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Mainstreaming NUS in national policy for nutrition outcomes

Nutrition-sensitive Agriculture - Note no. 5

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How To Do Notes provide tools for good practice design based on best practices collected at the field level. They guide teams on how to implement specific recommendations of IFAD's operational policies, standard project requirements or financing tools. The How To Do Notes are "living" documents and will be updated periodically based on new experiences and on feedback. If you have any comments and suggestions, please contact the originators.

Originator

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Cover photo: Community Biodiversity Register maintained by local communities in Pokhara, Nepal. Credit: Bioversity International / S.Padulosi

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List of Acronyms

BFN	Biodiversity for Food and Nutrition
CBD	Convention on Biological Diversity
CFS	Committee on World Food Security
CSO	Civil Society Organisation
FAO	Food and Agricultural Organization of the United Nations
GEF	Global Environment Facility
HLPF	High-level Political Forum on Sustainable Development
HTDN	How to Do Note
IIED	International Institute for Environment and Development
IISD	International Institute for Sustainable Development
IFAD	International Fund for Agricultural Development
IGO	Inter-Governmental Organisation
MAGA	Ministry of Agriculture (Guatemala)
MINEDUC	The Ministry of Education (Guatemala)
MISPAS	Ministry of Public Health and Social Assistance (Guatemala)
MSSRF	M.S. Swaminathan Research Foundation
NBSAP	National Biodiversity Strategy and Action Plan
NGO	Non-Governmental Organisation
NSA	Nutrition-Sensitive Agriculture
NUS	Neglected and Underutilized Species
PACS	Payments for Agrobiodiversity Conservation Services
PDS	Public Distribution System
PGRFA	Plant Genetic Resources for Food and Agriculture
PNAE	National School Feeding Programme (Brazil)
REACH	Renewed Efforts Against Child Hunger and Undernutrition
UNGNA	United Nations Global Nutrition Agenda
RS	Reporting Services
SUN	Scaling Up Nutrition
SDG	Sustainable Development Goal
ITPGR	International Treaty for Plant Genetic Resources
UN	United Nations
UNCCC	United Nations Climate Change Convention
UNSCN	United Nations Standing Committee on Nutrition
WHO	World Health Organization

Introduction

Agricultural biodiversity is a strategic asset to fight climate change vulnerability, poverty, and food and nutrition insecurity. The wealth of food crops is estimated at 5,000 species (Kew Royal Botanic Gardens 2016) but global food systems are increasingly dominated by just three crops—rice, maize, and wheat—which altogether make up more than 50% of human plant-based caloric intake and cover 40% of arable land globally (FAOSTAT 2013)[1]. Modern agricultural practices, uniformity in agricultural markets, and changing lifestyles are causing the disappearance of crop diversity from production and food systems. The diversity of plant species gathered in the wild for food is also threatened due to degradation of natural habitats. Such a situation is having multiple impacts on peoples' livelihoods as cultivations are becoming more susceptible to climate change, farmer assets are being eroded, and consumers have fewer choices for nutritious and healthy diets.

Neglected and underutilized species, or NUS for short, are crops that have been left at the margins of research and development. The word 'neglected' underlines the low level of research investments made on these species when compared with mainstream commodity crops and 'underutilized' alludes to their untapped livelihood potentials. NUS include wild, semi- or fully domesticated plants from various food groups (cereals, vegetables, legumes, roots and tubers, fruits, spices) with diverse growth forms (field crops, trees, shrubs, vines, etc..). NUS are an integral part of local cultures and food traditions, and they are increasingly in the spotlight of efforts for revitalizing local cuisine and celebrating the identity of the 'terroir'.

Hot spots of NUS diversity coincide with regions where indigenous peoples live—largely remote areas where standardization of agricultural practices has not been very intense and agro-ecological practices have prevailed. Many of these areas are characterized by challenging conditions for agriculture where NUS are central in traditional farming and risk management practices, owing to their early maturation, low water requirements, and capacity to thrive in marginal soils, among other characteristics. Indigenous women in particular are often the custodians and main knowledge holders of NUS because of the great relevance these crops have for household nutrition and other livelihood needs. But in spite of being so relevant in the lives of local communities around the world, NUS have been sidelined by the Green revolution and received very little investments for their research and development. Scarce attention has been directed to enhance their yields and overcome challenges in their cultivation, processing, and marketing. Such a trend need to be reverted, as investing in these crops represents a strategic opportunity to unlock multiple livelihood benefits, especially for marginalized groups in both rural and urban settings.

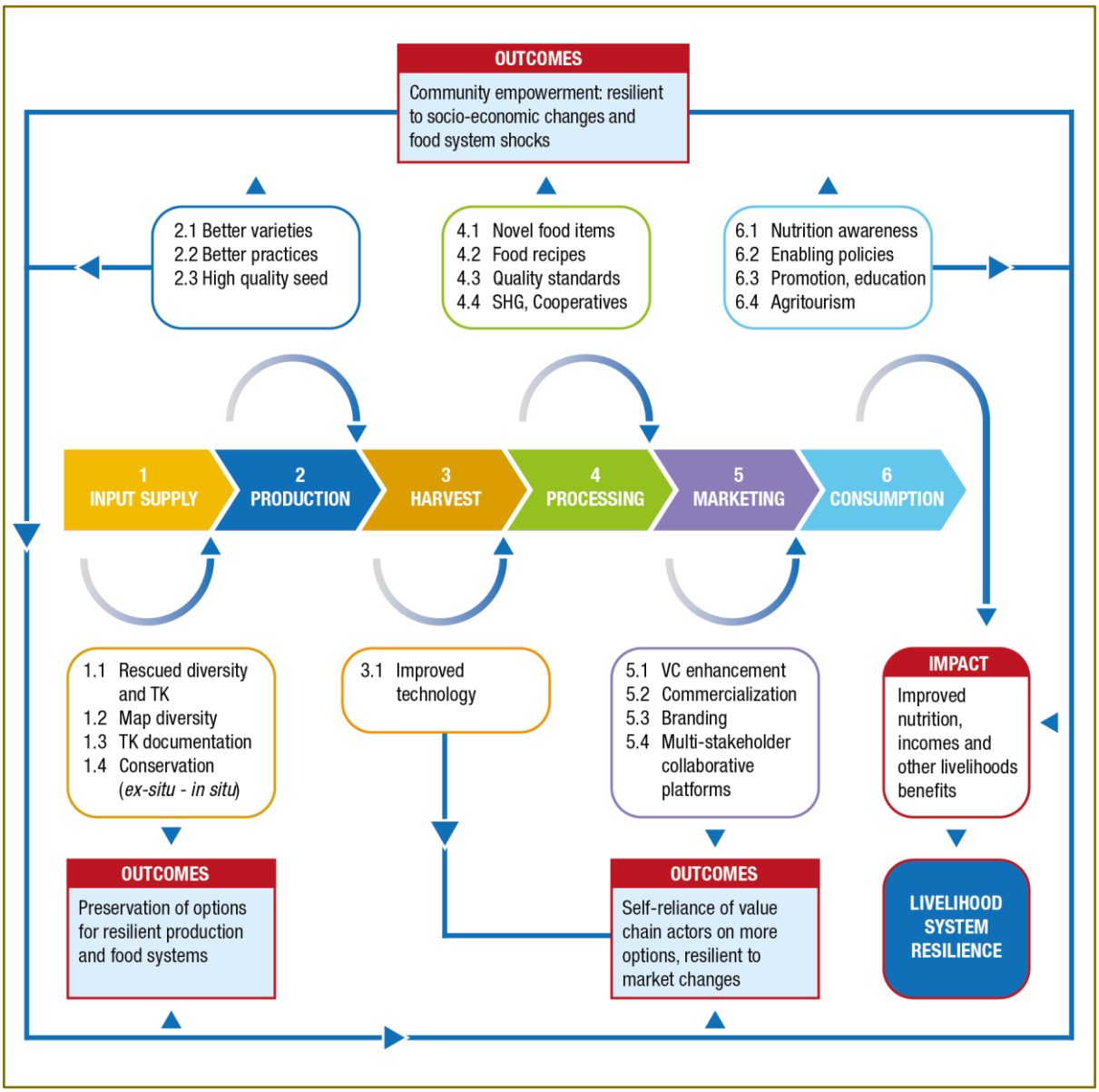
A Holistic Value Chain Approach for the use-enhancement of NUS has been developed and tested through IFAD-supported research grants. This approach involves interdisciplinary and participatory interventions at different stages of the value chain to overcome bottlenecks in the use of NUS and enable resilience, nutrition, and income generation outcomes to be reaped (Figure 1). The Holistic Value Chain Approach is outlined in the Operational Framework “Supporting Nutrition Sensitive Agriculture Through Neglected and Underutilized Species”, which was developed to support IFAD Country Directors, CPMs and ICOs to integrate NUS and indigenous peoples issues into their nutrition sensitive agricultural investment programmes, consistent with IFAD’s 2016-2018 Action Plan on Mainstreaming Nutrition Sensitive Agriculture[2]. A definition of nutrition sensitive Agriculture is provided in Box 1. This *How to Do Note* is part of a series of 5 NUS-focused Notes, that build on lessons learned, drawing on evidence- and experience-based insights from a number of research for development projects (including those financed by IFAD). They offer recommendations on practical methods, approaches, and tools for addressing use enhancement and mainstreaming of NUS in both design and implementation of an IFAD Project. Specific consideration is given for project design that can support the empowerment of indigenous peoples, women, and youth. The five HTDN in the series are as follows:

[1] FAOSTAT. Production, Food Balance, and Land Use Data. Available online: http://www.fao.org/faostat/en/?#home (accessed on 18 May 2018).

[2] https://bit.ly/2SYUCgn

- No 1: Priority setting for nutrition and resilience
- No 2: Assessing market needs and emerging opportunities in value chains
- No 3: Interventions in support of NUS domestic markets
- No 4: Interventions in support of NUS export market
- No 5: Policy and mainstreaming of NUS

Figure 1: Holistic value chain approach



Source: Padulosi et al. (2014). Sustainability 2014, 6, 1283-1312. https://bit.ly/2FftCpt

The NUS Operational Framework is complementary to the recently published volumes of IFAD's Operational Framework "Nutrition-sensitive value chains: A guide for project design" [3]. NUS are likely to stand out in the commodity selection (STEP 2) of the latter framework because of their great potential for nutrition-improvement. HTDN 1 outlines approaches and methods for ensuring that NUS are considered in such crop selection processes, as they are easily overlooked as a result of being poorly known. Situation analysis (STEP 1) is a core element of the process for identifying high potential NUS. Value chain analysis (STEP 3) is a key step in the nutrition-sensitive value chains operational framework, which identifies constraints and opportunities to guide the design of interventions (STEP 4). As NUS value chains have some particularities compared to more established agricultural commodities, specific approaches and methods for value chain analysis of NUS are outlined in HTDN 2, while NUS-specific approaches for domestic and export market development are discussed in HTDN 3 and 4, respectively. The nutrition-sensitive value chains framework is supported by an enabling environment that promotes the development and integration of the different stages of the value chain. HTDN 5 discusses approaches for building an enabling environment for NUS.

Box 1: Definition of nutrition-sensitive agriculture

Nutrition-sensitive agriculture is an approach to agricultural development that prioritize nutritionally rich foods, dietary diversity, and food fortification as the means to overcome malnutrition and micronutrient deficiencies. This approach stresses the multiple benefits derived from enjoying a variety of foods, recognizing the nutritional value of food for good nutrition, and the importance and social significance of the food and agricultural sector for supporting rural livelihoods (FAO 2014).

IFAD and NUS

IFAD has long been supporting research projects related to promoting NUS. These projects have especially been related to strengthening NUS value chains for stimulation of smallholder economy and increased nutrition and it is thus time to have guidelines of help mainstreaming NUS more systematically. Under IFAD's Strategic Framework 2016-2025, Strategic Objective 3 *Strengthen the environmental sustainability and climate resilience of poor rural people's economic activities* it is stated that IFAD project interventions should focus on addressing the loss of habitat and biodiversity. It further says that *special attention needs to be paid to environmental sustainability and climate resilience in agriculture while also promoting a reduction of greenhouse gas emissions from agriculture and agrifood value chains, and harnessing underutilized synergies that exist between adaptation and mitigation* (IFAD 2016). NUS are a type of resources that can be leveraged to contribute to these goals both directly in strengthening adaptation and mitigation and indirectly by offering opportunities to build untapped synergies across disciplines and sectors of society owing to their multiple roles in peoples' livelihood. IFAD hold important potentials to enhance outcomes and impact of many of the agrobiodiversity-based projects that the organisation is working on or planning to develop in the future. Furthermore, as also stated in the companion NUS Operational Framework (Padulosi et al. 2019), IFAD has the capacity to influence the development of supportive national and local policies that recognize the value and importance of NUS aiming at more resilient production systems.

In this How to Do Note we encourage the broader use of NUS to improving livelihood and their mainstreaming in almost any IFAD project, because of the many potentials of these species with regard to nutrition, climate change adaptation, rural economy and empowerment of vulnerable peoples. Enhancing their use will contribute also to maintain higher levels of biodiversity, critically important for sustaining local food systems today and in the future.

[3] De la Peña I. and J. Garrett. 2018. Nutrition-sensitive value chains, A guide for project design (Vol II and II). IFAD https://bit.ly/2PWtTzV and https://bit.ly/2D8qoBf

About this note

This entry in the NUS HTD Note series outlines key approaches towards assessing the policy environment for developing a policy strategy in support of NUS. The note provides guidance for (1) conducting a policy analysis, (2) lobbying for national policy change, (3) understanding the policy environment at its influence on NUS for nutrition-sensitive value chains (4) policy change targeting vulnerable groups, and (5) guidance for project design and implementation.

NUS and Policy

Enabling policies and mechanisms for collaboration are recognized as critical entry points to foster nutrition-sensitive agriculture (Jaenicke and Virchow, 2013). Policies and processes at global and national levels influence long-term dietary change and the success of initiatives addressing nutrition. Current food policies are generally recognized to be incompatible with promoting public health (Wang and Lobstein 2006). There is a need for policies that focus on long-term promotion of high-quality diets to address the triple burden of malnutrition with interventions targeting a broad range of actors including food producers, processors, and food providers to address obesity and diet-related chronic diseases (Hawkes 2007, Wang and Lobstein 2006).

NUS are crucial assets for improving diet quality and fostering nutrition-sensitive agriculture. Policy is often an important reason why these species are underutilized (Chishakwe, 2008). Policies shape the availability and use of NUS by influencing access to knowledge, propagation material, technologies for processing, extension services, and the level of organization and development of value chains (Chishakwe, 2008). Policy presents both challenges and opportunities for mobilizing NUS, therefore understanding the policy environment is a vital step to promoting nutrition-sensitive outcomes. Policy encompasses written agreements and legislation for which enforcement and action are typically closely aligned to and realized through complementary action plans.

In this HTDN, policy is defined as a written statement of commitment by a nation state, including ratified international agreements and official strategies. Action plans are inevitably guided by policy and contain detailed operational plans, budgets, goals and targets that are specific and measurable (Birkland, 2015). Mainstreaming NUS for nutrition-sensitive agriculture in national policy specifically refers to the organization, improvement, development, and evaluation of policy to incorporate NUS into relevant political actions to enhance use and conservation.

There are two major pathways for leveraging national policy for the use enhancement of NUS: (1) leveraging entry points in existing policy and (2) policy change. Both approaches can offer options for entry points for NUS but with crucial differences in the scale and timeline for leveraging policy for project implementation.

Leveraging or enhancing existing national policies and actions plans can be highly effective in promoting NUS within a short timeframe. Many programmes and policies are already in place and being defined within countries to address malnutrition and promote nutrition-sensitive agriculture. Integration of NUS into these existing national policies and programmes may only require raising the awareness of implementers on the value of specific species and how they are a strategic fit for meeting their objectives. Changing national policy is a longer and more intensive process that can take far beyond the timeframe of a single project to realize. Lobbying can target existing frameworks, aim to create new agreements and legislation, or to reposition disenabling policies by working directly with national decision-makers to lobby and advocate for these changes. While taking more time, engaging in this process can pave the way for future strategic policy change and enable a longer lasting and wide-reaching impact within the countries.

Policy influence on NUS value chains to foster nutrition-sensitive agriculture

Shaping national policies to create a better enabling environment for NUS in local, regional and national value chains can be an effective way to promote NUS for nutrition-sensitive agriculture. Through time, policymaking has played a role in excluding NUS from agricultural development strategies and programs, which has contributed to their marginalization by markets and value chains. Policy such as subsidies, the marketing of seeds restricted to registered varieties and seeds, trade policies, export promotion often target cash crops and high-value commodities rather than NUS. An example of such a situation is the Public Distribution System (PDS) (case study 5) in India that increased the access of affordable rice and wheat through subsidies and procurement measures that have been favoring only these crops, causing the marginalization of species like the minor millets.

The enabling environment

The policy context is crucial for developing an enabling environment for nutrition sensitive value chains involving NUS. In the case of NUS an enabling environment is impacted by multisector policy including local and regional development policies, legislation, regulations, directives and by-laws, social infrastructure (education, health, social security, etc.), and economic infrastructure (road and communication network, electricity, water). The enabling environment has both an effect on the vertical and the horizontal linkages in the value chains, and effectively has the power to control all stages of the chain.

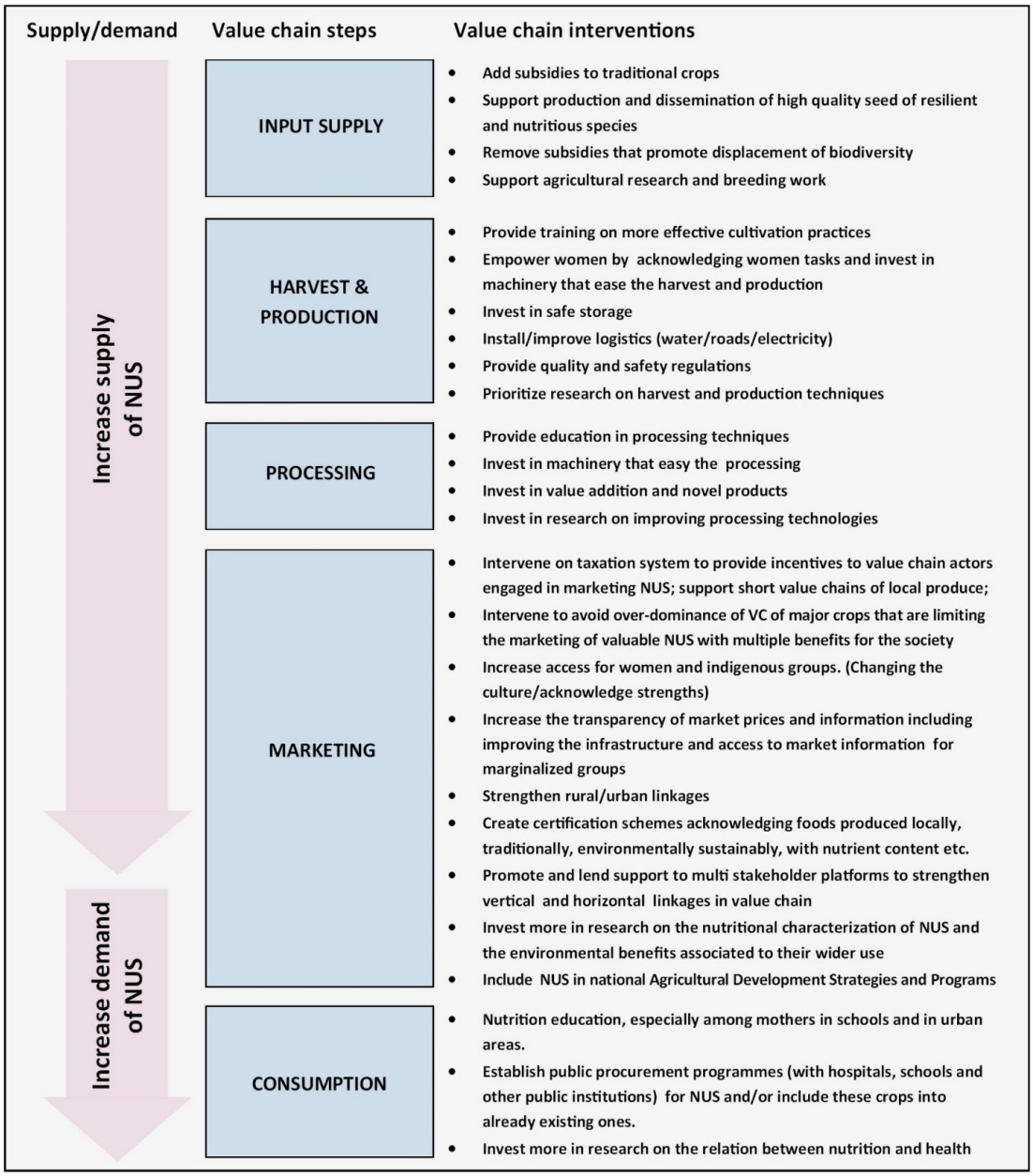
An enabling environment can minimize food and nutrient loss along the chain by improving the availability, affordability, quality and acceptability of nutritious food.

Value chain interventions by the enabling environment

Figure 2 below is an overview of some of the value chain interventions that national policy makers can make in order to enable the political environment for mainstreaming of NUS for nutrition-sensitive agriculture and markets and contribute to supportive public-private dialogue and cooperation to that end.

The activities illustrated in figure 2 largely require national policy-makers to step into the value chains or markets with supportive interventions or directly investing in relevant activities. Another possibility to consider is for policy makers to create an enabling climate that will encourage the private sector investment in NUS for nutrition-sensitive agriculture and value chains (Will, 2008).

Figure 2: Policy suggestions to increase the supply and demand of NUS in nutrition-sensitive agriculture



Key issues

Advocating for NUS as part of a holistic approach to nutrition-sensitive agriculture, rather than promoting a few species, strives to increase the available biodiversity of local food. To that regard, actions should not be limited to promote single value chains but rather to strengthen a system of value chains whose products complement each other from a nutritional point of view. A multi-value chain approach can bring about benefits on various fronts, including increased nutrition and health benefits for consumers, greater autonomy of urban and rural communities, stability and resilience of the agro-ecosystem and the 'food-scape', and income diversification options for value chain actors. Policies and programmes can help agriculture and food systems so that they can better contribute to improve nutrition, food quality and safety, by ensuring that acceptable, diverse and nutritious foods are available and accessible at all times. Policies influence both the supply and the demand of foods. From the supply side, interventions need to consider the way foods are produced, and also how they are processed, distributed and marketed through the chain. From the demand side, policy impacts the factors that influence consumers' demand and consumption. A more detailed analysis on ways to improve domestic and export markets for NUS is provided in the companion HTD Notes no. 2 and 3, dedicated to mapping value chains of NUS and interventions in support of their domestic market.

While NUS may not be as common in the market as commodity crops, they can be important in local food systems and deeply embedded in local cultures. Political support for NUS should consider how use enhancement could create fair and equitable social development of vulnerable target populations. Some underutilized crops have high nutrient or nutraceutical values, and have been often labelled as 'superfoods', a word that appeals to health-conscious consumers and high-value markets. Exploring wider income generation through access to larger markets, should be undertaken with respect for the principles of sustainable use and equal benefit sharing for local communities and stakeholders. Integrating NUS into these initiatives provides a unique opportunity to empower marginalized groups, especially resource-poor women and indigenous peoples, who maintain and use these crops today (Padulosi et al., 2013). Marginalization and isolation of these groups is systemic and demands complementary mechanisms, initiatives, and planning to ensure that target populations are reached. Mainstreaming NUS can be an integral aspect of national policy design to increase inclusion and build opportunities.

Box 2: Relevance of NUS for Indigenous Peoples

In November 2018 FAO and partners organized a High-Level Expert Seminar on Indigenous Food Systems to bring Indigenous Food Systems on the political agenda. When speaking about Indigenous Food Systems, implied is also the indigenous species, predominately NUS, which are essential to such traditional systems. These are some of the key statements derived from the conference with relevance to NUS:

- Raise awareness on indigenous peoples' customary institutions to ensure adequate governance of their indigenous food systems in order for their knowledge to positively influence national policies and reduce the food industry's threats to indigenous food systems.
- Promote spaces for dialogue and policy discussion to promote and conserve indigenous peoples' native-seeds, biocultural diversity, and diets.
- Reviving local seeds and achieving seed sovereignty through participatory and evolutionary plant breeding.
- Promote dedicated research, documentation and awareness raising on indigenous food systems, especially in terms of nutrition values, biodiversity and conservation of resources, and resilience and climate change.
- Raise awareness on indigenous food systems' values including legends, recipes and storytelling related to indigenous foods and their production.
- Build capacity of youth on their understanding on indigenous food systems to improve their recognition of nutritional and resilience benefits.

Modified from FAO 2018a

The following are key domain of actions for NUS supportive policy, whose development is likely to lead towards improved food and nutrition security, greater resilience to climate change and increased incomes, with a particular attention to the empowerment of indigenous peoples, women and youth.

1. Ensuring national coverage of NUS

Advocating for the inclusion of NUS in national nutritional policies and crop diversification programmes can be pursued by leveraging existing frameworks or by supporting the development of more inclusive policy. International agreements regarding nutrition and biodiversity can be used as leverage to increase the range of species being conserved and streamlined for wider consumption at national level. Depending on the national context there may also be the opportunity to use evidence to build a case for streamlining NUS into national development plans and initiatives. This can have an overall effect on vulnerable groups as it removes barriers to supporting NUS projects to benefit conservation and use enhancement of species relevant for them. IFAD Loans can assist governments in developing best practices for NUS by integrating the methods and tools for NUS into government programmes. Potential actions can include introducing NUS in food composition tables and/or national food dietary guidelines, building capacities to establishing nutritional value and best practices, and promoting education to change conceptions of the crops.

2. Ensuring access to material conserved in gene banks and promote benefit sharing

Due to poor international and national coverage, legal protection of NUS (both wild and cultivated) is currently limited. Maintaining the intellectual property rights and equal benefit sharing through the ITPGR at a national level can help establish the legal rights of custodian farmers to their local NUS. In the case of NUS, often local communities have been cultivating and managing their genetic resources for generations and more developed value chains may strip these groups from their rights. Maintaining access to seed of NUS in ex-situ seed banks is also important to ensure that vulnerable groups are able to recuperate their local varieties and culturally important species in the case of disaster.

3. Supporting in situ conservation

By and large NUS diversity is maintained by farmers through on farm conservation or is to be found in the wild where it is harvested by local gatherers. More needs to be done to strengthen in particular the contribution made by local populations to the society in keeping and managing this diversity. Many NUS have desirable traits such as resistance to drought, early maturation, lower water requirements, and higher tolerance to poor soils (Padulosi et al., 2011). Providing incentives (e.g. PACS) can not only help meet national biodiversity goals but also support more ecological agricultural systems that in turn can ensure decentralized seed supplies. In addition, supporting decentralized seed systems for traditional crops can also maintain access and quality of genetic resources of NUS. Supporting on farm conservation of NUS also has the capacity to help society support a dynamic agricultural adaptation process, which is strategic for coping with climate change.

4. Recognizing and supporting traditional knowledge

In accordance with the IFAD Policy for Engagement with Indigenous Peoples, it should be recognized that NUS can be both cultural heritage and strategic resources for Indigenous Peoples, therefore we should work to ensure that the traditional knowledge associated to NUS is properly recognized and integrated into their conservation and use. The integration of traditional knowledge is cross cutting and can fortify efforts to mainstream NUS at multiple levels. Integration activities can include development of cookbooks or other resources for documenting traditional recipes, working collaboratively with women to validate the nutritional quality of traditional recipes and develop improved practices for their preparation, working with community members to create biodiversity registries, integrating traditional farming methods and planting schemes resulting from scientific findings, forming information sessions with extension and technical agents lead by

indigenous peoples to discuss best practices, integrating and respecting associated ceremony and cultural activities related to NUS into curricula.

5. Encouraging the use of NUS by public institutions

Linking NUS to local institutions, such as public procurement programs for school or hospital meals, can be advantageous for increasing the consumption of NUS in reaching vulnerable populations, encouraging local trade, and promoting behaviour changes. Including NUS in school feeding programs and curricula can impact consumption of nutritious foods in the short term and can have a long lasting impact in changing the behaviour of young consumers. Other initiatives such as including NUS in school gardens that introduce NUS traditional knowledge in schools and provide materials that can change the perception of NUS as a "poor food" are all actions that can help building pride around production and consumption of these resources. Other institutions such as universities and culinary schools can be engaged to build evidence, raising the status of NUS in a culinary sense, and educating the broader populace about NUS.

6. Support small and medium sized NUS driven enterprises

Home and kitchen gardens are areas primarily managed by women. By promoting local consumption and conservation in home gardens of NUS, excess of these products can be also sold in local markets to diversify income sources while increasing access to nutritious foods to consumers. In the same vein supporting micro loans and grants for small and medium sized businesses utilizing NUS can have benefits for the primary producers and knowledge holders of these crops, namely women and indigenous peoples. Introducing marketing intelligence systems can enhance local coordination allowing the sharing of offer and demand estimates via mobile phones across value chain actors. These technologies paired with a holistic value chain approach can allow local communities to access information about where to find NUS in the community, how to use them and to buy and sell them.

7. Encourage improved production and processing

Producing and processing NUS is very often labour intensive, therefore to truly empower women and Indigenous peoples there is a need to invest in eliminating drudgery in cultivating practices and value addition technologies. Policy to support the development of pro-NUS technology to eliminate drudgery in agricultural activities (cultivation, harvesting, processing, etc…) will be also valuable to unlocking their nutritional and health potential. These will also help value chains in developing other commercial items (e.g more attractive to consumers and more amenable for commercialization) in support of income generation of local entrepreneurs. Organising and supporting community-based processing units are also effective ways to support income generation from value addition and this is especially true in indigenous people's areas where community-shared activities are well rooted in the local culture and social behaviour. Innovative technology targeting remote hilly areas and marginal lands is very much in demand, such as less labour-intensive weeding, more efficient water use or optimizing and storing locally available renewable energy for processing operations. Providing informational materials and technologies regarding seasonal availability of local biodiversity, nutrition value of local species and up to date climate information can also be useful tools to plan production at multiple scales; actions that can be supported by policy enabling the inclusion of NUS in rural advisory services (RSA).

8. Promote multi stakeholder dialogues and representation

Increasing representation at all levels of the policy process can help create more enabling and empowering initiatives. At the local levels, building the capacity of women and indigenous peoples to serve as technical agents to local communities can improve the integration of traditional and technical knowledge. At regional and national levels, local communities and producers should be included as key stakeholders with complimentary mechanisms that maintain ownership. At the national and international level taking advantage of civil society mechanisms or an ombudsman can strengthen national and international legal

instruments and frameworks by ensuring that national and international decision-making bodies consider the rights of current and future generations of marginalized peoples[4].

Table 1. Summary of Policy Recommendations and outcomes

Policy Recommendations	Pathways for Mainstreaming NUS in Policy	Potential Outcomes
1. Ensuring national coverage of NUS	• Leveraging International agreements such as the CBD a to increase the coverage and use of species at the national level • Including NUS in national food composition tables • Supporting national nutritional analyses	• Higher level of knowledge about the valour of local species that could lead better marketing and high value niche markets • Building empowerment and pride associated to traditional species • Increased incentives for conservation of NUS
2. Ensuring access to material conserved in gene banks and promote benefit sharing	• To establish legal requirements concerning plant breeders' rights • Addressing intellectual property rights, access and agency for the NUS	• Increasing legal protection for Indigenous Peoples and traditional value chains • Stimulate private sector interest • Increasing seed quality and availability • Increasing ownership and livelihoods of indigenous peoples and women
3. Supporting in situ conservation	• Payment for ecosystem services • Payment for maintaining biodiversity • Decentralized seed systems for traditional crops	• Improved livelihoods • Improved access to genetic resources • Improved in-situ conservation
4. Encouraging the use of NUS by public institutions	• Developing educational materials for traditional knowledge • Working collaboratively with women to validate nutritional quality of traditional recipes • Working collaboratively with women to develop best practices for preparation • Creating biodiversity registries • Integrating traditional farming methods and planting schemes into best practices • Integrating and respecting associated ceremony and cultural activities related to NUS into curriculums.	• Building the capacity of marginalized peoples • Conserving and building traditional knowledge • Increasing agency • Increasing sense of ownership and empowerment • Changing perceptions of NUS • Empowering local traditions
5. Encouraging the use of NUS by public institutions	• Linking with schools to integrate NUS into school feeding programs and curriculums • Linking with community centres to offer programs and information • Linking with universities and culinary schools to build evidence • Linking with Ex situ gene banks	• Increasing education and awareness • Initiating behaviour change to consume healthier foods • Increasing availability of healthy foods • Raising the status of NUS from a poor people food • Secure conservation and provisioning of material to communities, especially in case of disasters affecting on farm conservation
6. Support NUS markets and value chains	• Introducing marketing intelligence systems can enhance local coordination • Supporting micro loans and grants for small and medium sized businesses primarily for women owned enterprises	• Enhancing incomes • Increasing job opportunities especially for women • Reducing drudgery • Increasing consumption of NUS • Reducing food waste • Empowerment of women in the marketplace

[4] http://www.fao.org/fileadmin/templates/food_composition/documents/Cordoba_NUS_Declaration_2012_FINAL.pdf

Policy Recommendations	Pathways for Mainstreaming NUS in Policy	Potential Outcomes
7. Encourage improved production and processing	• Organising and supporting community-based processing units from value addition • optimizing and storing locally available renewable energy • Providing informational materials and technologies regarding seasonal availability of local biodiversity, nutrition value of local species and up to date climate information	• Supporting income generation • Increasing food availability through storage and creation of value-added products • Increasing nutritional values of processed goods • Building local production capacity with knowledge and technology
8. Promote multi-stakeholder dialogues and representation	• Building the capacity of women and indigenous peoples to serve as technical agents to local communities • Developing civil society mechanisms and/or an ombudsman	• Can improve the integration of traditional and technical knowledge • Capacity building • Empowerment and sense of ownership • Helping to ensure that rights of current and future generations of indigenous peoples and women are represented

Policy analysis to identify entry-points for NUS promotion

Before initiating the project an analysis of the country situation should be conducted as preparation for the policy analysis. This consists of a few steps that clarify the main points, viz. the problem to be addressed, how to address it and the current stage of knowledge relevant to the identified problem. Find guidance of how to conduct a pre-project situation analysis in Annex 1.

Conducting a policy analysis is a primary stage to identify existing policy frameworks or possible pathways for policy change that are aligned with desired NUS for nutrition-sensitive agriculture outcomes. This section presents a methodological approach for the analysis which is made of four main steps:

1. Policy documentation review
2. Mapping the decision-making structure
3. Assessing implementation progress
4. Identifying entry points and gaps for promoting NUS for nutrition-sensitive agriculture

Each of these steps is important, however those undertaking the analysis, may find that based on the level of available information and scale of the action, the approach can be modified, specific sections by-passed or some sections more relevant for project implementation.

Step 1. Policy Document Review

The core of the policy analysis is to identify the current state of policy relating to the identified issues, target populations, geographies, and NUS. The first step of the document review is to identify the key policy, programs, and initiatives by content and theme, the second step presents some guidelines for mapping the decision-making structures of the relevant policies.

Content and Thematic Analysis

An effective approach to reviewing whitepapers and identifying relevant policies is to start with one or more key political agreements, for example a relevant international agreement. The analysis of the agreement at the international scale can guide us to other relevant policy measures linked to it implementation that may exist at regional or municipal level.

Box 3: Tips for identifying policies relevant for NUS in reviewing documents

As NUS are by definition neglected by policy and research it can be difficult to identify which policies are relevant for their use enhancement when reviewing some relevant documents. The following two tips will help us to tailor our document review to capture policies that are potential entry points for NUS:
Establishing key search terms - It is rare that NUS will explicitly be mentioned in policy, therefore defining selecting terms related to NUS can aid in the search process. Utilising key terms in the national language will help identify policies in relation to nutrition security, agriculture, rural development, climate adaptation and conservation. Typically, in such policies, NUS would be overlooked in favour of major commodities but identifying enabling language can reveal where more advocacy can be made for including NUS. Good proxy words related to NUS include: crops, agriculture, foods, seeds, biodiversity, agrobiodiversity, agricultural biodiversity, culturally relevant foods, culturally appropriate foods, traditional crops, orphan crops, traditional foods, native foods, indigenous plants, indigenous foods, ecosystem services, ecological farming, traditional farming methods, multiuse forests, famine foods among others.

Identifying cross cutting themes - NUS are often relevant to issues that are cross cutting in policy narratives and can be associated with many domains of such as women or indigenous peoples empowerment, biodiversity conservation, climate smart agriculture, agroecology or rural livelihoods improvement. As such, the policy scope of a wider NUS deployment in agricultural production and markets may be quite broad and difficult to assign to one specific policy entry point. On the other hand, identifying relevant cross-cutting issues related to NUS would be valuable for pursuing a more holistic impact for their use enhancement, leveraging the multiple cross-cutting benefits that could be potentially harnessed through their mainstreaming.

A comprehensive analysis at all scales (see table 2 below) is recommended to identify common entry points for NUS that might be present in more than one agreement. For example, the reviewing of national plans or countries' policies related to the Convention on Biological Diversity (CBD), the International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA), or the United Nations Framework Convention on Climate Change (UNFCCC), can reveal important opportunities where the use of NUS would lead to multiple benefits across all those agreements.

Table 2. Levels of Policy, Programs and Initiative

International Agreements	Ex. Treaties, Conventions, International and Regional Pacts, Agreements
National Legislation	Ex. Laws, Decrees, Constitutional Law, Court cases
National Programs	Ex. Operational Plans, Programs, Pacts
Regional and Municipal	Ex. Coalitions of municipalities, Municipal programs, Cooperatives, Seed banks
Grassroots initiatives	Ex. Community Networks, Coalitions, Cooperatives

Such policy analyses can benefit also of the availability of several online policy databases, e.g. FAOLEX database, ECOLEX, LexisNexis, as well as of many others available on the respective websites of the international agreements or national government agencies dealing with the conservation and use of biodiversity (wild or cultivated).

The following questions are suggested to guide the policy analysis:

- What are the policies in (insert respective country) affecting the use of agricultural biodiversity in production systems, markets and diets?
- With regards to seed policies, what are the policies regarding intellectual property rights and use (cultivation and sale) of local varieties?
- What are policies that enable or hinder *in-situ* and *ex situ* linkages?
- What are the policy opportunities and bottlenecks that promote/ hinder the use enhancement of agricultural biodiversity in (insert respective country)?

What are the impacts (both positive and negative) of policy?

- Who is being impacted? And what is the impact especially to groups such as Indigenous peoples, women and youth?
- What is the level of the impact for these groups?
- What is contributing to a high or low level of impact?
- Is the impact sustainable?
- How can impact be optimal?

Specific questions focusing on the use enhancement of NUS may include:

- What are the policies that are affecting the use of agricultural biodiversity in production systems, markets and diets?
- With regards to seed policies, what are the policies dealing with intellectual property rights and use (cultivation and sale) of local varieties?
- With regards to conservation, what are policies that enable or hinder in-situ and ex situ linkages necessary to achieve an integrated conservation of NUS?
- With regards to markets, what are the policy opportunities and bottlenecks that promote/ hinder the development of NUS value chains and markets? Can interventions in support of NUS markets be tailored to benefit especially indigenous peoples or other vulnerable groups?
- With regards to nutrition, are native species or traditional crops currently being used in any national policy tackling ways to improve nutrition? If yes:
    - What are these species? Are they being used in a specific geography?
    - What are those qualities that made them politically desirable?
    - Are there current entry points for using NUS to strengthen nutrition goals?
    - Are there trends in policy that would provide future opportunities include NUS?
    - How can awareness on the nutritional and resilience benefits deriving from NUS can be raised through ad hoc campaigning, or education in schools?

Step 2. Mapping the Decision-Making Structure

Guided by desired development outcomes and goals of the project, the next step consists in mapping the key institutional structures of decision-making related to agriculture and nutrition, as key target areas for the promotion of NUS. Table 3 (below) details how desired project outcomes correlate to political entry points and can provide guidance for identifying relevant national ministries, governing bodies, and/or decision makers.

Table 3. Political scale of entry points and desired outcomes

Type of national political scale of entry point	Desired Outcomes
Governance outcomes	Ex. Increased recognition of stakeholder rights and representation
Policy and political outcomes	Ex. high-level sector, fiscal, development and social policies, constitutions and statements of national vision, include biodiversity considerations, and vice versa
Plan outcomes	Ex. inclusion of NUS in development and poverty reduction and biodiversity strategies
Budgeting and accounting outcomes	Ex. Public-private sector resource mobilisation to support diversification of incomes and small-scale rural enterprise, inclusion of development-NUS linkages in national public and sector budgets; inclusion of ecosystem services in national accounting systems
Institutional and capacity outcomes	Ex. strengthened capacity within biodiversity-related institutions to understand development and economic processes and interact in a more inter-sector constructive manner; valuation of the economic importance of NUS for the social empowerment of vulnerable groups like women and Indigenous peoples.
Investment and economic outcomes	Ex. improved domestic resource mobilisation for poverty-biodiversity investments or recognition of potential trade-offs in sector investments such as mining
Behavioural outcomes	Ex. key patterns and processes of production, consumption and waste treatment in sectors and localities are informed by NUS and poverty considerations
Pro-poor management outcomes	Ex. pro-poor management of ecosystem services, such as medicinal, cosmetic or edible plants; healthcare, wild foods, soil fertility; traditional breeds and crop varieties; water purification; cultural or religious use, providing material and immaterial benefits from NUS to local populations

Diagram modified from *10 steps to mainstreaming Biodiversity* (IIED 2013)

Depending on the scale of political action some policy levels will be more relevant to leverage than others for NUS mainstreaming. After relevant policies have been identified, we should then identify relevant organisations, entities or individuals at the various levels that are formally involved in national policy processes, who will be strategic players to support NUS policy implementation or their possible improvement.

While this process of mapping the decision-making structure may yield important information, the identification of other actors informally involved in decision making would is also a valuable exercise. Box 4 lists several of these informal actors that will be worthwhile considering. Entry points should be mapped out against the decision-making process at the various scales. Out of that list, we should then take note of those stakeholders and civil society mechanisms that could be most helpful for our pro-NUS policy work and could be then contacted for collaboration.

Box 4: Different actors in formal decision making

Influencers: those who take part in the decision-making process and can affect the outcome of the policy process using legitimate means based on their opinions and views.

Owner/Decision Maker: can affect the policy outcome in terms of the intellectual or practical components or an entity that owns all or component parts of the policy development process within a specified boundary.

Influencer/Deliverer: influencers who are also engaged in the delivery, process, or reporting of the action which in turn facilitates the interpretation, transposition and/or implementation of the policy.

Deliverer: can affect policy outcomes as a result of the delivery, processes or reporting of actions which facilitate the interpretation, transposition and/or implementation of the policy.

adapted from the Rapid Policy Network Analysis presented in Bainbridge et al. 2011.

Step 3. Assessing implementation progress

The identification and analysis of policy documents are important for determining entry points but are unlikely to adequately reveal the current state of use or efficacy of policies. It is therefore important to review how the programs, initiatives and plans have been executed and funded, which will reveal gaps and opportunities for mainstreaming.

It should be also noted that essential to understanding the general political and institutional context is the reviewing of the political, socioeconomic, and ecological situation of our target area. Moreover, understanding political controversy, efficacy, as well as cooperation between civil society and other actors can help determine effective means for leveraging national policy and engaging stakeholders.

Our NUS policy review can be also supported by interviewing stakeholders for assessing efficacy of policy implementation. Individuals or groups from government departments, NGOs, communities, private sector organisations can all provide further insights. If interviews are unfeasible, a review of third-party audits, reports from donors, and project assessments can be also considered.

Some guiding questions* for interviews can include:

- Does the policy clearly identify steps for implementation?
- Was the policy implemented in accordance with the policy requirements?
- What inputs and resources were required to implement the policy?
    - Were these inputs and resources available?
    - Were the available resources used?
- What were the primary activities completed during policy implementation period?
    - Did the activities meet the desired outcomes?
- Was the policy implemented consistently across target communities and/or environments?
- Were there any unintended consequences of the method of implementation?

What external factors influenced the policy implementation?

*Questions adapted from CDC, 2012.

Step 4. Identifying entry points and gaps for promoting NUS in nutrition-sensitive agriculture

The policy analysis helps to identify pathways for impact and potential entry points to leverage in national policy development. Indication of how existing national policy can be leveraged or how to best lobby for supportive national policy development for NUS can also be revealed from this research. Policy entry points and gaps generally fall into three categories: 1) existing policy to which NUS can be integrated with some awareness raising, 2) policies hindering the deployment of diversity in agriculture, and 3) gaps in policy where new legislation and programs can be proposed, or existing policies can be modified to provide a more enabling environment.

A general review of these documents reveals some common policy constraints and barriers faced on the use enhancement of NUS. As NUS tend to be always seen as 'minor' crops and for that reason demand less attention then commodity crops, they are usually left out of subsidies, export agreements, and other production supportive initiatives that favour commodity crops. The poor funding and attention for the conservation of their genetic resources is also a major constraint that inhibits their sustainable use (e.g. NUS are not included in Annex I of the ITPGRFA). The general lack of funding to support scientific research and their poor coverage in R&D projects is also a recurrent condition observed in NUS, determining their limited characterization and evaluation (incl. for their nutritional composition), breeding efforts, seed production, post-harvest management and marketing, which in turn impede a robust assessment of their multiple benefits hindering the building of sound evidence for their promotion. Other common constraints come in the form of behaviours, ideologies and perceptions that relegate NUS as food of the poor and lead to their exclusion in relevant agricultural policies. Very often, international nutrition policies reinforced by national nutrition legislations tend to also exclude NUS from their recommended guidelines and messages.

After recognizing barriers and constraints, viable entry points can be identified in existing policy. The duration and stage of targeted programs and initiatives will help also to understand which pathway could prove the most effective. For example, if a program does include NUS and is reaching the end of its implementation, it would offer a 'low hanging fruit' opportunity to assemble evidence on the benefits of these species in support of our lobbying, which may eventually lead to continued financial support for such a work. If potential entry points for NUS are identified, e.g. a school feeding program where NUS could be included, lobbying decisively towards that goal should be pursued. This should be done sooner rather than later, as policy change or amendment is a long process. An example of a successful inclusion of NUS in school meals is that of Brazil, where the Bioversity-led Biodiversity for Food and Nutrition project has worked closely with Brazilian policy-makers and the National School Feeding Programme, leading to successful incorporation of indigenous foods into school meals (see case study 4).

In order to aid NUS mainstreaming efforts, it is also useful to review successful policy efforts and frameworks that do not necessarily deal with NUS but that because of their well-organized structure can guide in building the case for NUS. Overall it is noted that globally there are several legal frameworks, policies, projects, national programmes and strategies relating to NUS (FAO 2010). It is important thus to devote proper attention to learn from these and leverage the collective wisdom on how various challenges have been addressed and what design approaches have been taken into consideration to overcome these consistently.

The business case will often be an aspect of the pre-project design to help with capital planning and securing investment for the project it is a vital tool that should be built-on and refined throughout the project. A business case aims to present thorough and compelling justification to an organization or individuals that the project is able to meet their respective mission, goals, and objectives. In a policy sense, this document intends to educate and inspire decision makers to take action on the issues presented while providing feasible pathways for action in their national context. It is probable that the business case has already informed the target groups and themes for the policy review, Box 5 offers some tips of how entry points and gaps identified in the policy review should be integrated into the argument for NUS to meet national challenges and targets.

Box 5: Building policy into the business case

The following presents some tips into how findings from the policy analysis can be used to build the business case for NUS and NSA:

- Restate overarching national commitments or goals for relevant themes such as food security and nutrition, climate adaptation, and rural development.
  - Present progress towards these goals.
  - Highlight any barriers and challenges to meeting these goals.
    - Present how NUS and nutrition sensitive agriculture can overcome these challenges and barriers.
    - Or present what changes would need to be made to have enabling policies (also helpful to use examples from other countries)
  - Use these overall goals as leverage to present the benefits of using NUS and NSA that go beyond financial incentives (ie empowerment, improved nutrition, culturally sensitive nutritious options
- Present existing policies that have entry points for promoting the use of NUS (ex. school feeding, PACS, and etc)
  - Provide examples on how specific actions could be scaled up
  - Providing options for how to integrate NUS into these policies to meet goals
  - Examples from other countries where NUS have been integrated into similar policy initiatives and have had positive impacts

Business cases can take many forms depending on the audience such as briefs, factsheets, verbal presentations, and reports, among others (please see Box. 8 Tailoring the business case below on p.24).

Lobbying for supportive policies

Identifying and engaging the relevant key stakeholders for mainstreaming NUS into national policies and programmes is essential for a successful implementation. Building up a strong enabling environment that supports the desired outcomes on various levels and in various fields is the most efficient way to ensure actual impact on policies, which essentially is what results in long-term impact. This is also emphasized in the NUS Operational Framework, stating that policy engagement, advocacy and partnerships contribute to better governance, a supportive enabling environment and consequently more effective projects and country level (Padulosi et al. 2019).

What kind of stakeholders to take on board?

When talking about NUS for nutrition-sensitive agriculture, stakeholders from many different ministries and institutions are relevant, including those working on topics related to agriculture, nutrition and health, environment, education, social development, employment and even trade and finance. Coordinating across sectors, both horizontally and vertically, can be most beneficial in strengthening the enabling environment and increase the influential power.

Depending on the project, different levels of governance may be interesting to explore. From national and regional level to local level governance or even community policies. Furthermore, it may be relevant to include other actors for leveraging, such as Civil society organizations (CSOs), Non-governmental organizations (NGOs), local authorities or other representation mechanisms, service providers, media groups and journalists, community groups, farmers etc. In addition, institutions such as schools and hospitals with the capacity to build a demand for NUS species are also worth considering as well as research institutions, universities and experts. Finally, private-sector actors with e.g. an influence on the value chain environment are essential FAO (2015a).

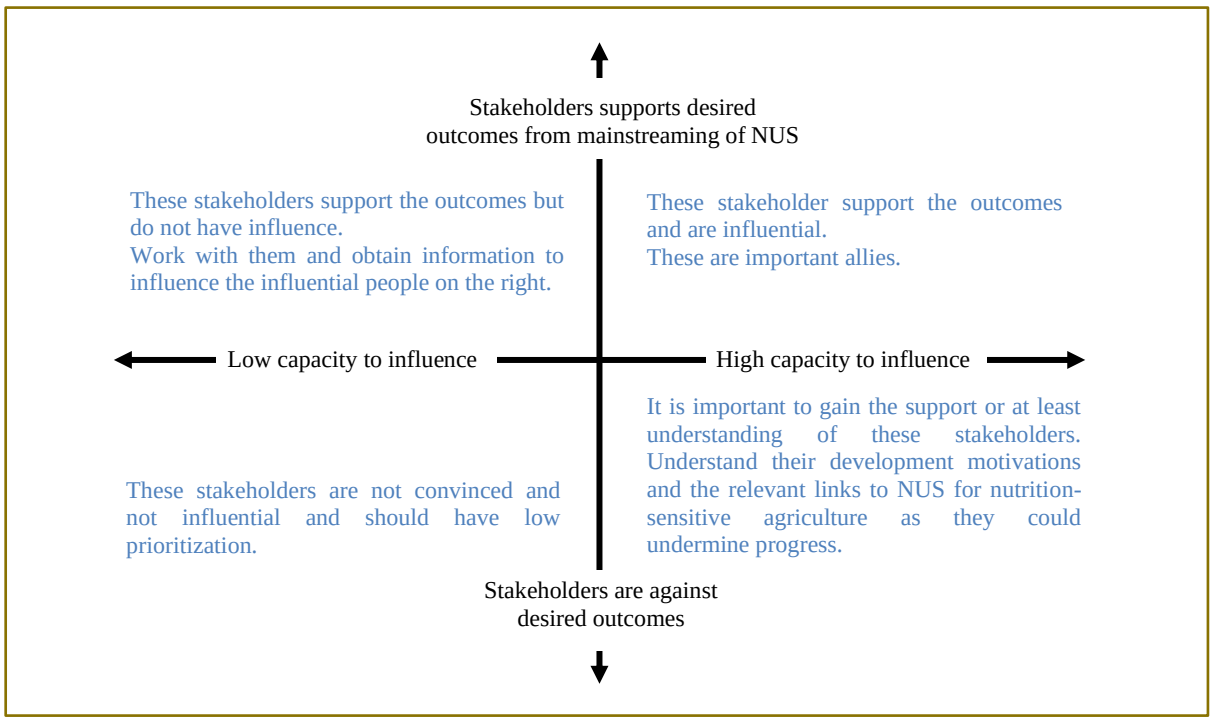
Identification of key-stakeholders

In the identification of key-stakeholders for specific projects, different factors must be taken into consideration including what stakeholders are likely to support the desired objective and what their capacity is to have an influence on the outcome. Good will can be found in many stakeholders, but good will coupled with influential capacity is a winning card. Interestingly, the International Institute for Environment and Development (IIED) suggests to also identify a few actors that are likely to undermine the project because engaging with them a constructive dialogue will help to develop more robust oppositional lobbying points. The stakeholders with the highest influence should be the ones engaged, whether it is for or against the project objective.

Identification of key stakeholders will be naturally an important part of the policy analysis described in the former section. Especially if the analysis includes key informant interviews with relevant stakeholders, which will allow for direct exploration of the stakeholders' interests and engagement in related project's fields. An example of such an interview to identify key stakeholders in given in Annex 2.

The stakeholder mapping matrix below (figure 3) can help in identify potential engagement of stakeholders having different degree of interest on NUS and capacity to influence. Most helpful stakeholders would be those in the top right quadrant:

Figure 3: Stakeholder mapping matrix



Modified from (IIED 2013)

How to establish partnerships?

Cross-sectoral partnerships are essential for meeting the complexity that food systems represent and thus important for ensuring holistic and sustainable mainstreaming of NUS into national policies (Hunter et al. 2016; Tribaldos et al. 2018). The above identified key-stakeholders may very well be potential partners that can contribute to a comprehensive approach, lifting the project up on an effective level.

The preliminary policy analysis will reveal areas of potential for supportive policies as well as national and regional plans of action suitable for integrating NUS into nutrition-sensitive agriculture plans. Ideally, there is an opportunity to build on already existing national policy frameworks or alliances for nutrition-sensitive agriculture (e.g. as described in Case study 4). Alternatively, partnerships or networks can be established after identifying relevant stakeholders to forge alliances for building a strong enabling environment for policy impact: e.g. involve ministries and other agencies interested in promoting healthy dietary practices and leveraging their lobbying and advocacy campaigns to convince other influential policymakers. Partnering up with platforms or organizations with similar objectives that are already well connected to national or local policy-makers will be also strategic.

Box 6: National food-based dietary guidelines

National food-based dietary guidelines are useful for politicians to guide consumers in their eating preferences. They can provide recommendations on latest evidence in hand of food and nutrient composition of healthy diets, adapted to the national context. This has strong power to influence consumer preferences because it informs both consumers but also guide food related policies within the country it exists. (HLPE 2017)

Box 7: Engaging NUS champions for a broader reach

Engaging so-called champions able to bring the message about the NUS benefits to wider public and higher policy makers' levels is an efficient way to mainstream these species. This can be pursued either through the involvement of champions with strong influential power within the political sphere or through those who have strong influence on the public opinion, which can then call on decision makers for supportive changes in favour of NUS. The latter type of champions may even contribute to a public paradigm shift, which can force politicians to incorporate such considerations into their policies. Either as a result of public pressure, e.g. through petitions or general revolt, or because it will be democratic and strategic for politicians to follow the will of their voters. An efficient strategy is to engage famous individuals that are already heavily exposed and followed by the public. This was e.g. done by the Crops for the Future who partnered up with Prince Charles of Wales to launch the Forgotten Foods Network. This is an interesting approach to reach a target group that may not have interest in environmental topics, biodiversity or even cooking but nevertheless represents the 'average man or woman' and thus a significant part of society. Other highly recognized champions within related fields include Leonardo DiCaprio's advocating for conservation of biodiversity and Jamie Oliver's promoting nutritious meals in English School meal programmes. The latter resulting in new regulations for improving the standards of school meals in the UK (DoE 2014).

These champions are strong partners because they bring along with them an already existing trust from their professional networks and supporters, and thus less explanation and persuasion is needed. In addition, such champions are not dependent on project grants or subject to strict project documentation procedures, which allows them to move more freely and be more impulsive in their approach. Furthermore, partnering up with champions have a tendency to represent a more long lasting solution because they have their own agendas with personal and economic gains that are not limited to a project period of three years but often a lifelong project.

Building capacities at community level to understand policy and participate in advocacy campaigns

For a policy proposal to have long-term success and be effective on the ground, it needs full support and endorsement of those communities whose livelihood aims at improving. Participation of communities is thus essential, but this is often hindered by their poor understanding of policy and related processes. In consistency with the NUS operational framework (Padulosi et al. 2019), building capacities at community level to understand these is thus an important step of our policy change process. As such, a communication strategy for how to ensure clear transmission between policy designers and communities, is warranted. When discussing policy change with a community, issues should be presented with honesty and in a way that people can easily understand, whether it being done by means of policy briefs, community meetings, videos, internet or other tools. Often a combination of communication measures will reach a broader audience in the most effective way.

Regardless the type of communication strategy applied, people should be provided the opportunity to comment and actively support the policy ideas and proposals as well as questioning them or expressing doubts if they wish so. Local communities have greatest knowledge and expertise on the cultivation and use of NUS as well as being experts on the functionality of the community, thus holding knowledge crucial for a good policy design and implementation. The use of such knowledge strengthens local advocacy and the quality of the policy change, making it more relevant to local context. The more potential a community can see in a new project or policy the more likely it is for them to accept and adapt to it. Seeking communities' feedback will be also important to check whether our engagement with them as been effective in building their policy understanding.

Meeting sound governance structures that may be already in place locally and leveraging this to communicate with people can be the most convenient and effective channel to follow. Alternatively, local grassroots or community representatives can be engaged to support the dissemination of information and help in capacity building activities. These will be in a good position to assess how well the information is received by the communities and assist them in providing feedback. In the earlier mentioned study, Jaenicke and Virchow (2013) found evidence that if government actively supports or initiates a programme, which is then implemented in partnership with civil society and/or partners (such as NGOs), these initiatives have a higher probability of success than those supported by single entities with no government involvement. Therefore, analysing and addressing the policy environment and identifying government actors to involve at the onset of our policy change efforts, would be most relevant for the ultimate impact of our initiative.

Box 8: Tailoring the business case

After having identified the key stakeholders, it is helpful to build a business case tailored to each of them that would give evidence to the NUS benefits by leveraging nutrition-sensitive agriculture issues contained in national policy and programmes. Essentially, this can be done by highlighting proven successes associated to ongoing or completed projects and stressing how the scaling up of these through national programmes could benefit the wider population.

The underuse of NUS species is to a big extent the result of lack of awareness of the species' many benefits. Hence building a case also may simply delve on presenting the concept of NUS and its unexplored potentials. Emphasis should be put on the concrete benefits that mainstreaming NUS can bring about to people and society as a whole such as stimulate local or national economies; help addressing hunger and malnutrition; decrease the public expenses on healthcare; create jobs; strengthen cultural or traditional identity; create safety net in times of crisis and extreme weather; contribute to reduced health care expenses; ease climate change adaptation; help government to meet the national and international commitments and targets etc. Outcomes must be convincing and well presented to targeted stakeholders and in each case we should use argumentations dearest to each stakeholder' category (e.g. emphasis the nutrition benefits with stakeholders of the Ministry of Health, or adaptation to climate change with those of

the Ministry of Agriculture). Table 4 lists potential outcomes from mainstreaming NUS into various sectors which can be taken into consideration when building a business case.

These are some examples of how NUS can be mainstreamed and what beneficial outcome could be potentially derived, especially when this work is integrated with other programmes (see Table 4 below). Desired outcomes naturally depend on the level of scaling up and the extent of investment. Many benefits are also a result of each other, and desired outcomes cannot strictly be divided into sectors but the diagrams gives an idea of potential beneficial outcomes that are useful when building a business case and helps identify mutual beneficial outcomes with already existing, or new projects. Annex 3 provides suggested indicators that can be used to provide evidence of political outcomes and measure the success of project activities to support the business case.

Table 4. Potential outcomes from mainstreaming NUS into various sectors

Sector/programmes	Examples of potential outcomes for business cases	Relevance & Impact in major Treaties/ Agreements
Health	• Reduction in the incidence of malnutrition in the population (in particular among women and children suffering from anaemia and vitamin A deficiency and/or overweight and obesity) • National healthcare savings	Contributing to strengthen the achievement of global commitments such as: Aichi Biodiversity targets: **1** (inform about biodiversity), **2** (mainstream biodiversity), **4** (sustainable production), **5** (decrease habitat loss), **7** (sustainable management), **13** (conserve gene pool), **14** (restore ecosystems), **18** (Conserve traditional knowledge) Sustainable Development Goals: **1** (no poverty), **2** (zero hunger), **3** (good health and well-being), **4** (quality education), **5** (Gender equality), **8** (decent work and economic growth), **10** (reduced inequalities), **11** (sustainable cities and communities), **12** (responsible consumption and production), **13** (climate action), 15 (life on land) National Biodiversity Strategies and Action Plans (NBSAPs) The FAO Global Plan of Action on Plant Genetic Resources for Food and Agriculture (PGRFA) (Priority Activity no. 11) (FAO, 2011). The International Treaty on PGRFA. The 2016-2020 Strategic Plan of the UN Standing Committee on Nutrition (UNSCN).
Social and cultural	• Strengthened food and nutrition security • Strengthened food sovereignty • Strengthened traditional knowledge and peoples' identity • Recognition of indigenous peoples cultures and self-determination • Empowerment of indigenous peoples and other marginalized groups • Strengthening of territorial identity	
Economic	• Diversification of sources of incomes esp. for the poor • Linking marginal and indigenous group to the market • Healthy and productive population • Stimulate local and national economy • Creation of novel income opportunities for youth	
Environmental and agricultural	• Enhanced access to more nutritious foods • Reduction of biodiversity loss through continued use • On-farm conservation • Resilience building for small-holder farmers • Agricultural diversification for more sustainable food production • Climate change adaptation of national production systems	
Educational	Including NUS into educational programmes • Raising awareness about climate change and the importance of biodiversity • Engagement with students to spread knowledge` • Nutrition education • Raising the status of local NUS Including NUS into school feeding programmes • Meals with higher nutrition content • Integrating NUS in local procurement schemes • Increasing access to culturally relevant foods in schools	
Extension work	• Higher and better quality yield • Use of high genetic variation of seeds • Decrease of drudgery work task (especially for women) • Integration of sustainable cultivation practices • *In situ* conservation of breeds and varieties	

Lessons learned

The following 6 case studies provide some examples of how the policy has been influencing positively NUS adoption in some countries around the world. While examples are context specific, certain elements are highlighted which have proved successful and could be scaled up or adapted to other regions.

Case study 1: Bringing traditional species into school feeding programmes in Guatemala

Even though NUS are still receiving insufficient attention, successful examples of their mainstreaming into national policies and programs do exist. Various examples of how to mainstream NUS for sensitive agriculture into national policies and programs have been reported in this note. The following is an example of how a new law in Guatemala has actually created an entry point for mainstreaming NUS into the national school feeding scheme.

In order to reduce chronic diseases, the government of Guatemala approved in 2017 a School Feeding Law to provide a healthier and more nutritious diet to students between 6 and 12 years of age from public schools, along with an allocated budget. The Ministry of Education (MINEDUC) in coordination with the Ministry of Public Health and Social Assistance (MISPAS) and the Ministry of Agriculture (MAGA) are in charge of developing an annual list of healthy foods to prepare 20 different diets or menus that have local and cultural relevance. These foods should be fresh and preferably purchased from local producers from the region where the school is located, prioritizing suppliers who practice family farming but are able to provide a tax valid invoice. In August 2018 MINEDUC jointly with MISPAS and different local stakeholders (e.g. Mancomunidad Copan Ch'orti') identified and prepared the 2019 list of healthy foods for the public schools located in the Department of Chiquimula. Also, during this consultation different food dishes to be prepared with the selected ingredients were designed and evaluated by nutritionists taking into account: nutritional value, cost, feasibility and acceptability. During the mentioned consultation, Bioversity International in coordination with Mancomunidad Copan Ch'orti' was able to propose the native plant known as chaya as an ingredient for the School feeding program in Chiquimula. Important information provided by Bioversity included chaya nutritional value to fight malnutrition, its ease of production, low cost, local availability and different recipes for cooking. After the government evaluated all the proposed healthy foods, chaya was approved to be a key ingredient in 3 of the 20 menus to be prepared in public schools located in Chiquimula in 2019. Furthermore, chaya will also be considered as an alternative in other 7 dishes, among other leafy vegetables proposed (e.g. chipilin, black nightshade). In October 2018, MINEDUC, MAGA and FAO organized an event where all 20 menus, including those made with chaya, were cooked and officially presented to parent–teacher associations from different public schools in Chiquimula.

Case study 2: Multi-sectoral policy platform to develop a Biodiversity Conservation Policy in Kenya

In 2010 the Kenyan government went through a process of decentralization, which essentially gave Counties a stronger independency in policy decision making. This created an opportunity to the GEF-funded Project "Biodiversity for Food and Nutrition" (BFN) to further its efforts on biodiversity and nutrition deployed in that country. In particular, this policy change represented an entry point for the better mainstreaming of biodiversity into sectoral programmes and projects by engaging more effectively local policymakers. These were closely involved in a multi-sectoral biodiversity policy platform that was established among the national ministries of education, agriculture, health and environment. The platform developed a biodiversity policy for Busia County based on the shared believe in the need to conserve and better utilize biodiversity for improved nutrition and human welfare, through its mainstreaming into projects and programmes.

This policy process helped the BFN project to mainstream indigenous vegetables into school meals by linking farmer groups to institutional markets (schools, hospitals, hotels and community clinics) and thus to

ensure the supply of highly nutritious NUS to improve nutritional outcomes. The process has furthermore culminated in the endorsement of the first ever Biodiversity Conservation Policy for Kenya's 47 counties.

The BFN project team in Kenya is a member of the Nutrition Interagency Coordinating Committee, which operates under the Scaling Up Nutrition (SUN) umbrella that brings together stakeholders from ministries of various countries, donors, UN agencies, civil society and business organizations aiming at linking nutrition with agriculture. The collaboration serves as a good platform to mainstream biodiversity into national plans and actions and the scaling up of local activities (Hunter et al. 2018).

Case study 3: Example of a business case

In our context, a business case is effective when you are able to demonstrate that greater integration of NUS for nutrition-sensitive agriculture can generate benefits at multiple levels in line with national strategies and objectives. In 2014 the Malabo Declaration - a set of goals for agricultural development - was adopted by Heads of State and Governments of the African Union to achieve shared prosperity and improved livelihoods. A project under Bioversity International funded by the IFAD and the European Commission - '*Linking agrobiodiversity value chains, climate adaptation and nutrition: Empowering the poor to manage risk'* - saw the declaration as an opportunity for promoting NUS native to the African countries. The continent is rich in biodiversity including numerous native African crops adapted to the challenging growing conditions found throughout the countries. This underutilized resource have the potential to be key asset for achieving the goals of eliminating hunger, reducing poverty, and enhancing climate resilience, which are some of the areas covered in the declaration. Besides requiring low irrigation or other input, many of the crops also have good pest and disease resistance and are able to grow on marginal soils. In addition to high micronutrient content, some have nutraceutical values (e.g. low glycemic index, gluten free, high antioxidant content, etc.), which can be leveraged for marketing as high value superfoods. Usually native African crops are in the hands of women, indigenous and marginalized groups and thus developing a demand can stimulate local economic growth for vulnerable groups, while contributing to food security for the whole continent in line with the Malabo Declaration. In addition, these outcomes are aligned with international targets, such as the United Nation’s Sustainable Development Goals and the CBD Aichi targets. As such, integrating NUS for nutrition-sensitive agriculture into serve as a strategy with many beneficial outcomes on several levels.

This business case assessment was presented by Bioversity International at the 4th Global Science Conference on Climate Smart Agriculture in Johannesburg, South Africa, November 2017 (Padulosi and Meldrum 2017).

Case study 4: Mainstreaming indigenous fruit into Brazilian policies

One of the successful ways of mainstreaming NUS has been through school feeding schemes. An example to that regard is provided by the BFN project, executed by Bioversity International with implementation support from UN Environment and FAO. With the objective to mainstream indigenous biodiversity in Brazil, BFN has been leveraging an existing framework in that country, the Zero Hunger Strategy, as entry point for its campaigns. The Zero Hunger Strategy is a framework consisting of policy-makers across many sectors of society and involving many programs, including the National School Feeding Program (PNAE), which BFN successfully leveraged as key entry point to influence the introduction of nutritious local crops into school meals. The PNAE program is reaching 43 million Brazilian students every day and was for this reason a huge opportunity for mainstreaming NUS. Through the close collaboration with PNAE, highly nutritious indigenous fruits have been incorporated in school meals. But the impact of the BFN Project went beyond that. In fact, with the help from the Food Acquisition Program (another program of the Zero Hunger Strategy), indigenous fruits being served at the schools are sourced locally, and contributing to stimulate therefore also local incomes and empowerment of smallholder farmers. Moreover, this cooperation has also contributed to improve the National Dietary Guidelines of Brazil with the inclusion of specific recommendations to eat a high diversity of foods, stressing the benefits from consuming native, local and seasonal species from sustainable food systems (Hunter et al. 2019).

Case study 5: Integrating millets into the Public Distribution System (PDS) in India

Inadequate agricultural and food security policies targeting solely major staples have often diminished the dietary role of more nutritious species such as millets, indigenous fruits, nuts, vegetables, roots and tubers. This is a problem for instance in India where the PDS system has always favoured rice and wheat to such an extent that many other cereals, highly nutritious, have been marginalized by mainstream agriculture. Based on research findings from an IFAD supported program, Bioversity international in partnership with the M.S. Swaminathan Research Foundation (MSSRF), have been advocating a policy change in the country to allow the inclusion also of minor millets such as kodo, kutki, and finger millet into the national PDS system. The PDS is a subsistence programme that supply commodities to about 500,000 shops all over India. Minor millets are high in nutrition, climate resilient and often grown by smallholders and indigenous peoples and thus such a policy change could have tremendous impact in terms of strengthening food security, incomes and climate adaptation, especially in marginal areas, inhabited by vulnerable people. The policy engagement strategy followed by these Bioversity-MSSRF joint efforts, made particular use of the power of mass media, public appearances and press interviews releases by Prof. Swaminathan, along with visits from high-ranking government officials and the press to the IFAD NUS project site to show the impact of the use enhancement of millets on local populations. Based on research findings resulting from the IFAD Program, with Prof. Swaminathan as front champion, the project team was able to successfully reach out to high level decision makers and influence after several years of continued lobbying, the inclusion of nutritious and resilient millets into the PDS, through an amendment of the National Food Security Act. As a result of these efforts, millets are today included in important programs like providing mid-day meals, community canteens and destitute feeding programmes. Such a unique policy change (no other policy for NUS equalling its valence has been ever developed in any country) was possible due certainly to many actors, but Prof. Swaminathan played a key role, in view of his charisma, regarded as the father of the Indian Green revolution with unparalleled scientific and human wisdom made his commitment powerful in promoting better use of agrobiodiversity in India and elsewhere in the world.

Case study 6: Public private partnerships to open the market for quinoa, cañihua and amaranth

In the 2000's, Bioversity International worked on the IFAD funded project: *Enhancing the Contribution of Neglected and Underutilized Species to Food Security and to Incomes of the Rural Poor*. The project aimed to enhance the sustainable conservation and use of Andean grain in Latin America through a holistic value chain approach. One of the reasons why Andean grains were not sufficiently integrated on the market was the lack of technical expertise and capacities in national programmes and poor supportive policies.

To overcome these issues seminars were held involving representatives of the Ministries of Agriculture and Commerce and from the private sector to discuss ways of promoting quality introduction of standards for Andean grains while maintaining diversity in production systems. A fundamental obstacle to promote quinoa, cañihua and amaranth in national and international markets was the lack of technical regulations that determine their quality standards. Through a coordinated work with the Bolivian Institute of Quality and Standardization – IBNORCA, technical regulations for cañihua and quinoa were developed, the first of their kind in the country and in the whole Andean region. This achievement allowed producers better access to export markets, because this was not possible before due to the lack of quality standards. Furthermore, the development of technical regulations for amaranth was supported as well as the revision and actualization technical regulations for quinoa. (Rojas et al. 2009)

Guidance for project design and implementation

Mainstreaming NUS for nutrition-sensitive agriculture into IFAD projects

IFAD is working with many themes with the capacity for integrating NUS for nutrition-sensitive agriculture including the organization's work on indigenous peoples, nutrition-sensitive value chains, climate and environment, crops conservation and production, gender, rights to land and natural resources, urbanization, market access, nutrition and youth. Integrating NUS for nutrition-sensitive agriculture can contribute positively to already existing programmes and even help to meet given objectives.

Project implementation plan

There is not one correct way of mainstreaming NUS into national policies. As earlier mentioned the process is highly dependent on the national context, the political environment and stability, the partners, the already existing networks aiming to mainstream NUS, former mainstreaming efforts and so forth. Yet, the following is a suggested plan for how a policy process may be organised throughout a 3-5 year project cycle. Figure 4 provides an example of a four year process cycle with further details in Table 5. This table suggest an optimal timeline for conduction of policy process related activities. The policy process will likely happen alongside other project activities, such as gathering of evidence, awareness raising, capacity building of farmers, and value chain analysis where a constant exchange will ensure up to date interactions with policy partners.

In reality a project timeline is naturally flexible with specific activities to meet the desired outcomes budget and project timeline. Therefore the example intends to provide recommendations for prioritising activities such as to conduct the initial policy analysis early on in the project so priority can be given to lobbying for supportive policies. The outcomes and networks obtained from one project cycle may advantageously be carried on in a new project such as the business case which may even be useful as the foundation for raising funds for one or several other projects. In box 9 a checklist can be found summarising key activities for the full project phase.

Figure 4: Conceptual diagram of a four-year project cycle with main policy process steps

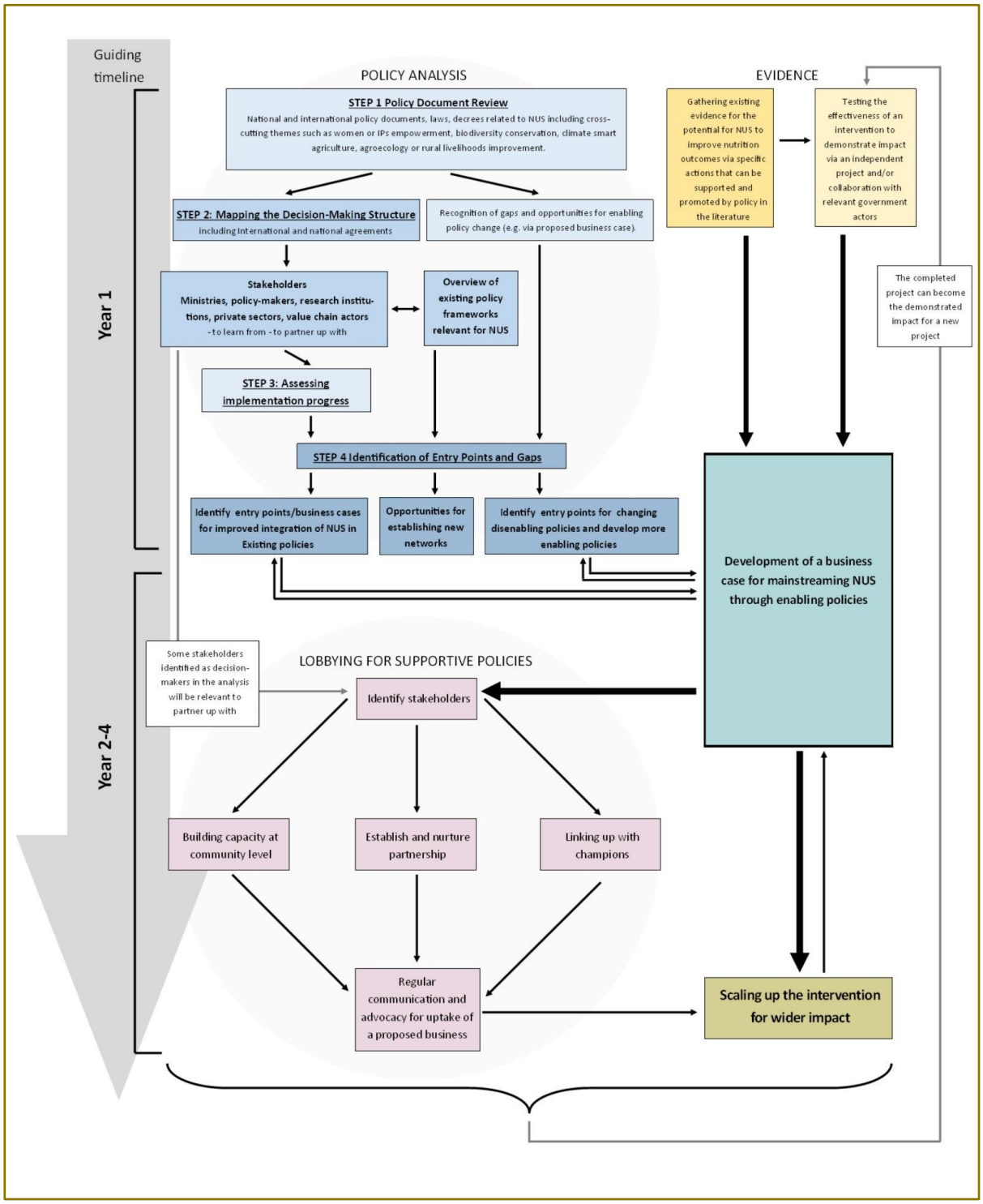


Table 5: timeline for conduction of policy process related activities

Year	Policy process steps	Key activities	Notes/recommendations
Before project	Pre-project analysis	• Frame the problem • Understand national context of this problem • Malnutrition situation in the country (who, where, to what extent, drivers, solutions).	Identify business cases to build on top of in an early stage, if not before initiating, the project.
YEAR 1: POLICY ANALYSIS	Policy document review	• Establish key search terms • Identify cross cutting themes such as women or indigenous peoples' empowerment, biodiversity conservation, climate smart agriculture, agroecology or rural livelihoods improvement • Review policy databases including FAOLEX database, ECOLEX, LexisNexis • Review country ministry databases • Review international agreements including the NBSAP and policies under the ITPGRFA and UNCCC	Encourage project partners to assist with the policy document review since many documents are likely in local languages. These activities should be done within the first three months of the project Look carefully into research papers/projects documentation etc. closely related to your work. This prevents you from duplicating already existing work and allows you to leverage and save time.
	Mapping the decision-making structure	• Mapping the decision-making structure and other strategic players. Clarify their potential capacity in mainstreaming NUS and categorize them in accordance to box 4: Influencer, owner/decision maker, influencer/deliverer, deliverer.	When mapping the decision-making structure, consider power relations, current structure stability and influential capacity of actors as important aspects for understanding the policy structure.
	Assessing implementation process	• Review how the above programs, initiatives and plans have been executed and funded • Pay attention to political controversy, efficacy, as well as cooperation between civil society and other actors • Obtain third party audits, reports from donors, and project assessments	
	Identifying entry points and gaps for promoting NUS in nutrition-sensitive agriculture	• Based on the above, identify entry points and gaps • Identify stakeholders, civil society actors and academia • Consider how to leverage from the findings	Prioritization of gaps and entry points: narrow down focus and prioritize low-hanging fruits.
YEAR 1- 2: BUILDING A BUSINESS CASE	Collect scientific evidence of proven benefits of mainstreaming	• Gather existing evidence for the potential for NUS to improve nutrition outcomes via specific actions that can be supported and promoted by policy in the literature e.g. experiences in other sites and countries; documentation of nutritional value • Testing the effectiveness of an intervention to demonstrate impact via an independent project and/or collaboration with relevant government actors	
	Build argument for mainstreaming	• Identify proven successes and benefits of mainstreaming of NUS • Relate proven successes and benefits to specific national and international policies • Tailor various business cases for various actors to ensure relevance. • Share business cases with relevant actors through briefs, videos etc.	For a business case to be strong, the potential of mainstreaming NUS should be shown demonstrated on as many aspects as possible, referring directly to national/international policy targets.

Year	Policy process steps	Key activities	Notes/recommendations
YEAR 2, 3 & 4: LOBBYING FOR SUPPORTIVE POLICIES	Identifying key-stakeholders	• Consider relevant CSOs, NGOs, value chain actors, local authorities, representatives, service providers, media groups and journalists, community groups, farmers, schools and hospitals, research institutions, universities and experts • Prepare and conduct key-stakeholder interviews	This activity may advantageously start during the policy analysis process
	Establish and nurture partnerships	• Explore the opportunity of building on already existing partnerships for policy impact. • If no existing partnerships exist, establish new alliance	A well-functioning partnership must be nurtured. Maintain good partnership by prioritizing transparency and frequent exchange of project process and results as well as challenges.
	Linking up with champions	• Identify champions that have already showed an interest in NUS or NUS related topics. Clarify potential policy impact	
	Building capacity at community level	• Establish a good relationship with involved communities. • Keep community updated on project policy processes • Provide training to the community on policy and related processes. • Learn from the community and integrate their knowledge in the policy design and implementation. • Establish two-way communication channel that enable transparency and easy communication	Respect the community proceedings and communicate in accordance to local customs. In case of indigenous communities, explore customs before engaging.

Box 9: Check list of key actions to do in designing IFAD loans

Policy analysis – is the foundation for an impactful project

- ✓ Identified relevant policies through policy documents, laws, regulations, national and international databases, action plans, strategies and agreements
- ✓ Interviewed key-policy actors on all levels from grassroots' representatives to national ministers
- ✓ Identified cross cutting themes with particular attention to women and indigenous peoples' empowerment
- ✓ Clarified relevance and capacity for actors to influence the mainstreaming of NUS
- ✓ Kept track on stakeholders and identified potential partners
- ✓ Identified entry points and gaps for interventions and assessed their applicability against impact
- ✓ Identified networks, civil society organizations, research institutions or other that works towards mainstreaming NUS

Lobbying for supportive policies – is the way to ensure broad-based support

- ✓ Identified key-stakeholders including a broad range of actors, also outside the policy sphere
- ✓ Interviewed key stakeholders to explore partnership potential
- ✓ Established strategic partnerships with actors
- ✓ Joined already existing networks or alternatively created a new network with a broad range of stakeholders
- ✓ Identified champions to advocate for mainstreaming of NUS
- ✓ Created rapport with involved communities and carefully made sure that they have been updated and understood the policy-making process and activities
- ✓ Integrated community knowledge in the policy design and implementation

Building a business case – is your tool for scaling up

- ✓ Used policy gaps and opportunities to refine and strengthen the business case
- ✓ Built business cases for actors with the power to support the mainstreaming of NUS
- ✓ Found a suitable way for business cases to be presented to relevant decision-makers and stakeholders
- ✓ Project outputs are measurable to build future business cases for NUS and NSA

Building on IFAD's existing networks

IFAD has the capacity to advocate for nutrition among opinion leaders in donor and partner countries. As indicated many times throughout the document, working multi-sectoral with a wide range of stakeholders is key to successful mainstreaming of NUS for nutrition-sensitive agriculture. IFAD cooperates with a broad group of stakeholders including companies, foundations, multilateral organizations, non-governmental organizations, producer organizations, research and academic institutions, United Nations agencies as well as the individual 177 member states. Partnerships across these many actors are of great capacity. Taking advantage of already existing linkages (see Box 10) to mainstream NUS can be an efficient way to achieve good results without dedicating a lot of time and resources on building relationship and establishing partnerships. Some of these include network and forums directly linked to NUS for nutrition-sensitive agriculture. E.g. the Scaling Up Nutrition (SUN) which unites people from civil society, the United Nations, donors, businesses and researchers for the purpose of ending malnutrition. Identifying complimentary IFAD initiatives as this can be helpful both for potentially partnering up and for expanding knowledge and identifying research/implementation gaps.

Box 10: IFAD frameworks closely linked to Mainstreaming NUS for nutrition-sensitive agriculture

- United Nations Standing Committee on Nutrition (UNSCN)
- Renewed Efforts Against Child Hunger and Undernutrition (REACH)
- United Nations Global Nutrition Agenda (UNGNA)
- Scaling up Nutrition (SUN)
- Committee on World Food Security (CFS)
- Overview of IFAD projects related to Mainstreaming NUS for sensitive agriculture into policies and programmes
- The Integrated Approach Programme (IAP) on Food Security in sub-Saharan Africa, supported by the Global Environment Facility. One of the projects components is to enhance on-farm agro-biodiversity through e.g. focus on key neglected species in project countries. Read more: https://www.ifad.org/en/iap
- Agrobiodiversity and Land restoration for food security and nutrition in Eastern Africa. The project is being implemented through a partnership between ICRAF and Bioversity in collaboration with national partners from both Uganda and Ethiopia. Read more: https://www.worldagroforestry.org/sites/default/files/outputs/IFAD%20AgBiodiversity%20Project%20Flyer.pdf
- Neglected and Underutilized Species Community projects
- Linking agrobiodiversity value chains, climate adaptation and nutrition: Empowering the poor to manage risks funded by IFAD and EU. Read more: http://www.nuscommunity.org/initiatives/ifad-eu-ccafs-nus/
- Reinforcing the resilience of poor rural communities in the face of food insecurity, poverty and climate change through on-farm conservation of local agrobiodiversity in India Nepal and Bolivia funded by IFAD and CCAFS. Read more: http://www.nuscommunity.org/research/projects/ifad-nus-iii-iv/
- Empowering the rural poor by strengthening their identity income opportunities and nutritional security through the improved use and marketing of neglected and underutilized species. Read more: http://www.nuscommunity.org/research/projects/ifad-nus-i-ii/
- Putting lessons into practice: Scaling up People's Biodiversity Management for Food Security Funded by IFAD and Oxfam Novib. Read more: https://d1tn3vj7xz9fdh.cloudfront.net/s3fs-public/file_attachments/tb-scaling-up-biodiversity-management-081015-en.pdf
- International Centre for Integrated Mountain Development project: Gender and Biodiversity Management in the Greater Himalayas. Read more: http://lib.icimod.org/record/20377/files/icimod-gender_and_biodiversity_management_in_the_greater_himalayas.pdf
- Using Agricultural Biodiversity and Farmers' Knowledge to Adapt Crops to Climate Change (IFAD grant). Financed by IFAD, Global Crop Diversity Trust, smallholders. Read more: https://www.ifad.org/en/web/knowledge/publication/asset/39257938.

Furthermore, building on these already existing structure leads to more effective and efficient governance structures; create stronger harmony of policies and programs at global, regional and country level; underline the role of agriculture and food-based approaches to reduce malnutrition; and better funding for nutrition and agriculture.

Further reading on tools and methods for further inspiration

A number of complementary publications exist, elaborating more on aspects relevant to mainstreaming of NUS. The closest related is the IFAD's operational framework, which elaborate on the strategic importance of nutrition sensitive NUS value chains:

- Supporting Nutrition Sensitive Agriculture Through Neglected and Underutilized Species. IFAD Operational Guidance (Padulosi et al. 2019).

The last couple of years interest has increased on how to mainstream biodiversity into policies and programmes. The following are some of the key publications useful to guide policy impact.

- Biodiversity Mainstreaming for Healthy & Sustainable Food Systems. A Toolkit to Support Incorporating Biodiversity into Policies and Programmes (BFN. 2018).
- Voluntary Guidelines for Mainstreaming Biodiversity into Policies, Programmes and National and Regional Plans of Action on Nutrition (FAO 2015b).

Especially the mandatory National Biodiversity Strategies and Action Plans (NBSAPs) under the Convention on Biological Diversity (CBD) has created a worldwide demand for guidelines of how to integrate environmental related strategies into national policies. The below publications are guidelines useful for development and implementation of NBSAP but can also be used as inspiration for integrating NUS into policies.

- Biodiversity Planning Support Programme - A Guide for Countries Preparing National Biodiversity Strategies and Action (Hagan 1999).
- Ten steps to biodiversity mainstreaming. Tips for NBSAPs 2.0 and beyond (IIED, 2013).

Women have a fundamental role in conserving biodiversity and NUS. They are often custodians of seeds, farmers of subsistence crops and are generally the household members concerned about health and nutrition intake in the families. Integrating the gender aspects into mainstreaming NUS for nutrition-sensitive agriculture is thus essential. The below publication is a guideline of how to mainstream gender into the NBSAP but serves as a useful tool beyond the NBSAPs.

- Guidelines for Mainstreaming Gender into National Biodiversity Strategies and Action Plans (Sasvari et al., 2010).

Marketing NUS to benefit Indigenous peoples

- Intercultural business: A culturally sensitive path to achieve sustainable development in indigenous Maya communities (Rosado-May, 2018).

Integrating nutrition sensitive NUS into value chains represent big impact potential on various levels. Get more familiar with policy making and NUS for nutrition sensitive value chains in the following documents:

- Nutrition-sensitive value chains - A guide for project design (Peña and Garrett, 2018).
- How can value chains be shaped to improve nutrition? (FAO, 2017).
- Promoting Value Chains of Neglected and Underutilized Species for Pro-Poor Growth and Biodiversity Conservation. Guidelines and Good Practices (Will, 2008).

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Annexes

Annex 1: Pre project situation analysis

Before initiating the project an analysis of the country situation should be conducted as preparation for the policy analysis. This consist of a few steps that clarifies the main points: the problem to be addressed; how to address it; and the current stage of knowledge with relevance, for the identified problem.

Framing the Problem

An initial step of the policy analysis is framing the main problem that the project or initiative would like to address and understanding the national context of this problem. This step supports the identification of main malnutrition issues at local or country level that could be addressed by nutritional and nutrition-related policies and programs mainstreaming NUS. This step will aid in narrowing the scope of the policy analysis. When framing the problem, the following questions should be considered:

- What are the main nutrition issues (ex. obesity, micronutrient deficiencies, stunting, wasting, and etc.)?
- Who are the target groups affected by these issues (ex. mothers and children in the window of the 1000 days, school aged children, women at reproductive age, specific cultural groups, economic levels and etc.)?
- What is the scale of these issues and are there specific associated geographies (ex. rural areas, urban centers, peri-urban communities, specific elevations, political boundaries, bio regions, Eco regions, and etc.)?
- Are there specific factors that exacerbate these issues (ex. poverty, climate change, access to healthy foods, sanitation, knowledge of preparation, and etc.)
- Which of these issues can be addressed by mainstreaming NUS?
- What are the desired nutritional, cultural, and environmental qualities of the NUS that could address these issues (ex. high in specific vitamins and minerals, drought tolerant, year around availability, complementary supplement for staple foods, have the potential to contribute to incomes, connotations specific socio-cultural or gender groups, and etc.)?

Desired Project Outcomes

Considering the answers in Section 1, the desired project outcomes and level of political engagement should be defined. This section provides a conceptual diagram for visualising the overall policy and development outcomes at different that have the most potential to mainstream NUS. Different levels might be more ambitious than others but also might present opportunity for more profound impacts. This exercise aims to narrow the modes of development and scale that are appropriate for the project scope. Refining outcomes goals will help to focus analysis to strategize more effective, targeted, and realistic pathways for leveraging policy to mainstream NUS.

Gather Evidence

Assessing the current state of knowledge on the biodiversity development, conservation, and more specifically the protection and use enhancement of NUS is essential for providing evidence to impact policy. It is recommended that a list of key documents, research initiatives and data sources are compiled to assess the level of available evidence while also identifying gaps to support strategic research efforts.

Documents should demonstrate the interaction between target groups, geographies, and nutrition issues with other factors such as biodiversity use (highlighting species considered NUS), conservation, wild foods, and protected area management. Indicators of the knowledge on the merit and use of NUS can be

determined by identifying the coverage of NUS in nutrition recommendations and guidelines, food composition tables, ex situ institutions, ethnobotanical studies, among others.

Annex 2: Draft for interview with stakeholders for policy analysis

This is a collection of questions that may be of relevance when interviewing stakeholders for the policy analysis. The essential points are to get an idea of current activities and programmes relevant for nutrition sensitive agriculture, to explore room for mainstreaming, to identify entry points and to discover potential partnership.

Make sure to clarify the meaning of NUS for Nutrition sensitive agriculture before initiating the interview. Use a vocabulary that allow reflections on the topic in the broadest sense possible. Use key words that are relevant to the ministry, organisation, civil society group or other that you are interviewing.

The interview will vary substantially according to what stakeholder is being interviewed and thus the below is only rough guidelines to inspire to the interviews.

- Collect information on name, position, organization/ministry/group etc. that the interviewee represents.

Current activities:

- Is your organization involved in projects working on the promotion or utilization of traditional crops? If yes, can you explain the idea behind the project and give an example of some of these crops? What characterize the selection of crops?

Is your organisation involved directly with any national programmes addressing nutrition, agriculture, environment or other that could have relevance to NUS for nutrition-sensitive agriculture? If yes, elaborate. What are the objectives of this project/these?

- Could you list the programmes or projects run through this organisation with relevance to NUS for nutrition-sensitive agriculture, starting from currently operating to completed programmes:

Name of project/program	Year of implementation	Target beneficiary (primary/secondary)	Other partners involved	Main donor agency	Short description of programme	How are NUS aspects taken into account

- What national policies and guidelines are related to these project and programmes? In your opinion how effective is the implementation of these policies and guidelines:

Policy/Guideline	Level of effectiveness 1=Not effective; 2= slightly effective; 3=Effective; 4=Very effective	Provide at least 2 reasons for the answer on effectiveness

- Are you aware of other national initiatives related to NUS for nutrition-sensitive agriculture? (list project/programme and responsible ministry/organisation/group)

Room for mainstreaming and identification of entry points:

- What challenges are your ministry/organisation/group facing in the implementation of NUS for nutrition-sensitive agriculture

- Do you have any suggestions to possible solutions to the above-mentioned challenges?

 Do you have any suggestions of how to improve the national political arena for NUS for nutrition-sensitive agriculture in your country?

- Based on your knowledge and experience on programmes related to NUS for nutrition-sensitive agriculture, what are your thoughts on incorporating NUS for nutrition-sensitive agriculture more broadly in this country?

- Looking forward how do you imagine the incorporation of NUS for nutrition-sensitive agriculture.

 Do you have any recommendations of what to take into consideration in the process of mainstreaming NUS into policies and programmes?

- Where do you think could be the best to have a pilot study for NUS for nutrition-sensitive agriculture in the country and why?

Potential for partnership?

 Do you have any ideas for potential national project partners and donors? If yes, which ones?

 Do you have any documents, websites or information materials on school feeding projects or other relevant projects that you could share with our project team?

 Would you or any member of your team be able and willing to be part of this project as key stakeholders?

Annex 3: Suggested Indicators

A wide range of indicators can be used to measure impact of a project targeting the use enhancement of NUS depending on how the project is put together and what stakeholders are being involved. The following list provides some examples related to the various themes that link NUS with nutrition-sensitive agriculture, clustered around resilient production systems, nutrition and food secured communities, improved incomes and empowerment.

Indicators

Resilient Production Systems

- Increased number of species covered in national policy
- Number of institutions in the community that support risk management decisions for agriculture under climate change
- Increase in the exchange of high-quality genetic material from ex-situ to in-situ of nutrient dense species
- Number of varieties of target crops conserved in national and community seed banks
- Number of replicable projects that have the capacity to be scaled up in diverse contexts
- Number of local producers of NUS crops

Nutrition and food secured communities

- Increase in published qualitative and quantitative research to build stronger business cases on the merits of NUS for nutrition sensitive agriculture
- Inclusion of target crops in national feeding programs, including school feeding
- Number of public schools or other institutions with gardens cultivating traditional or native species
- Number of policies promoting home consumption of NUS

Improved Incomes

- Increase in NUS related enterprises (with an increase of those owned by women and IPs) funded by the microloans or government grants
- Increase of interventions that address seasonality of income, labour use and micronutrient-rich food availability.
- Number of programmes with conservation incentives such as payment for ecosystem services or PACS.

Empowerment

- Increase in projects and initiatives mainstreaming NUS for nutrition-sensitive agriculture at regional and country level
- Number of government technicians and extension agents trained in NUS related activities
- Increased number of NUS related capacity building exercises in rural communities
- Increased percentage of local actors participating in local initiatives level including schools, hospitals and other local institutions
- Increase in stakeholder ownership and actions to increase project impact and support mainstreaming of NUS for nutrition-sensitive agriculture

- More representation of women and indigenous peoples in governance at all scales
- Increase in youth education and processing programs that include NUS
- High proportion of indigenous peoples and female project participants
- Increase in women's access to land and other productive assets
- The empowerment, agency, and inclusion of women in the agriculture sector. E.g. Women's Empowerment in Agriculture Index (WEAI) (IFPRI 2012).
- Qualitative assessments of gender equity and norms.
- Number of national policies addressing indigenous peoples including rights to land and resources, rights to plant breeding, rights to seeds
- Number of policies mentioning traditional knowledge as an area of focus
- Reduction of drudgery, particularly for women, in NUS related value chains as a result of initiatives to increase access to technology or building local networks

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