of your organization

2a. Name of your organization:

2b. Organization website:

2c. Type of organization:

- Government body
- Technical agency
- Academic body
- Research institution
- NGO
- Private company
- Member of a permanent forum (e.g. river basin commission)
- Other (please specify)

2d. Main area of expertise of your organization:

- Agriculture
- Capacity building
- Climate change
- Ecosystem
- Food security
- Forestry
- Gender
- Governance
- Health and nutrition
- Inclusive finance
- Land management
- Livelihoods
- Livestock
- Markets
- Soil and water
- Value chains
- Youth and employment
- Other (please specify)

3. Project details

Please fill in information that applies to your project. If your organization is involved in more than one integrated project, please choose the most relevant one.

3a. Title of project:

3b. Sponsor(s):

3c. Collaborating organization(s), if applicable:

3d. Coordinating organization, if applicable:

3e. Link to project website/documents (description, report, evaluation):

3f. Duration of project:

3g. Status of project (beginning/middle/end/finished):

4. Type of integrated approach

4a. What type of integrated approach(es) does your project adopt? (Multiple answers possible)

- No name/general integrated
- Climate smart agriculture
- Cluster approach
- Comprehensive approach
- Cross-sector approach
- Ecological agriculture
- Ecosystem approach
- Integrated approach
- Landscape approach
- Multi-dimensional approach
- Multi-disciplinary approach
- Multi-sectoral approach
- Territorial approach
- Other (please specify)

5. Integrated approach

5a. Your project is considered integrated according to our definition because it integrates different (multiple answers possible):

- Organizations
- Areas of work
- Disciplines
- Levels
- Other (please specify)

6. Project priorities

6a. Please indicate which of the following working areas are a priority for your project and to what extent:

Primary sectors

	Not a priority	Low priority	Medium priority	High priority
agriculture				
fisheries				
forestry				
pastoralism				
seed systems				
food availability (e.g. production)				

Environmental dimension:

	Not a priority	Low priority	Medium priority	High priority
biodiversity				
climate change adaptation and mitigation				
disaster risk management				
ecosystem management				
energy				
soil health				
water management				
natural resources				

Economic dimension:

	Not a priority	Low priority	Medium priority	High priority
agro-industry				
financial inclusion				
food access (e.g. food price)				
food stability (e.g. distribution)				
income employment secure livelihoods				
infrastructure development				
market access				
value chain development				

Cross-cutting areas:

	Not a priority	Low priority	Medium priority	High priority
conflict resolution				
education and training				
equity in access to resources				
food safety				
food quality				
gender				
governance				
health and sanitation				
reproductive health child and maternal health early childhood development				
social protection				

6b. Please specify any other dimensions of food and nutrition security that your initiative substantively addresses.

7. Organizational support

7a. Which type of support is provided by your organizational unit? (Multiple answers possible)

- Advisory services (i.e. rural extension, technical assistance, etc.)
- Financial support (i.e. grants, credit, loans, etc.)
- Training (i.e. natural resources management, organizational management, tenure, conflict resolution, etc.)
- Concept/desk-based study
- Investment and technical project development
- Other (please specify)

8. Level

8a. What is the main level/perspective of your project? (Multiple answers possible)

- Local land users (farmers, entrepreneurs)
- Local/community/village
- District/province
- Urban/peri-urban area

- Sub-national (in country)
- National (countrywide)
- Multi-scale
- Transboundary (landscape across neighbouring countries)
- Regional (sharing experiences among countries)
- Global
- All of the above levels

9. Region

9a. In which region and country is your project? (Multiple answers possible)

- Africa
- Asia
- South America
- North America
- Europe
- Australasia/Oceania
- Global (no particular country or region)

10. Outputs

10a. What specific outputs have you produced to support your integrated project? (Multiple answers possible)

- Diagnostic/assessment tools
- Maps/GIS
- Land/natural resources management plans
- Case studies
- Training materials
- Policy advice/briefs
- Project design/development
- Other (please specify)

10b. Please specify if we may contact you to ask for these documents.

Yes/no

11. Lessons learned from your integrated project

11a. What were the bottlenecks while implementing the integrated approach?

11b. What are the advantages of adopting an integrated approach?

11c. What are the disadvantages of adopting an integrated approach?

Thank you! Please do not forget to click submit.

Thank you for taking the time to complete this survey!

Please click on the 'Submit' button below to submit your answers.

If you have any other comments, please contact us at le@thebrokeronline.eu or rojan@thebrokeronline.eu

Appendix III. Interview questions

1. What are the projects that you are involved that adopt integrated approaches?
2. What type of integrated approaches are adopted?
3. Why does your project adopt an integrated approach?
4. Could you define the integrated approaches?
5. What are important factors to understand an integrated approach?
6. Are integrated projects implemented as they are designed?
7. What are the bottlenecks in the design and implementation?
8. In your view, what are the important factors to successfully design and implement an integrated project?
9. Have you come across with other types of integrated approaches?
10. What is your opinion on those approaches?
11. What are the important factors for measuring the impact of integrated projects?

Appendix IV. List of interviewees

1. Maja Slingerland, Wageningen University and Research Centre
2. Ariane van Beuzekom, Ministry of Economic Affairs
3. Mathilde Miedema and Erwin Beckers, TNO
4. Johan Verburg, Oxfam Novib
5. Cora van Oosten, Centre for Development Innovation, Wageningen University and Research Centre

Appendix V. Glossary of integrated approaches in the survey questionnaire

Climate-smart agriculture

Climate-smart agriculture (CSA) intends to address the interlinked challenges of food security and climate change. It has three main pillars: sustainably increasing agricultural productivity and incomes; adapting and building resilience to climate change; and reducing and/or removing greenhouse gases emissions, where possible (FAO, 2013b). The extent of integration in this approach is, thus, limited to linking climate change mitigation and food production. Such projects can be as simple as switching crops from rice to vegetables to deal with a changing climate (SNV, 2014). But it can also involve building aquaponics installations in the desert that grow fish and vegetables in one system to reduce the needed inputs of resources for growing or transporting food (DAC, 2015). The focus of this approach on climate change mitigation and adaptation means that it has received some criticism for its sole focus on environmental efficiency. This is because technologies such as genetic modification can also be called climate-smart, although they might not be as resistant to environmental or economic shocks as other approaches (Anderson, 2014).

Cluster approach

The cluster approach is a humanitarian coordination mechanism that aims to ensure good inter-agency and inter-organizational coordination and clarity on responsibilities in emergencies, while also working to prevent their occurrence. A cluster is a group of agencies or organizations that work together towards common objectives within a particular sector of emergency response. Currently eleven clusters exist in the global system: Food Security, Camp Coordination/Management, Early Recovery, Education, Shelter, Emergency Telecommunications, Health, Logistics, Nutrition, Protection, and Water, Sanitation and Hygiene (UNOCHA, nd.; WHO, 2015). The Food Security Cluster is co-led by FAO and the World Food Programme (WFP), which support national-level clusters monitoring the food security situation (FAO & WFP, 2014). Integration in this approach occurs along organizational and thematic lines and is limited to the coordination of responsibilities to avoid duplication.

Comprehensive approach

In the context of food and nutrition security a comprehensive approach is commonly used as a general term. It means 'including or dealing with all or nearly all elements or aspects of something' (Oxford Dictionary of British & World English, 2015). In 2011, the High Level Task Force on Global Food Security defined it as follows (UN HLTF, 2011):

A comprehensive approach requires: (i) addressing all dimensions of food and nutrition security – availability, access, utilization and stability – and taking into account the interconnectedness and interactions between them; (ii) addressing the full spectrum of food and nutrition security, including sustainable agricultural production, procurement and distribution of food, and safety-net strengthening; (iii) integrating cross-cutting issues such as protection and promotion of human rights, gender equity, support to nutrition, management of sustainable ecosystems, and

climate change mitigation and adaptation into law, policy and programme design; and (iv) ensuring multi-sectoral engagement and coordination on agriculture, social security, trade and market, employment, health, education, nutrition, and humanitarian assistance. In practice, adopting a comprehensive approach calls for maximum synergy and coordination among all components of food and nutrition security and the sectors which influence them.

Such an all-encompassing approach calls for the integration of thematic priorities between areas of work (i.e. water, energy, agriculture) as well as the maximization of synergies and coordination between these components on different levels. Such extensive programmes are only possible on the scale of a state, as was done in the Brazilian *Fome Zero* (zero hunger) programme (Da silva et al., 2011). *Fome Zero* was based on the assumption that in Brazil food access was among the main problems, which means that working on inequality and poverty was crucial. This was done by installing a supra-sectoral coordinating National Food and Nutritional Security Council whose task was to implement national Food Security and Nutrition policy through organizations and ministries and to ensure that this implementation was done in a feasible way. The main drawbacks and risks of such an approach are the costs involved, difficulty of coordination across such a large territory, and the risk that its implementation does not consider local demands due to its technocratic and top-down nature.

Cross-sector approach

A cross-sector approach is a general description indicating that organizations active in different sectors (e.g. agriculture, energy, and water; or public sector, private sector, academia and civil society) engage in a collaborative effort. Public-private partnerships (PPPs) are a common example of this type of approach, in which risks and responsibilities are shared between the government and business(es) in the provision of a public service (PPPIRC, 2015). Such collaborations exist in many forms; the 'Dutch Diamond Approach', for instance, brings together the private sector, civil society, research institutions and the government (GoNL, 2015). According to McKenzie (2013), what sets cross-sector collaboration apart from other types of cooperation is the combination of multi-sector with multi-actor collaboration and that decision making and actions take place across sectors.

Ecological agriculture approach

An ecological agriculture approach combines the areas of agriculture and ecology to base the practice of agriculture on the resources and limits of the ecosystems that they are part of and partly create. Such an 'agro-ecosystem' includes the region that is impacted on by farming activity – for instance, by the use of water, biodiversity – and impacts on the energy flows in the food chain (Power, 2010). An ecological approach to agriculture aims to manage such biological interactions by incorporating the strengths of natural ecosystems (efficiency, diversity, self-sufficiency, self-regulation, and resiliency) into these agro-ecosystems. In practice, this often means: growing healthy plants with good defence capabilities; stressing pests; and enhancing populations of beneficial organisms instead of using pesticides (Magdoff, 2007). This approach shares its principles and practices with the science and practice of agroecology and is also practised mainly by small-scale farmers (Silici, 2014). For the purpose of this study, ecological agriculture is regarded as an umbrella term that also includes agroecology, a

term more often used, and based on the application of the science of ecology to agricultural practice.

Multi-dimensional approach

Multi-dimensional is a general description indicating that several dimensions are involved in a situation. In the context of food security this means availability, access, utilization and stability (FAO, 2008). These dimensions are seen as overlapping, meaning that multi-dimensional approaches to food security combine two or more of its aspects (i.e. poverty alleviation, or access, with enhancing food production, or availability, or nutritional education, which falls under utilization).

Multi-disciplinary approach

A multi-disciplinary approach refers to a combination of professions or specializations involved in one project. Agricultural extension projects, for example, combine new research and knowledge with farmer education to improve farming practices. But, applied on a larger scale, the linkage between urban and rural areas in food security and sustainable resource use provides an interesting example. The Food for the Cities initiative by FAO, for example, identifies four dimensions of the food system in this context: people-centred and social development policy; natural resource management; multi-level governance; and urban and territorial planning (FAO, 2011). The variety of professions and specializations involved in this approach would include, for instance, policy-makers, private sector entrepreneurs, urban planners, farmers, and teachers, not to mention the various scientific disciplines that could be involved.

Multi-sectoral approach

A multi-sectoral approach is a general description that refers to when an intervention combines efforts in two or more sectors of economic activity (i.e. agriculture, energy, water) because such a combination is deemed to be more effective than approaching the problem from a single sector (a sectoral, or 'siloed', approach) (Asian Development Bank, 2015). The degree to which such a project is integrated can vary greatly, however. Often a multi-sectoral approach means that actions undertaken by different organizations in different sectors are coordinated so as to avoid the duplication of efforts, while increasing effectiveness by coordinating when and where a project is implemented, and who is targeted.



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