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GAP AND MARKET ANALYSIS FOR ORGANIC PRODUCTION AND CERTIFICATION IN MOZAMBIQUE

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Gap and Market Analysis for Organic Production and Certification in Mozambique

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SUMÁRIO EXECUTIVO

A agricultura orgânica em Moçambique representa um caminho promissor para melhorar a segurança alimentar, preservar o ambiente e aumentar os rendimentos dos pequenos agricultores. No entanto, o seu desenvolvimento depende de intervenções direccionadas que abordem as limitações para promover a sustentabilidade e a resiliência do sector. O relatório sobre a análise de lacunas, análise de mercado e avaliação das necessidades para a produção e certificação orgânica em Moçambique apresenta uma visão abrangente: i) do estado actual da agricultura orgânica e da certificação no país, destacando tanto o seu potencial como os desafios que enfrenta, ii) dos marcos regulatórios que regem a agricultura orgânica e a certificação, incluindo a sua conformidade com os padrões internacionais; e iii) das limitações e recomendações para o desenvolvimento do sector orgânico.

A avaliação foi baseada em três abordagens complementares: revisão documental, entrevistas com informantes-chave e workshops nacionais. A equipe analisou documentos e dados sobre produção orgânica, desenvolvimento de mercado e políticas associadas. Foram realizadas entrevistas semiestruturadas, presenciais e virtuais, com actores de sete cadeias de valor seleccionadas com base no seu potencial para produção e conversão para práticas orgânicas nomeadamente: café, chá, macadâmia, abacate, baobá, mel e cana-de-açúcar. As entrevistas ocorreram entre Junho e Agosto de 2024, acompanhadas de visitas de campo a quatro províncias (Zambézia, Sofala, Manica e Maputo). Foram realizados dois seminários em Maputo (7 de agosto e 4 de setembro de 2024) para desenvolver um plano de acção, validar e refinar os resultados preliminares com a participação de partes interessadas de diferentes níveis (central, provincial e distrital) e sectores (público, privado, parceiros de desenvolvimento e organizações da sociedade civil), com foco específico nos actores da cadeia de valor (produtores, processadores, distribuidores, retalhistas e certificadores).

Visão geral da Agricultura Orgânica em Moçambique

A agricultura é a principal actividade económica em Moçambique para a maioria das famílias, com 66% dos chefes de família a dependerem desta actividade para o rendimento, particularmente nas zonas rurais. No entanto, o sector enfrenta desafios, como a baixa produtividade devido à dependência dos sistemas de cultivo de sequeiro, ao uso limitado de insumos agrícolas e à pequena dimensão das parcelas de terra. Dados do Inquérito Agrícola Integrado (IAI) de 2020 indicam que apenas uma pequena percentagem de agricultores utilizou sementes melhoradas (10,9%), fertilizantes (5,1%), irrigação (3,5%), pesticidas (1,4%) e herbicidas (0,5%).

Apesar destes desafios, há uma oportunidade de aproveitar algumas das práticas agrícolas para converter a agricultura para orgânica. Segundo a Federação Internacional dos Movimentos de Agricultura Orgânica (IFOAM), a agricultura orgânica é um sistema que sustenta a saúde do solo e os ecossistemas através de processos ecológicos e biodiversidade. Assim, a agricultura orgânica inclui as seguintes dimensões: rotação de culturas, uso de esterco e dejetos animais ou fertilizantes sintéticos, uso de resíduos de culturas, controlo de ervas daninhas, pesticidas, sementes, consociação de culturas, fertilidade do solo, compostagem, aditivos na pecuária, bem-estar animal e carga de trabalho.

Na campanha de 2019/2020, um número significativo de agricultores utilizou práticas orgânicas, com 65% a deixar os resíduos das culturas no campo, 33% a praticar rotação de culturas, 92% a utilizar fertilizantes orgânicos, 95% a evitar pesticidas químicos e 93% a não aplicar fertilizantes sintéticos. Para esta análise, os pequenos agricultores foram agrupados em três categorias com base no seu potencial de conversão para a agricultura orgânica: **alto potencial** - aqueles que aplicam 7 das 8 práticas

orgânicas; **potencial médio** - aqueles que aplicam de 4 a 6 práticas; e **baixo potencial** - aqueles que aplicam menos de 4 práticas.

Com base nestas categorias, apenas 15% dos agricultores na campanha de 2019/2020 tinham um alto potencial de conversão para práticas orgânicas, com a maioria (78%) a aplicar entre quatro e seis práticas orgânicas. Para potenciar a utilização dessas práticas, recomenda-se que os agricultores se organizem em associações, uma vez que o acesso aos serviços de extensão é consideravelmente maior entre os agricultores que pertencem a organizações de agricultores, em comparação aos que não pertencem (33% contra 5%).

As diversas zonas agroecológicas de Moçambique apresentam vários desafios para a produção de culturas, sendo o milho e a mandioca as culturas mais cultivadas. Os resultados indicam que a diversificação das culturas, particularmente a rotação /consociação com leguminosas, é crucial para melhorar a saúde do solo e apoiar as práticas de agricultura orgânica, que dependem de processos ecológicos para manter a fertilidade do solo e a estabilidade nos agroecossistemas.

Análise comparativa da proposta de regulamento de Moçambique e padrões internacionais

A análise comparativa de regulamentos sobre a agricultura orgânica foca-se em três documentos fundamentais:

1. **MOR (Moçambique):** uma proposta de regulamento datada de setembro de 2024, com o objectivo de estabelecer um quadro legal para a produção, certificação e rotulagem de produtos orgânicos em Moçambique.
2. **EU 848 (União Europeia):** o regulamento 2018/848, que é o padrão consolidado para a agricultura orgânica na Europa, reconhecido pela sua robustez e abrangência.
3. **NOP/USDA (Estados Unidos):** o Programa Nacional de Agricultura Orgânica, que regula a produção e comercialização de produtos orgânicos nos Estados Unidos.

A escolha dos regulamentos da União Europeia e dos Estados Unidos como referências foi estratégica, dado que estes mercados são os principais destinos das exportações de produtos orgânicos de Moçambique.

Principais observações e limitações do MOR incluem:

a) Limitações gerais

1. **Falta de definições claras:** O MOR não apresenta definições precisas para termos cruciais, como "unidade de produção", "transformação" e "exploração", o que gera ambiguidade e dificulta a implementação prática.
2. **Inconsistências na terminologia:** O uso intercambiável de terminologias como "não orgânico" e "convencional" sugere falta de clareza e rigor na redação do regulamento, e a ausência de referências cruzadas adequadas e de uma revisão abrangente indicam a necessidade de uma revisão substancial do texto.

- 3. Conceito de certificação:** O MOR baseia a certificação em testes dos produtos finais, ao invés de focar no processo de produção, o que contrasta com a abordagem holística da UE e dos EUA, que consideram a produção orgânica como um sistema integrado de gestão agrícola.
- 4. Influência do EU 848:** Embora algumas secções do MOR sejam redigidas de forma semelhante ao EU 848, muitos conceitos e definições não estão adaptados ao contexto local, o que levanta questões sobre a aplicabilidade e eficácia da regulamentação.

b) Comparações no âmbito e definições

- 1. Legislação horizontal e grupos de operadores:** O MOR não menciona a integridade orgânica e a rotulagem de Organismos Geneticamente Modificados (OGM's), ao contrário da legislação da UE, que é mais rigorosa neste aspecto. A falta de um Sistema de Controlo Interno (ICS) para certificação colectiva é uma lacuna significativa, pois dificulta a colaboração entre pequenos produtores.
- 2. Produtos e substâncias:** O MOR não fornece clareza sobre a lista de insumos autorizados, focando-se em nomes comerciais em vez de ingredientes ativos, o que pode complicar a conformidade e a fiscalização.
- 3. Rotulagem:** A regulamentação não está alinhada com os padrões gerais de rotulagem alimentar, o que pode criar barreiras para a aceitação dos produtos moçambicanos nos mercados internacionais.

c) Regras de produção e controlo

- 1. Produção convencional e orgânica:** A permissão para a produção simultânea de produtos convencionais e orgânicos é semelhante à abordagem da UE e do NOP, mas o MOR exige separação menos rigorosa, o que pode comprometer a integridade dos produtos orgânicos.
- 2. OGMs e contaminação:** O MOR proíbe o uso de OGMs, mas não fornece directrizes claras para verificar esta proibição, o que pode levar à contaminação não intencional.
- 3. Derrogações e flexibilidade:** O MOR permite excepções numa extensão maior do que a UE, o que pode ser problemático, pois pode abrir brechas para práticas não conformes.

d) Controlo e certificação

- 1. Organização e responsabilidade:** O Ministério da Agricultura e Desenvolvimento Rural (MADER) centraliza as funções de controlo, mas enfrenta limitações significativas em termos de infraestrutura e recursos humanos. O MOR utiliza terminologia inconsistente para descrever as entidades certificadoras, o que pode gerar confusão e falta de confiança no sistema.
- 2. Requisitos e frequência de controlo:** Embora o MOR preveja controlos anuais, a falta de detalhes sobre os requisitos mínimos para a certificação pode resultar em práticas de fiscalização inadequadas. A necessidade de padronização nas amostras e análises laboratoriais é crucial para garantir a qualidade e segurança dos produtos.
- 3. Infrações e sanções:** A ausência de um catálogo específico para infrações e sanções, como existe na UE, limita a capacidade do MOR de responder a práticas não conformes.

e) Comércio internacional e reconhecimento

1. **Certificados de importação:** O MOR carece de mecanismos robustos para gerir a importação e exportação de produtos orgânicos, o que pode comprometer a competitividade dos produtos moçambicanos no mercado global.
2. **Conflito para exportações:** A proibição de venda de produtos orgânicos no mercado interno com destino à exportação pode criar um paradoxo legal, onde os produtos não podem ser certificados de acordo com as regulamentações estrangeiras, limitando as oportunidades de mercado.

O MOR apresenta um quadro inicial promissor, mas é evidente que necessita de:

- **Revisões substanciais** para fornecer um quadro legal sólido e aplicável à produção orgânica em Moçambique.
- **Harmonização conceptual com os regulamentos de referência da UE e dos EUA**, garantindo que os princípios e definições sejam adaptados ao contexto local.
- **Desenvolvimento de uma estrutura robusta de certificação e supervisão**, essencial para garantir a qualidade e aceitação dos produtos orgânicos moçambicanos nos mercados internacionais.

A implementação destas recomendações não só fortalecerá o regulamento da agricultura orgânica em Moçambique, mas também aumentará a confiança dos consumidores e a competitividade dos produtos no mercado global.

Constrangimentos para o desenvolvimento da produção e certificação orgânica

A análise identificou 48 limitações para o desenvolvimento da produção e certificação orgânica em Moçambique, categorizadas em sete áreas:

1. **Constrangimentos legais** incluem: i) vigilância limitada do mercado e aplicação dos sistemas de gestão da segurança alimentar; ii) falta de uma base legal para a alegação “orgânico” para proteger o consumidor final; iii) duração e custo do registo de produtos de protecção de plantas (PPP); iv) Constrangimentos aplicáveis aos PPP registados; v) uso de PPPs não registados; vi) condições restritivas para a colocação de PPPs no mercado; e vii) identificação de PPPs permitidos para uso na produção orgânica.
2. **Limitações agronómicas** incluem: i) elevada sensibilidade dos rendimentos das culturas aos choques climáticos; ii) disponibilidade limitada de variedades de culturas adequadas para produção orgânica; iii) aumento da vulnerabilidade das culturas perenes durante o período de conversão; iv) fertilizantes orgânicos disponíveis não fornecem nutrição adequada às plantas; v) disponibilidade limitada de materiais reprodutivos de plantas (MRPs) adequados para a produção orgânica; vi) disponibilidade limitada de PPPs para controlar pragas/doenças seleccionadas; vii) forte presença de práticas agrícolas convencionais; e viii) disponibilidade limitada de equipamentos agrícolas e de processamento adequados.
3. **Constrangimentos logísticos** incluem: i) desenvolvimento limitado de infraestruturas; ii) disponibilidade limitada de materiais de embalagem adequados; iii) questões de conformidade

com os requisitos de rotulagem; iv) vida útil curta dos produtos dos pequenos produtores; e v) inspecções demoradas.

4. Limitações de conformidade incluem: i) limitações técnicas para garantir a contínua garantia de qualidade; ii) superar não conformidades para obter certificação orgânica; iii) investimento contínuo para manter a certificação orgânica; iv) ausência de uma política governamental envolvendo a produção orgânica; v) disponibilidade limitada de métodos para o período de conversão; vi) problemas decorrentes da imposição de métodos de cultivo convencionais; e vii) corrupção e fraude.

5. Limitações de conhecimento incluem: i) conhecimento e competências limitados sobre os princípios da produção orgânica; ii) falta de competências dos operadores para observação, compreensão, inovação e implementação de práticas orgânicas; iii) falta de prestadores de serviços qualificados para aconselhamento técnico (início) e orientação contínua (garantia de qualidade); iv) experiência limitada ao nível da autoridade competente em relação à vigilância e supervisão do mercado; e v) experiência limitada ao nível da inspeção e certificação de produtos orgânicos.

6. Limitações no desenvolvimento de mercado

6.1. Constrangimentos no mercado de insumos incluem: i) falta de regras sobre a colecta selvagem de produtos orgânicos; ii) disponibilidade limitada de equipamentos agrícolas e de processamento; iii) desenvolvimento limitado de infraestruturas; iv) falta de laboratórios suficientemente qualificados; v) alto custo da certificação orgânica; vi) recursos limitados para expandir as actividades e cobrir um segmento maior da cadeia de valor; vii) encontrar e manter fornecedores de matérias-primas orgânicas; viii) organizar pequenos produtores em organizações funcionais de produtores (OPs); e ix) disponibilidade limitada de materiais reprodutivos de plantas (MRPs) adequados para a produção orgânica.

6.2. Constrangimentos no mercado de produtos incluem: i) baixo nível de percepção e expectativas dos consumidores; ii) alta volatilidade de preços no mercado internacional; iii) sensibilidade da sobretaxa de preço ser específica para a mercadoria; iv) termos de pagamento no mercado internacional; v) vigilância limitada do mercado e aplicação dos sistemas de gestão da segurança alimentar; vi) falta de uma base legal para a alegação “orgânico” para proteger o consumidor final; e vii) identificação e manutenção de uma base de dados de clientes.

7. Limitações no comércio internacional incluem: i) falta de acordos comerciais internacionais com alguns mercados orgânicos de alto potencial; ii) informações limitadas sobre isenções para fumos de transporte transfronteiriço; iii) procedimento dispendioso e demorado para obter o certificado fitossanitário; e iv) vigilância limitada do mercado e aplicação dos sistemas de gestão da segurança alimentar.

Condições para uma produção orgânica sustentável

Para superar esses desafios, propõe-se acções a nível dos consumidores, governo, pequenos agricultores e operadores médios e grandes.

- **A nível dos consumidores**, as necessidades incluem uma compreensão sobre a distinção entre mercados formais e informais, segurança alimentar versus produtos orgânicos, a criação de um sistema de rastreabilidade e a identificação da oferta e demanda de produtos orgânicos.
- **A nível governamental**, é essencial fortalecer a capacidade institucional para a vigilância do mercado, estabelecer uma base de dados para operadores, documentar os procedimentos de certificação e desenvolver um quadro regulatório para produtos orgânicos.
- **Para pequenos e médios agricultores**, o foco está em criar organizações de agricultores funcionais (OAs) para promover alimentos seguros no mercado formal.
- **Operadores médios a grandes** precisam de incentivos para a transição para a agricultura orgânica, melhor acesso à terra e água para produção orgânica, maior disposição para investir em capital humano e adopção de uma abordagem baseada na qualidade para garantir produtos orgânicos de alta qualidade.

Recomendações para o desenvolvimento da produção e certificação orgânica

O relatório apresenta várias recomendações para melhorar o ambiente de produção orgânica em Moçambique, agrupadas em dois grupos principais:

- i. **Ajuste e desenvolvimento de um quadro político para a produção orgânica** (com oito recomendações), e
- ii. **Desenvolvimento de capacidades** (com as restantes cinco recomendações).

I. Ajuste e desenvolvimento do quadro político

- **Finalização e publicação do regulamento orgânico:** O Ministério da Agricultura e Desenvolvimento Rural (MADER) deve finalizar e aprovar o regulamento para a produção orgânica e certificação, revisando a proposta actual para incluir informações essenciais e requisitos específicos para o comércio internacional.
- **Revisão da legislação complementar:** A regulamentação de produção orgânica deve ser integrada à legislação existente sobre segurança alimentar (alimentos seguros/food safety) para evitar conflitos e aproveitar as sinergias.
- **Fortalecimento da supervisão e fiscalização:** Estabelecer um departamento para liderar a produção orgânica e certificação, com auditores próprios para verificar a conformidade das entidades certificadoras privadas.
- **Adopção de normas de certificação internacional:** Implementar a norma ISO 17065 para certificação de produtos orgânicos, promovendo treinamentos práticos para as partes interessadas e desenvolvendo um manual de qualidade interno.
- **Reconhecimento internacional:** Solicitar o reconhecimento dos padrões de certificação orgânica de Moçambique pela Comissão Europeia e pelo Departamento de Agricultura dos Estados Unidos (USDA).

- **Documentação e transparência nos serviços públicos:** Melhorar a eficácia e eficiência dos serviços públicos que apoiam a implementação do regulamento, documentando os métodos de trabalho e mantendo a transparência e imparcialidade.
- **Facilitação do acesso à produção orgânica:** Promover o conhecimento e as competências sobre os princípios de produção orgânica e certificação em todos os níveis.
- **Fortalecimento das organizações de agricultores:** Apoiar a organização dos pequenos agricultores para reduzir os custos de transação e facilitar a colecta de produtos orgânicos.

II. Desenvolvimento de capacidades

- **Identificar e alocar recursos para supervisão:** Alocar recursos técnicos, financeiros e de infraestrutura para a supervisão da produção orgânica, abordando a limitada capacidade institucional.
- **Desenvolvimento de formação para inspectores:** Criar programas de formação especializadas para inspectores qualificados, garantindo competência na verificação de conformidade.
- **Documentação de esquemas de produção orgânica:** Catalogar e documentar os esquemas de produção orgânica existentes no país para promover as melhores práticas.
- **Promoção da consciencialização do consumidor:** Investir em campanhas de informação para aumentar a consciencialização e a confiança do consumidor nos produtos orgânicos.
- **Atração de investidores privados:** Desenhar incentivos financeiros e criar um portal para investidores interessados na produção orgânica, integrando a produção orgânica em acordos comerciais.

O sucesso da produção orgânica em Moçambique depende de um esforço coordenado entre o governo, o sector privado e os agricultores, com foco em políticas eficazes, capacitação e reconhecimento internacional. A implementação dessas recomendações é crucial para estabelecer um sistema robusto de produção e certificação orgânica, promovendo a sustentabilidade e a competitividade no mercado global.

EXECUTIVE SUMMARY

Organic agriculture in Mozambique represents a promising path to improve food security, preserve the environment and improve the incomes for smallholder farmers. However, its development depends on targeted interventions that address limitations to promote the sustainability and resilience of the sector. The report on the gap and market analysis and needs assessment for organic production and certification in Mozambique presents a comprehensive view of i) the current state of organic farming and certification in the country, highlighting both its potential and the challenges it faces, ii) the regulatory frameworks governing organic farming and certification including its alignment with international standards; and iii) the constraints and recommendations for the organic sector development.

The assessment was based on three complementary approaches: documentary review, interviews with key informants and national workshops. The team analyzed documents and data on organic production, market development and associated policies. Semi-structured, face-to-face, and virtual interviews were conducted with actors in seven value chains selected based on their potential for production and conversion to organic practices (coffee, tea, macadamia, avocado, baobab, honey, and sugar cane). The interviews took place between June and August 2024, accompanied by field visits in four provinces (Zambezia, Sofala, Manica and Maputo). Two seminars were held in Maputo (7 August and 4 September 2024) to develop a road map and validate and refine the preliminary results with the participation of stakeholders from different levels (central, provincial and district) and sectors (public, private, development partners and civil society organizations) specifically focusing on value chain actors (producers, processors, distributors, retailers and certifiers).

Overview of Organic Farming in Mozambique

Agriculture is Mozambique's primary economic activity for most households, with 66% of household heads relying on it for income, particularly in rural areas. However, the sector faces challenges such as low productivity due to reliance on rainfed systems, limited use of agricultural inputs, and small land holdings. Data from the Integrated Agricultural Survey (IAI) 2020 indicates that only a small percentage of farmers used improved seeds (10.9%), fertilizers (5.1%), irrigation (3.5%), pesticides (1.4%), and herbicides (0.5%).

Despite these challenges, there is an opportunity to leverage some of the farming practices to convert to organic farming. According to the International Federation of Organic Agriculture Movements (IFOAM) organic farming is a system that sustains soil health and ecosystems through ecological processes and biodiversity. As such, organic farming includes the following dimensions: crop rotation, animal dung and slurry, synthetic fertilizer, crop residue, tillage, weed control, pesticide, seeds, intercropping, soil fertility, composting, additives in animal husbandry, animal welfare and workload.

In the 2019/2020 season, a significant number of farmers employed organic practices, with 65% leaving crop residues on the field, 33% practicing crop rotation, 92% using organic fertilizers, 95% avoiding chemical pesticides and 93% did not apply synthetic fertilizer. For this analysis, smallholder farmers were grouped in three categories based on their potential to convert to organic farming: *high potential* – those who apply 7 out of 8 organic practices; *medium potential*: those who apply 4 to 6 practices; and *low potential* – those who apply less than 4 practices.

Based on these categories, only 15% of farmers in the 2019/2020 campaign had a high potential to convert to organic practices with the majority (78%) applying between four and six organic practices. To enhance the use of such practices it is recommended that farmers organize in associations as access

to extension services is considerably higher among farmers who belong to farmers organizations compared to those who do not (33% vs 5%)

Mozambique's diverse agroecological zones present various challenges for crop production, with maize and cassava being the most cultivated crops. The findings indicate that crop diversification, particularly with legumes, is crucial for enhancing soil health and supporting organic farming practices, which rely on ecological processes to maintain soil fertility and stability in agroecosystems.

Comparison of Mozambique draft regulation and international standards

The comparative analysis of organic agriculture regulations focuses on three fundamental documents:

1. **MOR (Mozambique):** a draft organic regulation dated September 2024, aimed at establishing a legal framework for the production, certification and labelling of organic products in Mozambique.
2. **EU 848 (European Union):** regulation 2018/848, which is the consolidated standard for organic agriculture in Europe, recognized for its robustness and comprehensiveness.
3. **NOP/USDA (United States):** the National Organic Program, which regulates the production and marketing of organic products in the U.S.

The choice of EU and U.S. regulations as references was strategic, given that these markets are the primary destinations for Mozambique's organic product exports.

Main observations and limitations of the MOR include:

a) Overall limitations

1. **Lack of clear definitions:** MOR lacks precise definitions for crucial terms such as "production unit," "transformation," and "exploration," which creates ambiguity and hinders practical implementation.
2. **Terminology inconsistencies:** the interchangeable use of terminologies like "non-organic" and "conventional" suggests a lack of clarity and rigor in the drafting of the regulation and inadequate cross-references and the absence of a comprehensive review indicate the need for a substantial revision of the text.
3. **Certification concept:** MOR bases certification on tests of final products rather than focusing on the production process, which contrasts with the holistic approach of the EU and the U.S., which consider organic production as an integrated agricultural management system.
4. **Influence of EU 848:** although some sections of the MOR are worded similarly to EU 848, many concepts and definitions are not adapted to the local context, raising questions about the applicability and effectiveness of the regulation.

b) Scope and definitions comparisons

1. **Horizontal legislation and groups of operators:** MOR does not mention organic integrity and the labeling of Genetically Modified Organisms (GMOs), unlike EU legislation, which is more stringent in this regard. the lack of an Internal Control System (ICS) for collective certification is a significant gap, as it hinders collaboration among small producers.
2. **Products and substances:** MOR does not provide clarity on the list of authorized inputs, focusing on trade names rather than active ingredients, which may complicate compliance and enforcement.

3. **Labeling:** the regulation is not aligned with general food labeling standards, which may create barriers for the acceptance of Mozambican products in international markets.

c) **Production and control rules**

1. **Conventional and organic production:** the allowance for the simultaneous production of conventional and organic products is similar to the approach of the EU and NOP, but the MOR requires less stringent separation, which may compromise the integrity of organic products.
2. **GMOs and contamination:** MOR prohibits the use of GMOs but does not provide clear guidelines for verifying this prohibition, which may lead to unintentional contamination.
3. **Derogations and flexibility:** MOR allows exceptions to a greater extent than the EU, which can be problematic as it may open loopholes for non-compliant practices.

d) **Control and certification.**

1. **Organization and responsibility:** the Ministry of Agriculture of Mozambique (MADER) centralizes control functions but faces significant limitations in terms of infrastructure and human resources. MOR uses inconsistent terminology to describe certifying entities, which may generate confusion and a lack of trust in the system.
2. **Requirements and frequency of control:** although MOR provides for annual controls, the lack of detail regarding minimum requirements for certification may result in inadequate enforcement practices. The need for standardization in sampling and laboratory analyses is crucial to ensure the quality and safety of products.
3. **Infractions and sanctions:** the absence of a specific catalog for infractions and sanctions, as exists in the EU, limits the MOR's ability to respond to non-compliant practices.

e) **International trade and recognition**

1. **Import certificates:** MOR lacks robust mechanisms to manage the import and export of organic products, which may compromise the competitiveness of Mozambican products in the global market.
2. **Conflict for exports:** the prohibition on selling organic products in the domestic market intended for export may create a legal paradox, where products cannot be certified according to foreign regulations, limiting market opportunities.

The MOR presents a promising initial framework, but it is evident that it requires:

- Substantial revisions to provide a solid and applicable legal framework for organic production in Mozambique.
- Conceptual harmonization with reference regulations from the EU and the U.S., ensuring that principles and definitions are adapted to the local context.
- Development of a robust certification and oversight structure, essential for ensuring the quality and acceptance of Mozambican organic products in international markets.

Implementing these recommendations will not only strengthen the regulation of organic agriculture in Mozambique but also increase consumer confidence and the competitiveness of products in the global arena.

Constraints for organic production and certification development

The analysis identified 48 limitations for the development of organic production and certification in Mozambique, categorized into seven areas:

1. **Legal constraints** include: i) limited market surveillance and enforcement of food safety management systems; ii) lack of a legal basis for the claim “organic” to protect the (final) consumer; iii) length and cost of registration for plant protection products (PPPs); iv) restrictions applicable to registered PPPs; v) use of non-registered PPPs; vi) restrictive condition for placement of PPPs on the market; and vii) identification of PPPs permitted for use in organic production.
2. **Agonomic limitations** include: i) high sensitivity of crop yields to climatic shocks; ii) limited availability of crop varieties suitable for organic production; iii) increased vulnerability of perennial crops during conversion period; iv) available organic fertilizers do not provide suitable nutrition for plants; v) limited availability of plant reproductive materials (PRMs) suitable for organic production; vi) limited availability of PPPs to control selected pests/diseases; vii) strong conventional farming’ practices and viii) limited availability of suitable farming and processing equipment.
3. **Logistical constraints** include: i) limited infrastructure development; ii) limited availability of suitable packaging materials; iii) issues of compliance with labeling requirements; iv) short shelf life of smallholder farmers produce; and v) time-consuming inspections.
4. **Compliance limitations** include: i) technical limitations to ensure continued quality assurance; ii) overcoming non-compliances to obtain organic certification; iii) continued investment to maintain organic certification; iv) absence of a governmental policy involving organic production; v) limited availability of conversion-period methods; vi) issues from enforcing conventional farming methods; and vii) corruption and fraud.
5. **Knowledge limitations** include: i) limited knowledge and skills about organic production principles; ii) operators’ lack of skills for observation, understanding, innovation and implementation of organic practices; iii) lack of qualified service providers for technical advice (startups) and continued guidance (quality assurance; iv) limited experience at the level of the competent authority as regard to market surveillance and supervision; and v) limited experience at the level of inspection and certification of organic products
6. **Market development limitations**
 - 6.1. **Input market constraints include:** i) lack of rules about wild collection of organic products; ii) limited availability of farming and processing equipment; iii) limited infrastructure development; iv) lack of sufficiently qualified laboratories; v) high cost of organic certification; vi) limited resources to extend activities to cover a larger segment of the value chain; vii) finding and keeping suppliers of organic raw materials; viii) getting smallholder farmers organized in functioning farmers’ organizations (fos) ; and ix) limited availability of plant reproductive materials (prms) suitable for organic production.
 - 6.2. **Output market constraints include:** i) low level of consumer perceptions and expectations; ii) high price volatility in the international market; iii) sensitivity of price premium is commodity specific; iv) terms of payment on the international market; v) limited

market surveillance and enforcement of food safety management systems;; vi) lack of a legal basis for the claim “organic” to protect the (final) consumer; and vii) identifying and maintaining a client database.

- 7. International trade limitations** include: i) lack of international trade agreements with some high potential organic markets; ii) limited information about exemptions for fumigation for cross-border transport; iii) costly and time-consuming procedure to obtain the phytosanitary certificate; and iv) limited market surveillance and enforcement of food safety management systems.

Conditions for a sustainable organic production

To overcome these challenges, the report proposes actions at the level of consumers, government, small farmers, and medium and large operators.

- **At the consumer level**, the needs include a better understanding of the distinction between formal and informal markets, food safety versus organic products, the creation of a traceability system and the identification of supply and demand for organic products.
- **At government level**, it is essential to strengthen institutional capacity for market surveillance, establish a database for operators, document procedures for certification and develop a regulatory framework for organic products.
- **For small and medium-sized farmers**, the focus is on creating functional farmers' organizations (FOs) to promote safe food on the formal market.
- **Medium to large operators** need incentives for the transition to organic farming, better access to land and water for organic production, greater willingness to invest in human capital and the adoption of a quality-based approach to guarantee high-quality organic products.

Recommendations for organic production and certification development

The report provides several recommendations for improving the organic production environment in Mozambique, which are clustered into two main groups: i. adjustment and development of a government policy framework subscribing to organic production (consisting of eight recommendations), and ii. capacity building actions (remaining five recommendations).

I. Adjustment and development of the policy framework

- **Finalization and publication of the organic regulation:** the Ministry of Agriculture and Rural Development (MADER) should finalize and approve the regulation for organic production and certification, revising the current draft to include essential information and specific requirements for international trade.
- **Review of complementary legislation:** the organic production regulation should be integrated within existing food safety legislation to avoid conflicts and leverage synergies.
- **Strengthening supervision and oversight:** establish a government department to lead organic production and certification, with its own auditors to verify the compliance of private certifying entities.
- **Adoption of international certification standards:** implement the ISO 17065 standard for organic product certification, promoting hands-on training for stakeholders and developing an internal quality manual.

- **International recognition:** request recognition of Mozambique's organic certification standards from the European Commission and the United States Department of Agriculture (USDA).
- **Documentation and transparency in public services:** improve the effectiveness and efficiency of public services supporting organic regulation by documenting working methods and maintaining transparency and impartiality.
- **Facilitation of access to organic production:** promote knowledge and skills about organic production principles and certification at all levels.
- **Strengthening farmers' organizations:** support the organization of small farmers to reduce transaction costs and facilitate the collection of organic products.

II. Capacity building actions

- **Designation of resources for supervision:** allocate technical, financial, and infrastructure resources for the supervision of organic production, addressing limited institutional capacity.
- **Development of training for inspectors:** create specialized training programs for qualified inspectors, ensuring competence in compliance verification.
- **Documentation of organic production schemes:** catalog and document existing organic production schemes in the country to promote best practices.
- **Promotion of consumer awareness:** invest in information campaigns to increase consumer awareness and trust in organic products.
- **Attraction of private investors:** develop financial incentives and create a portal for investors interested in organic production, integrating organic production into trade agreements.

The success of organic production in Mozambique depends on a coordinated effort between the government, the private sector, and farmers, focusing on effective policies, capacity building, and international recognition. Implementing these recommendations is crucial to establishing a robust system of organic production and certification, promoting sustainability and competitiveness in the global market.

I INTRODUCTION

According to the International Federation of Organic Agriculture Movements (IFOAM), organic farming is a production system aimed at sustaining soil health, ecosystems and people by relying on ecological processes, biodiversity, resilience and cycles adapted to local conditions. A food item is considered organic if its production process complies with standards of organic farming, suggesting that the food item is more nutritious, flavorful and safe to eat. These standards vary from country to country or from region to region.

Organic food consumption is rapidly increasing worldwide due mainly to increasing consumers' concerns about healthier and more sustainable food options coupled with increasing trust in food with organic certified label. For instance, Smoluk-Sikorska et al (2024) documented that global organic food market value stood at USD 208.2 billion in 2022 (equivalent of about 7.0 percent of the Africa GDP in the same year) with an estimated annual growth rate of 11.7 percent between 2023 and 2030. This estimate indicates that the substantial growth of organic food consumption will remain in the upcoming years.

Mozambique could potentially fulfill part of this rapidly increasing global demand for organic food for at least two reasons. First, 20.2 percent (15.3 percent) of smallholder farmers in 2014/2015 (2019/2020) cropping season have high potential for conversion to organic farming given their agricultural practices. Second, Mozambique possesses abundant endowments of arable land and water resources coupled with a variety of agroecological conditions suitable for production of various crops, suggesting huge potential for agricultural production including organic farming. Smallholder farmers' total cultivated land area in the 2019/2020 cropping season, amounting to about 5.5 million hectares, accounted for 15.3 percent of the total arable land. Smallholder farmers with high potential for organic farming contributed 19.1 percent of the total cultivated land area in the 2019/2020 agricultural season. These findings suggest that a considerable amount of land area is potentially available for organic production, coupled with a wide variety of environmental, soil and climate conditions suitable for a wide range of crops. However, the domestic market for organic food is still in its incipient stages of development.

Domestic organic food consumption remains low because accessing enough food to satisfy essential nutritional needs appears to be the highest priority among Mozambican consumers due mainly to high prevalences of poverty (49.2 percent) and stunting among under-five children (38.0 percent). However, domestic organic food consumption is slowly growing due mainly to the increasing number of expatriates. On the other hand, very few Mozambique-based medium-to-large-scale organic operators – supplying predominantly organic products to the international market – are certified by international certification bodies with no offices in Mozambique. Hence, Mozambique should create an enabling environment – promoting organic production and certification – to attract private investment to develop the organic industry aimed at supplying both the domestic and international markets.

Recognizing the potential for organic production, the Ministry of Agriculture and Rural Development (MADER), under the leadership of the National Directorate of Plant and Animal Health (DNSAB), drafted a regulation for organic production and certification in 2021; however, it has not yet been finalized and approved due to a large extent to limited resources especially technical competences in terms of organic production and certification. Likewise, such limited technical competences also characterize the National Institute of Quality and Standards (INNOQ) under the Ministry of Industry and Trade (MIC), the government entity responsible for standardization, metrology, certification, and quality assurance at national level. Moreover, Mozambique-based laboratories are not used for testing of organic products required by the operating international certification bodies mostly because they

are not ISO 17025 accredited and offer a limited scope of analytical methods; coupled with limited capacity in terms of physical infrastructure, equipment, materials and qualified personnel to take sampling and perform testing for food safety in general.

Under these auspices, the Supporting the Policy Enabling Environment for Development (SPEED) Project – in partnership with the United States Agency for International Development (USAID) African Trade and Investment (ATI) Southern Africa – seek to provide technical assistance to DNSAB and INNOQ to develop a roadmap for a robust and realistic legal framework containing at least rules and requirements for organic production and the description of the control system including roles and responsibilities of the competent authority and certification bodies. The SPEED Project also seeks to identify the requirements to develop accreditation in view of organic certification and laboratory testing of organic products in Mozambique. Furthermore, through the current endeavor, the SPEED Project intends to provide insights on the potential benefit of Mozambique becoming competitive in the organic sector. To achieve these goals, this report identifies the constraints and needs for organic farming and certification in the context of Mozambique and draws key recommendations emanating from the key findings. The report is complemented by another report outlining the roadmap for organic certification in Mozambique emanating from the findings presented in this report.

This report is structured into four chapters including this introduction. The second chapter outlines the methodological approach employed to achieve the objectives, while the third chapter summarizes the main findings and is divided into three sections. The first section presents an overview of organic farming in Mozambique. The second section compares three organic regulations: Mozambique draft regulation, the European Union (EU), and the United States of America (USA). The final section assesses the constraints and needs for organic certification. The final chapter concludes and presents recommendations.

2 METHODOLOGICAL APPROACH

The methodology applied to carry out this assessment was based on three complementary approaches: (i) the review and analysis of the existing literature and data (desk review), (ii) interviews with key informants, and (iii) the organization of two national workshops. To leverage the existing technical knowledge and to avoid the replication of mistakes and unsuccessful experiences, the consultant team reviewed a variety of secondary sources (documents and data), focusing mainly on (a) reports on organic production and market development, and (b) policy framework for organic production. The list of the consulted bibliography is presented in ANNEX I.

The desk review was complemented by both face-to-face and online semi-structured interviews with several stakeholders operating along a variety of value chains. For the sake of interviews, the consultant team selected organic- and conventional-production value chains, focusing mainly on market-oriented commodities. Selection of the value chains was based mainly on the degree of success in terms of production, potential for organic production and the experience that organic production is not the destiny of all conventional operators. Under these premises, seven value chains were selected for interviews namely coffee, tea, macadamia, avocado, baobab, honey and sugarcane.¹ The interviews aimed predominantly at identifying needs and constraints for organic production in Mozambique by looking at selected commodities from different perspectives: conventional, organic and in certain cases “ex-organic” production.

The consultant team conducted interviews in June, July and August 2024 combined with field visits undertaken in July 2024 covering four provinces (Zambezia, Sofala, Manica and Maputo). Selection of these provinces was driven by the value chains chosen to be analyzed. The set of interviewed stakeholders include input suppliers, producers, processors, distributors, retailers, wholesalers, consumers, international certification bodies, laboratories, development partners, and government entities at various levels (central, provincial and district). A detailed overview of the key stakeholders interviewed is available in ANNEX II.

Two national workshops – with in person and online participation – supplemented the information gathered through the desk review and interviews with key stakeholders. The national workshops took place in Maputo on 7 August 2024 and 04 September 2024. Preliminary findings from the desk review and stakeholder interviews were presented to the workshop participants for further discussion and improvements to upscale organic production in Mozambique.

¹ Organic production value chains include tea, macadamia, baobab and sugarcane, while conventional production value chains include coffee, tea, macadamia and honey. The value chains were chosen only for the purpose of interviews, and they do not represent strategic value chains for organic production and certification.

3 MAIN FINDINGS

3.1 OVERVIEW OF ORGANIC FARMING IN MOZAMBIQUE

Agriculture is the main economic activity for most households in Mozambique. Data from a nationally representative Household Budget Survey, referred to as IOF, 2020 – administered by the National Institute of Statistics (INE) – show that 65.9 percent of household heads reported agriculture as their main income-generating activity. This reliance on agriculture as the main income source is considerably higher in rural than urban areas (82.5 percent versus 31.6 percent). However, low productivity is a major characteristic of the agriculture sector in Mozambique due mainly to the over reliance on rainfed production systems, low use of yield-boosting agricultural inputs coupled with small land holdings, leaving most smallholder farmers as net food buyers.

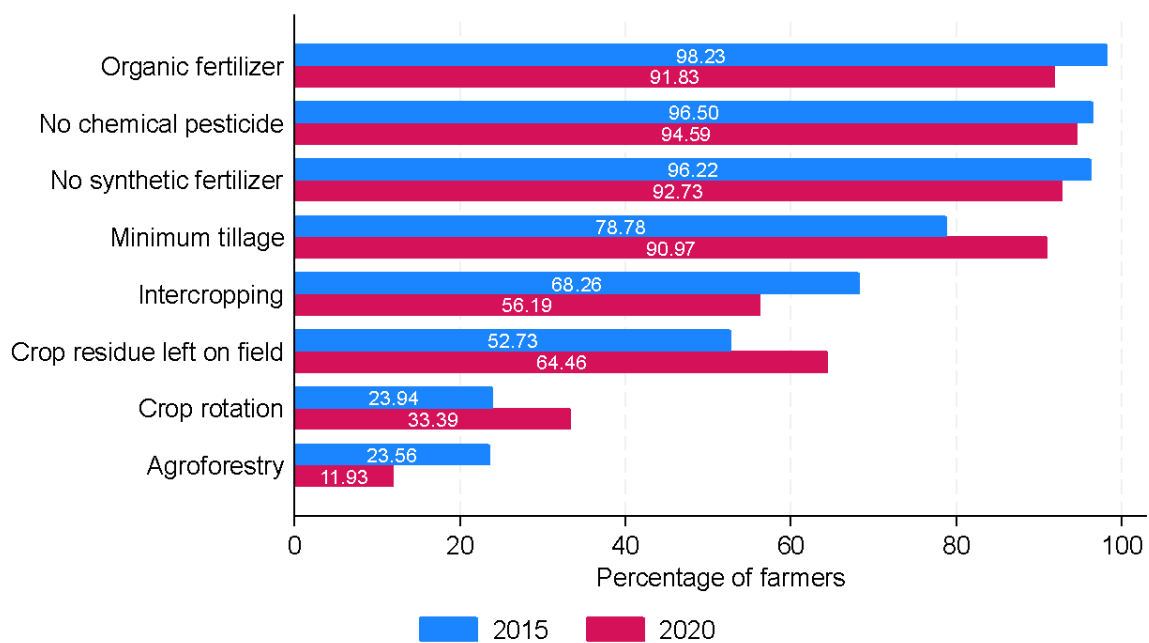
Data from a nationally representative Integrated Agricultural Survey, referred to as IAI, 2020 – conducted by the MADER – reveal that 10.9 percent of smallholder farmers used improved seed of any crop grown in the 2019/2020 agricultural season, 5.1 percent used fertilizer, 3.5 percent used irrigation, 1.4 percent used pesticide, and 0.5 percent used herbicide. The same data showed that smallholder farmers – accounting for 99.9 percent of the total rural farmers and about 95.0 percent of the total cultivated land area – cultivated on average 1.4 hectares in the 2019/2020 agricultural season. Hence, this section focuses on smallholder farmers given their predominance and data availability.

Furthermore, Mozambique is prone to recurrent natural disasters specially floods, droughts, cyclones, landslides and earthquakes, with the magnitude of the natural disasters varying from region to region and from year to year; central and northern Mozambique are more prone to floods occurring almost every two years. These frequent climatic shocks – coupled with climate change (increasing temperatures, rising sea level, decreasing rainfall) – have lasting devastating negative impacts on agricultural productivity; further reducing availability and access to food, and thus exacerbating poverty and food and nutrition insecurity especially in rural areas where agriculture is the predominant income source. IOF data reveal that poverty incidence stands at 49.2 percent, while chronic malnutrition (stunting) prevalence among under-five children at 38.0 percent; with considerably higher prevalences in rural areas compared to urban areas (53.1 percent versus 40.7 percent for poverty and 42.2 percent versus 27.7 percent for stunting). These are sizable incidences of poverty and food and nutrition insecurity by any standards.

On the other hand, some farming practices such as removal and burning of crop residues and no crop rotation as well as households' livelihood strategies such as cutting of trees for fuel and construction purposes reduce soil fertility and increase erosion due to land degradation emanating from no replacement of nutrients and organic matter. IAI data show that in the 2019/2020 cropping season, 64.5 percent of smallholder farmers left crop residues on their fields, 33.4 percent practiced crop rotation, and 14.1 percent reported cutting trees for fuel or construction purposes. This pattern suggests that organic farming could potentially contribute to sustainable agricultural management, ultimately becoming an avenue through which poverty and food and nutrition insecurity could be reduced, especially in rural areas.

According to Freyer et al (2020), the International Federation of Organic Agriculture Movements (IFOAM) defines organic farming as a type of production system aimed at sustaining soil health, ecosystems and people by relying on ecological processes, biodiversity and resilience and cycles adapted to local conditions. The following dimensions are considered in the IFOAM definition of organic farming: crop rotation, animal dung and slurry, synthetic fertilizer, crop residue, tillage, weed

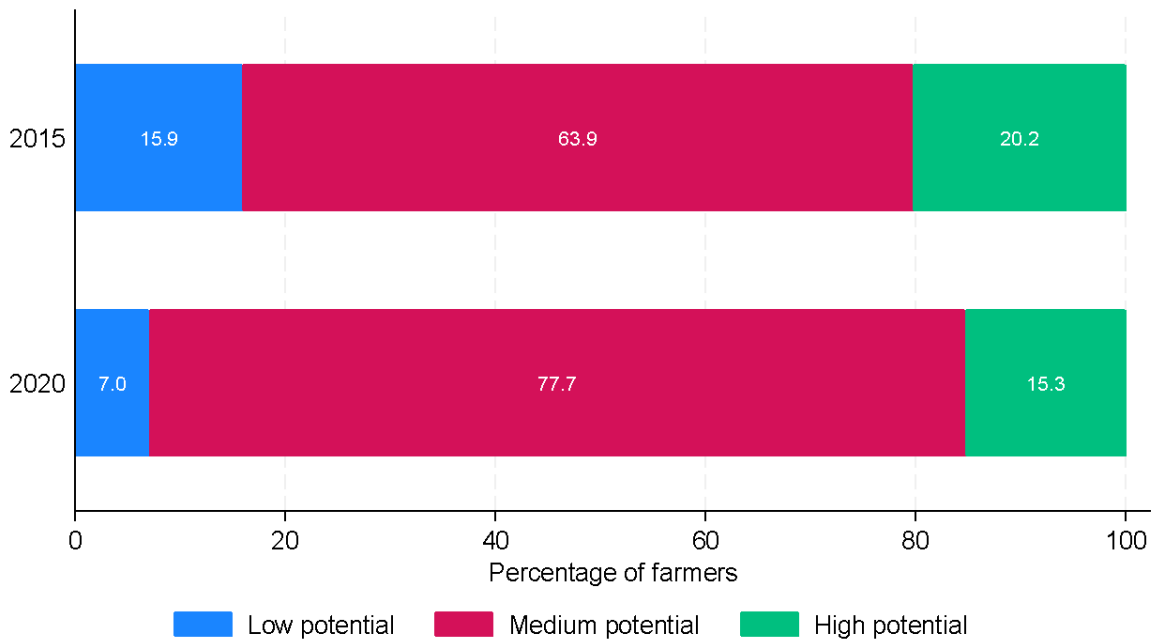
control, pesticide, seeds, intercropping, soil fertility, composting, additives in animal husbandry, animal welfare and workload. We looked at these dimensions, to the extent possible, in the context of Mozambique. Figure 1 shows proportions of smallholder farmers who used organic farming practices across two cropping seasons. This figure illustrates that a sizable share of smallholder farmers used a wide variety of organic farming practices in the 2014/2015 and 2019/2020 agricultural seasons although they did not necessarily practice organic production. In the 2019/2020 agricultural season, the top three most important organic farming practices in terms of the share of farmers using them include organic fertilizer (91.8 percent of farmers used it), no chemical pesticides (94.6 percent) and no synthetic fertilizer (92.7 percent); while the top three least important ones are cropping residue left on the field (64.5 percent), crop rotation (33.4 percent) and agroforestry (11.9 percent).



Source: IAI 2015 & 2020

Figure 1 Share of farmers using organic farming practices

Due to unavailability of data on organic farming in Mozambique, we grouped smallholder farmers into three categories based on the number of organic farming practices they employed and listed in Figure 1 above: *High potential organic farmers* denote those employing at least seven out of eight practices, *medium potential* those employing between four and six practices and *low potential* those employing at most three practices. Our findings are summarized in Figure 2 below. This figure shows that a sizable proportion of smallholder farmers (20.2 percent amounting to about 800 thousand farmers for the 2014/2015 cropping season and 15.3 percent amounting to about 650 thousand farmers for the 2019/2020 cropping season) have high potential for organic farming although they did not necessarily practice organic farming. This proportion could substantially increase if we consider smallholder farmers with medium potential for organic farming (63.9 percent for the 2014/2015 cropping season and 77.7 percent for the 2019/2020 cropping season). For both cropping seasons, IAI data reveal that no difference in the average land holding area (about 1.7 hectare) exists between low potential and high potential farmers.



Source: IAI 2015 & 2020

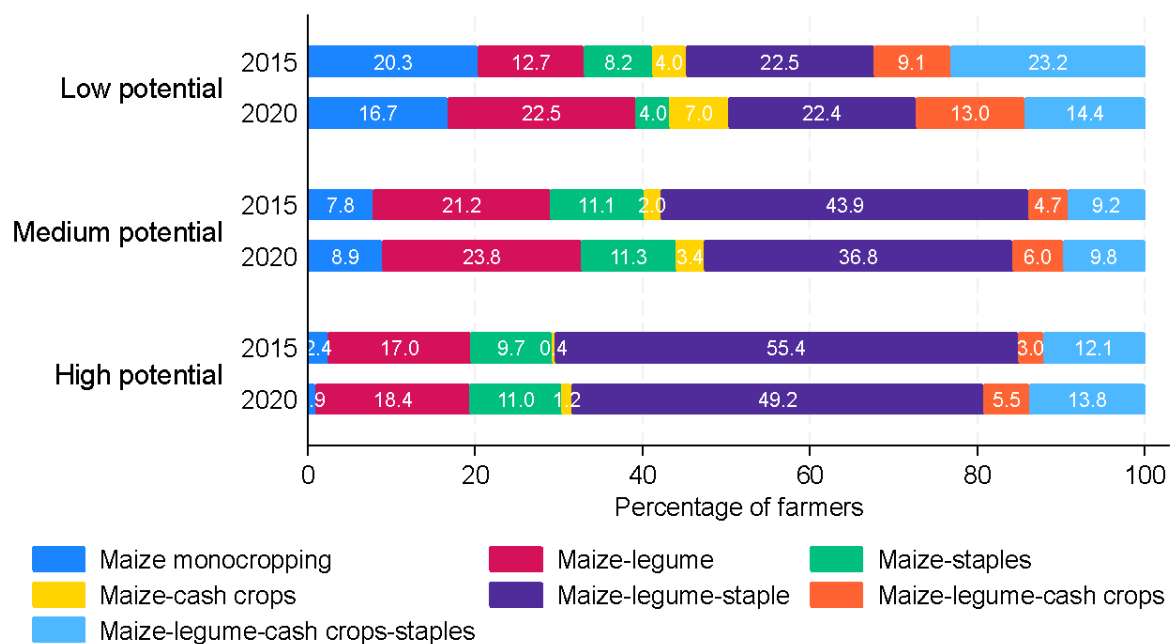
Figure 2 Farmers categories based on their potential for organic farming

The same data also show that membership to farmers’ organizations (FOs) – estimated at about 3.0 percent – is very limited with no difference between low potential and high potential farmers; coupled with low coverage of extension services and constrained access to credit. For the 2019/2020 agricultural season, data from IAI 2020 demonstrate that only about 7.0 percent of smallholder farmers had access to extension services and less than 1.0 percent had access to credit. Furthermore, access to extension services is considerably higher among farmers who belong to FOs compared to those who do not (33.3 percent versus 4.7 percent); this pattern holds across all three categories of farmers in terms of potential for organic farming (52.6 percent versus 5.3 percent for high potential farmers and 35.2 percent versus 2.6 percent for low potential farmers). This finding suggests that combining extension services with membership to FOs, as a package, could be an effective way to promote organic farming.

Crop production occurs in a wide variety of environmental, soil and climate conditions given that Mozambique has ten agroecological zones, indicating that farmers face a wide range of challenges for crop production. These ten agroecological zones are usually grouped into three categories based mainly on rainfall, altitude and potential evapotranspiration: (i) Highland zone with average annual rainfall of at least 1,000 millimeters (mm), altitude of at least 500 meters (m) and low evapotranspiration; (ii) medium-altitude zone with annual rainfall between 900 and 1,500 mm, altitude between 200 and 1,000 m and medium evapotranspiration; and (iii) low-altitude zone with annual rainfall of at most 1,000 mm, altitude of at most 500 m and high evapotranspiration.

Maize and cassava are the two most grown crops by smallholder farmers in terms of both the number of growers and cultivated land area. IAI 2020 data show that 79.8 percent of farmers grew maize, and 40.1 percent grew cassava in the 2019/2020 agricultural season. In the same cropping season, maize accounted for 43.8 percent of total cultivated land area, while cassava contributed to 10.6 percent. Figure 3 presents maize cropping systems across farmers’ potential for organic production. This figure illustrates that the three most important maize cropping systems among smallholder farmers with high potential for organic farming are maize-legume-staple (accounting for 49.2 percent), maize-legume

(18.4 percent) and maize-legume-cash crops-staple (13.8 percent) in the 2019/2020 cropping season, with similar pattern in the 2014/2015 cropping season. This finding suggests that smallholder farmers diversify their cropping systems with legume appearing in all top three cropping systems, representing a potential for maintaining soil health (and its improvement) and for practicing organic farming. Maximizing crop diversification, especially with inclusion of legumes, is an essential prerequisite for conversion to organic farming because organic farming relies on ecological process and biodiversity to maintain soil fertility and agroecosystem stability. Wide crop diversity also increases natural enemies and soil ability to prevent pest and disease problems.



Source: IAI 2015 & 2020

Figure 3 Production systems among smallholder farmers

3.2 COMPARISON OF ORGANIC REGULATIONS

The consultant team compared three organic regulations: (i) Mozambique draft organic regulation dated September 2024 (hereafter referred to as MOR); (ii) the European Union (EU) consolidated version of Council and Commission Regulation 2018/848 and the accompanying Commission Regulations (referred to as EU 848) and available at <https://eur-lex.europa.eu>; and (iii) National Organic Program (NOP) under the Agricultural Marketing Services (AMS) of the United States Department of Agriculture (USDA) and available at www.ams.usda.gov (referred to as NOP).² The consultant team chose the EU and the United States of America (USA) organic regulations as the benchmark against which the Mozambique draft organic regulation is compared to because EU and USA are undoubtedly the main markets to which Mozambique organic products are exported. Given

² Regarding EU organic regulation, the legal framework consists of several Regulations, all identified by a number. Relevant articles are Article 9 of EU 2021/1698 denoted as 1698(9) and Article 4 of EU 2021/279 denoted as 279(4). Given that relevant regulations were all published in year 2021, we dropped reference to year of publication when referring to these regulations.

the constrained time allocated to undertake the comparison; the consultant team made the following choices:

- Only one of the documents from the NOP handbook (considered as guidance and also referred to as the competent authority) was considered;
- The EU commission's frequently asked questions (FAQs) were not reviewed;
- Complementary Mozambique legislation was not examined;
- Aspects related to products originating from organic livestock and aquaculture production and to products closely related to agriculture are not considered.

Before comparing the three organic regulations, the consultant team presents its general observations about MOR. The consultant team believes that the current version of MOR needs to be revised substantially to provide a legal basis for organic production and certification in Mozambique because it contains several limitations. Some examples of such limitations include:

- **Missing information:** definitions of several terms (e.g., farm, production unit, processing, just to mention a few) and list of products and substances authorized for organic production are absent. For instance, Article 28 of MOR [denoted as MOR (28)] refers to **processing**, but it does not specify what processing entails; making it unclear whether post-harvest operations like washing, sorting, cleaning, packing and drying are subject to the MOR obligations;
- **Inconsistencies:** terms with different meanings are interchangeably used and different terms are used for the same aspect. For example, non-organic versus conventional, and the certifying entity is referred to in different ways. Another example, MOR uses the term supervision in an identical way as inspection, while they are clearly different based on EU 848(1698.3 – 8);
- **Incoherent referencing:** articles and annexes are mistakenly referenced in the main text. We mention two illustrative examples. First, MOR (1) mentions that Annex I contains definitions, while MOR (4) indicates that Annex I lists products closely related to agriculture, which could reflect “copying and pasting” of the EU organic regulation without making adjustments accordingly. Annex I is indeed dedicated to definitions. Second, MOR (15.9) states that the list of plant protection products authorized for organic production is presented in Annex 3, but this annex is indeed dedicated to “penalties and fines”.

The concept of organic certification presented in MOR (30) makes it very unlikely that the EU and USA will recognize organic products from Mozambique because organic certification under this concept is largely based on testing of samples of final organic products rather than the production process, while the EU and USA organic regulations consider organic production as an overall system of farm management and food production using natural substances and processes by combining best environmental practices, high level of biodiversity, preservation of natural resources, application of high animal welfare standards and high production standards.

Furthermore, MOR exhibits willingness to lean towards EU 848 as some sections of both regulations have similar wording; however, several concepts, definitions and institutional arrangements are not adapted to the Mozambique context; indicating that MOR requires further improvements on the theoretical ground. This also leaves the reader with many questions as regard to the applicability of MOR. For example, is it really the (EU) **Commission** who will adopt implementing actions to recognize control authorities and control bodies as stated in MOR (70)?

3.2.1 DEFINITION OF SCOPE, OBJECTIVES AND PRINCIPLES

The following aspects emerged from the comparison of the three organic regulations:

- MOR [MOR (4.3) and MOR (40.5)] does not specifically refer to applicable horizontal legislation. MOR also lacks precise reference to horizontal legislation pertaining to organic integrity [e.g. in relation to genetically modified organisms (GMOs)]. For instance, MOR does not specifically state organic operators' obligations regarding labeling of GMO and GMO-derived products. By contrast, such labeling rules are in place in the EU, but are not in the USA;
- MOR refers to operators and **groups of operators** in an inconsistent way. For example, no reference to groups is made in relation to subcontracting [MOR (27.3)], but it is made in relation to their obligations towards the certifying entity. Furthermore, MOR does not refer to the establishment of an internal control system (ICS), but MOR (38) requires the verification of the establishment and functioning of the ICS. Neither does MOR contain any specific requirements for the control and certification of groups. On the contrary, EU 848 and NOP refer to groups of operators and the ICS with legal requirements for control and certification of group of operators;
- MOR does not outline definitions for some concepts such as “**farm**”, “**holding**” and “**production unit**”. EU 848 employs the terms “holding” and “production unit” with clear definitions, while the NOP differentiates organic agricultural production methods at plot level. Secondly, MOR is not explicit about the coverage of the term “processing”, making it unclear whether it includes post-harvest operations. By contrast, EU 848 makes distinction between “preparation” and “processing”; while NOP covers all post-harvest operations under the definition of “handling”. Thirdly, MOR (28f) entails certification of the means of transport used to carry organic products, while neither EU 848 nor NOP imposes such certification and transport of organic products is covered under subcontracting when third parties are involved;
- MOR covers agricultural, livestock and aquaculture products, but does not provide clarification for the definition and coverage of these products. In addition, MOR's referencing of aquaculture products does not match its scope definition. Conversely, both EU 848 and NOP provide definitions of organic products and clearly align their respective range of covered products;
- MOR and EU 848 adopt the same possibilities for claims on organic product types (more than and less than 95 percent of organic ingredients), but MOR does not link the organic labeling rules to the general labeling rules for food (e.g. the list of ingredients), while EU 848 does. On the flip side, NOP adopts different product types and has different requirements for labeling (100 percent organic, 99-95 percent organic, 94-70 percent organic and less than 70 percent organic ingredients);
- MOR refers to both objectives of the organic regulation under MOR (3) and objectives of organic production under MOR (7). By contrast, EU 848 dedicates a section to the objective of organic production but not objectives of the regulation, while NOP does not have a section entitled “objectives”. However, NOP subpart D [from NOP (205.300) until NOP (205.311)] refers to the obligations for using the wording “organic” for agricultural products in the USA;
- Both MOR and EU 848 dedicate sections to general and specific principles for organic production, but the EU 848 general principles are reflected by combining the MOR general and specific principles. On the other hand, NOP does not have a section entitled “principles”.

3.2.2 PRODUCTION RULES

3.2.2.1 GENERAL PRODUCTION RULES

All three organic regulations [specifically under MOR (16), EU 848(9) and NOP (205.201)] allow **simultaneous organic and conventional production** on the same “farm” under certain conditions. However, MOR (16.7) refers to “**separation**” of the land area and products used for or obtained from organic production, while EU 848(9.7 through 10) and NOP (201(a)(5)) require separation among such products throughout the entire production.

3.2.2.2 CONVERSION PERIOD

Both MOR and EU 848 specify the same mandatory conversion period as part of the certification, but NOP does not require a conversion period as part of the certification. Furthermore, both MOR and EU 848 require that operators comply with organic production requirements during the conversion period and the conversion period starts no earlier than the notification date. However, under exceptional conditions (e.g., strict and documented procedures) for plant production, both MOR and EU 848 recognize a conversion period initiated before the notification date, with MOR having less thorough and less guarantees for harmonized application of the requirements for operators.

3.2.2.3 GENETICALLY MODIFIED ORGANISMS

MOR (8) excludes, under its principles, and MOR (13 and 21) prohibits, under its production rules, the use of GMO and GMO-derived products. MOR requires operators to check product labels, but it does not specify the relevant GMO labeling rules or provide guidance on how operators should apply the requirements. Neither does it specify how inspectors or auditors should verify compliance with these requirements in the context of organic production. On the contrary, while NOP (205.105) also prohibits the use of GMOs, the USA does not have GMO labeling rules in place.

3.2.2.4 AUTHORIZED PRODUCTS AND SUBSTANCES

Although the current version of MOR does not contain the list of **plant protection products** (PPPs) permitted for the purpose of organic production, the wording under MOR (15) suggests that MOR refers to commercial names of PPPs. By contrast, both EU 848 and NOP refer to specific active ingredients rather than commercial names of PPP. Furthermore, MOR (15.1) does not specify products and substances permitted for the purpose of **cleaning and disinfection of premises** including storage facilities used for organic plant production; whereas EU 848(24.1.f and g) and NOP (271) do specify such products. Largely inspired by the EU regulations, MOR provides theoretical framework to establish the list of authorized PPPs, but in contrast to EU (EGTOP) and USA (NOSB), MOR does not provide any human capacity, mechanism and procedures to assess the requests and possibilities for inclusion of products into such list in a fair and transparent manner.

3.2.2.5 PRECAUTIONARY MEASURES

MOR does not address issues related to contamination when operators possess information confirming contamination of organic products, while this situation is among the major points of attention in the EU 848(28 and 279.1). Moreover, according to EU 848(27), such situations are considered “special” requiring specific operators’ actions because they could potentially have impact on the integrity of organic products. However, EU 848 does not impose an interpretation scheme including decertification thresholds, but NOP (205.671) does.

3.2.2.6 DEROGATIONS AND TEMPORARY VARIANCES

MOR (58) contemplates derogation from the production rules for previously approved production requirements, but EU 848 does not allow for derogation unless this is explicitly laid down. Hence, deviation from production requirements results in non-compliance in the EU and USA. However, derogation in the EU includes exceptional circumstances outlined in EU 848(22) and EU 2146. Both NOP (205.290) and EU 848 address temporary variances in the same way and they only authorize the use of non-organic plant reproductive materials for organic plant production.

3.2.2.7 POST-HARVEST OPERATIONS

MOR does not address potential risks related to post-harvest activities such as cleaning, washing, sorting, packaging because these activities do not alter the nature of the agricultural organic products. However, both EU 848(1.13, 2.1 and 3) and NOP mention such activities with specific requirements for organic production.

3.2.2.8 DESCRIPTION OF ORGANIC ACTIVITIES

MOR (15.6) allows the use of synthetic pesticides if they are listed in the Organic Management Plan and authorized by the registrar. This is at least misleading because based on the principle of health, organic farming encompasses no use of synthetic pesticides and fertilizers.

MOR (26.2.d.i) requires that the operator provides a description of the operator's organic activities, but it is not clear whether this shall be done before the initial certification or before the renewal audit, while EU 848(1698.9) and NOP (§205.201) require this explicitly as a condition prior to the first certification.

3.2.2.9 ORGANIC PLANTS AND PLANT PRODUCTS

The following points emerged from the comparison of the three organic regulations:

- MOR (15 and 16) lists the authorized plant reproductive materials (PRMs), while MOR (25) lays down the legal provisions for PRMs handling and use. MOR (16.13 and 16.14) denotes that producers (individually and before use) should apply for a derogation to use non-organic PRMs. According to MOR (11 and 17), organic production starts with the use of either organic (not available), "in-conversion" (not mentioned) or non-organic untreated PRMs;
- **Database** of organic PRMs for the purpose of making available to interested parties. The consultant team are not aware of any development, testing or content of this important database. After all, using organic PRM comes at the beginning of organic (plant) production. Based on MOR (16.13 and 14), every interested farmer (individually and before use) must apply for a derogation to use non-organic PRM. In the absence of the database, this requirement will be mainly a bureaucratic process that most likely will end up in refusing every single request;
- Like EU 848 (II.I 1.1), MOR (17.1a and 17.3) refers to the **soil-related** nature of organic production of plants, including covering some relevant exceptions like production of seedlings and transplants as well as the organic production of ornamental plants and herbs. MOR (17.1b) explicitly excludes hydroponic production systems. NOP requires organic production to take place in the soil as well but does not prohibit hydroponic production systems. NOP also imposes detailed rules regarding the production and use of compost;

- Requirements in terms of methods and techniques to improve soil fertility are a major aspect in EU 848(II.I 1.9) and NOP (203 and 206). Similar requirements are addressed in MOR (17.4 through 17.10);
- Requirements in terms of methods and techniques to ensure **plant protection** are covered in a similar way in MOR (17.1d and e) as in EU 848(II.I and 1.10) and NOP (§205.203 and 206); although the detailed list of authorized products and substances under MOR is not available yet;
- The rules for the use and production of organic and “in-conversion” PRM are described in great detail in EU 848(II.I 1.8) but not in NOP and MOR. Moreover, NOP (§205.204) only refers to use, but not production of “in-conversion” PRM (including seeds and seedlings);
- MOR (17) does not impose the details of record keeping, which is the case in EU 848(II.I, 1.9.3, 1.10.2, 1.11 and 1.12). In addition, EU 848(II.I, 1.12 and 2119.2) require operators to keep detailed (stock and financial) records allowing among others for mass balance and traceability checks as well as verification of visual observations on-site;
- Finally, MOR does not refer to requirements for post-harvest (preparation and storage) operations other than on- and off-farm processing on plants or plant products, which represents specific risks for not respecting the production rules; while EU 848(II.I and 1.13) covers these practices and accompanying risks as well.

3.2.2.10 PROCESSED ORGANIC FOOD

The following aspects emerged from the organic regulation comparison:

- MOR (22.5) uses the term “preparation”, but this term is not defined under MOR (I); suggesting high potential for misleading interested parties because no common understanding of the term exists;
- Regarding the composition of processed organic food, MOR (23.5a) states that “certain food additives [...] shall be calculated as agricultural ingredients” without further specification. By contrast, EU 848 and NOP use the same approach, but do provide details about the implementation of this matter;
- As mentioned earlier, unlike EU and NOP, MOR does not contain a list of additives and processing aids authorized for use in the production of processed organic food.

3.2.3 CONTROL AND CERTIFICATION

Table I summarizes stakeholders’ responsibilities across the three organic regulations compared in this assessment. According to MOR (6), besides being the entity responsible for the implementation of MOR, the registrar (MADER) will be actively involved in all relevant activities and have many responsibilities in the certification process (e.g., authorizing partial conversion and parallel production, receiving and processing the notifications, establishing the labeling of organic products, just to mention a few). The consultant team expects that the registrar will not have the capacity to efficiently deliver all their responsibilities because, based on experience from other countries, the development of such systems, procedures, and documents, and training of staff require considerable time and (financial and human) resources. The MOR is expected to enter into force 90 days after its publication, which seems

too short to put in place the required infrastructure including qualified staff for effective and efficient implementation of organic regulation.

Table 1 Stakeholders' responsibilities across organic regulations

Responsibilities	MOR	848	NOP
Final responsibility against consumers	MADER	EU Commission and Member States	USDA / AMS / NOP
Develop and adopt organic production standards	MADER and Technical Advisory Committee	EU Commission plus Member States assisted by EGTOP	NOP assisted by OMRI and NOSB
Carry out controls	INNOQ and delegated bodies	Control authorities and private control bodies	Accredited certifying bodies (mainly)
Take certification decisions	MADER	Control authorities and private control bodies	Accredited certifying bodies (mainly)
Supervision	MADER	EU Commission with Member States and in the case of private control bodies, also the accreditation bodies	AMS

Note: Regarding the EU 848 and NOP, organic production standards refer to how production should be undertaken in Mozambique if organic products are to be exported into the EU and USA markets.

MOR (26 and 27) allows identification of the stakeholders of the control and certification system for the Mozambique case. The number of **stakeholder types** presented in MOR is higher than in the EU and USA.³ Moreover, the organizational model for control and certification of organic production in Mozambique is not clear.

The Ministry of Agriculture and Rural Development (MADER) seems to be playing (i) an “active role” in standards development, certification, supervision and exchange of information and (ii) a “passive role” in auditing and controls. However, MADER is not the only actor in these fields:

- The Commission at EU level (and the competent authorities at Member State level) and NOP have well established mechanisms to discuss production standards, but MOR does not have such mechanisms. MOR (69) lays down the “Executing Entities” as well as the “the Technical Advisory Committee” (TAC) on organic production, but MOR does not provide any additional information regarding this committee’s tasks, composition and role in the organic certification system;
- MOR lacks some consistency regarding the organization of controls: three terms (control, inspection and audit) are interchangeably used although they have different meanings. MOR (32) indicates that the audit teams are made up of professionals appointed by INNOQ (control authority). However, MOR (26, 29 and 38) uses several terms to refer to the party

³ MOR refers to “Ministry that oversees agriculture”, the “Certifying Entity (CE)”, “an entity delegated for this purpose”, “certifying agent”, “organic conformity assessment body of an accrediting entity”, “certifying body”, “registrar/control authority”, “authority to receive notifications”, “body to receive notification”, “INNOQ”, and “certification board”.

responsible for controls: “inspection body”, “certification body”, “accreditation organization”, “organic conformity assessment body” among others.⁴ Under the EU 848, accreditation refers to ISO 17065, but MOR (36.3, 37, 46.2, 48 and Annex I.3) suggests a different arrangement. NOP (§205.500 – 510) does not differentiate recognition of private and public institutions for accreditation and ISO 17065 accreditation is not officially required for NOP;

- MOR contains several articles regarding the minimum requirements for each of the controls: MOR 32 (organizational aspects), MOR 38 (content) and MOR 56 (various aspects). Like MOR, EU 848(38.2) pays considerable attention to this matter; however, unlike MOR, EU 848(38.2) focuses on risk-based and mandatory approaches (massive balance and traceability checks). The EU organic requirements for the impossibility of being certified are very strict for operators who lost their certificate in the previous two years. This is also not included in MOR;
- MOR (26) mentions the certification entity (CE) and “an entity delegated for this purpose”, but no specification is presented regarding whether the issuance of certificates can be delegated. Moreover, MOR (46.3) presents a list of activities which could be delegated, and the “issuance of certificates” is not listed;
- Regarding delegation of certain tasks, MOR (70.2) excludes national certification bodies, but it is not the case in EU and USA. According to MOR (70.2d) and MOR (46.2), national certification bodies must be accredited but no precise reference to the standard is made;
- MOR (70) contemplates that supervision is carried out by a Commission; however, supervision does not refer to market surveillance but only to monitoring of the work carried out in the delegated fields (control and certification decision making) in cooperation with the accreditation body and competent authorities. By contrast, supervision is extensively detailed in EU 848(46.2a and 1698.3 through 8) and in NOP (205.500 and 205.511), but not in MOR;
- MOR (31) does not clarify the minimum requirements for controls, while EU 848(1698.9-14) and NOP specify such requirements. The possibility that operators subcontract in whole or in part certain activities is not addressed in MOR, but EU 848(1698.10) and NOP (definition of handling) are explicit about it;
- All three regulations (MOR, EU 848 and NOP) cover the annual frequency of controls. MOR (38) and NOP (§205.403) allow for the possibility to carry out additional audits, but EU 848(1698.9) imposes a minimum amount. For the unannounced controls, MOR (33) imposes a minimum of 5 percent of the certified production units and the selection of the operators shall be risk based, which is equivalent to the EU 848(1698.9) (10 percent of the on-site inspections) and NOP (§205.403) (5 percent of the certified operations).
- Regarding sampling, MOR (37) foresees the collection of samples, but does not impose a minimum amount on an annual basis. However, sampling in case of suspicion of use of prohibited products and/or substances is mandatory like in EU 848(1698.12). Regarding the role of sampling and testing in relation to the various types of certifications, MOR (29) requires clarification to ensure that organic certification is not primarily based on sampling and testing

⁴ Annex I defines accreditation as a process through which the control body recognizes and legally authorizes a natural or legal person to perform the functions of certifier or inspector.

results. MOR does not rely on a quantitative system for interpretation of analytical results which is the case in NOP (§205.671);

- MOR (53 through 59) covers infractions and irregularities and allows for the change of certification status of batches and certificates, like in the EU 848(1698.23). On the contrary, NOP does not request (tolerate) changes of the certification status of lots without affecting the certificate. MOR does not refer to a catalog of measures, classification of non-compliances and minimum measures related to certain infringements like in EU 848 (1698.23 and IV).

3.2.4 INTERNATIONAL TRADE

The following aspects emerged from our comparisons of the three organic regulations:

- MOR (48) requires that for the sale of imported organic products, the products can be imported based on the same systems as the ones in place in the EU and USA: compliance or recognition of equivalent organic legislation. However, regarding the implementation thereof, MOR refers to import certificates and/or any other centralized system for monitoring incoming organic goods that still need to be developed. EU 848(1698.1 and 2 and Annexes I and II) and NOP have extensive legislation to determine which bodies are allowed to issue such certificates and seems to be much more robust and functional;
- MOR (50) prohibits the sale of organic products on the domestic market when such products are intended for the export market because compliance with the foreign organic regulations could potentially imply the use of products or processes prohibited under the MOR. This must be corrected because, based on the notification obligation for operators involved in export, products produced in Mozambique and intended to be exported must comply with MOR and cannot be certified otherwise.

3.3 CONSTRAINTS ANALYSIS AND NEEDS ASSESSMENT

Findings from the interviews with stakeholders along the selected value chains and the complementary information gathered from desk review led to the identification of constraints and needs for organic farming and certification in the context of Mozambique. Constraints are conditions that hinder or slow down the development of organic production while needs are conditions that shall be met to create and sustain organic production.

3.3.1 CONSTRAINTS ANALYSIS

The consultant team identified several constraints and grouped them into seven categories: legal, agronomic, logistical, compliance, know-how, (input and output) market development, and international trade.

3.3.1.1 LEGAL CONSTRAINTS

Seven legal constraints identified include:

Limited market surveillance and enforcement of food safety management systems: operators along the food and nonfood value chains are required by law to implement food safety management systems and to adhere to the quality-based culture, but market surveillance and enforcement of such food safety obligations are nonexistent in practice due mainly to three interconnected factors: (i) limited technical skills among government entities – Ministries of Health; of Agriculture and Rural

Development; of Sea, Inland Waters and Fisheries; and of Industry and Trade – responsible for food safety regulatory framework; (ii) limited coordination among these government entities; and (iii) limited availability of capital resources including infrastructure.⁵ This results in sale of products with or without traceability as a choice of the retailer, raising serious food safety concerns.

Interviewees reported that buyers, including those on the formal market, do not systematically know who they buy from. The interviews revealed that some value chain players developed their suppliers' policies, determining how far they intend to protect the final consumers from issues related to poor quality of products sold. However, the interviews also demonstrated that most players sold products without any traceability measures in place, revealing a lot of gaps in the frequency and intensity of market surveillance. For instance, some retailers, visited during fieldwork, were selling molded half cabbage and completely untraceable flat parsley in buckets.

The widespread lack of market surveillance – and consequently extremely limited enforcement of food safety obligations – complemented with very limited traceability makes unsafe (both food and nonfood) products hardly detectable in the market, consequently government entities hardly correct such violations of safety measures. This scenario strongly weakens the development of the food sector in general and the organic food sector in particular because the latter heavily relies on traceability and quality assurance.

Furthermore, limited market surveillance occurs also in shops selling farming inputs such as synthetic fertilizers, plant protection products (PPPs) and plant reproductive materials (PRMs). However, when market surveillance occurred, it focused merely on identifying whether non-registered products were being illegally sold rather than verifying compliance with safety measures.

Lack of a legal basis for the claim “organic” to protect the (final) consumer in labeling and publicity: Most consumers and other value chain actors have very little knowledge of the meaning of the term “organic”. This lack of knowledge is to some extent related to the absence of the organic regulation in Mozambique. Moreover, the few actors with knowledge are still reluctant to believe in the reliability of the claim “organic” because no regulatory framework to support it exists. Even with the existence of the regulatory framework, value chain actors would still be doubtful and suspicious if market surveillance and enforcement continues to be nonexistent in practice as is the case with food safety regulatory framework. Interviewers stated that

“We do not have competitors, but some companies claim that they sell organic products, while the products are not organic”

Lengthy and costly registration for plant protection products (PPPs): the regulatory framework requires that farming input suppliers sell registered PPPs.⁶ Interviewees revealed that obtaining such a registration is a time-consuming and costly process. Furthermore, the interviews demonstrated that the limited scale of use on the Mozambique market narrows suppliers' (mostly specialized importers) interest in acquiring registration for PPPs permitted for use in organic production based on international standards. Interviewees also indicated that neither bilateral nor multilateral agreements between Mozambique and neighboring countries with regards to PPP registration are in place. Such

⁵ Market surveillance means risk-based verification that food on the market is safe. This involves checking products on the shelves and inspecting companies producing such products. Non-compliance with the requirements shall be followed up by measures ensuring corrective actions and, where needed, actions in view of protecting the final consumers.

⁶ Plant protection products are substances or microorganisms intended for preventing, destroying or controlling pests and diseases.

agreements could reduce the workload for organizations and the organic sector would benefit from the released human capacity. By contrast, the EU has such agreements (between Member States) in place although classified in three climatic zones.

Restrictions applicable to registered PPPs: the EU and USA organic regulations impose restrictions (all kinds of tests) for PPP registration regardless of whether they will be used for organic or conventional production and these restrictions depend on the crop on which they will be used, while such restrictions do not exist in Mozambique. Interviewees identified these EU and USA registration procedures as a relevant constraint for organic production in the Mozambique context because the registration of neem oil, for example, does not allow its use on coffee production despite its high effectiveness in coffee production.

Use of non-registered PPPs: Interviews revealed that some prohibition measures could be very restrictive. For instance, some PPPs permitted under the EU organic regulation are not allowed for use under the Mozambique regulation. However, some interviewees indicated that such PPPs should be exceptionally permitted in Mozambique for limited time and space and for the purpose of testing only because such PPPs could potentially be beneficial in Mozambique. In such circumstances, interested farmers should be granted experimental licenses and become subject to reporting data to the competent authority. However, for the moment, such arrangements for testing purposes do not provide any guarantee for future registration because the PPP remains non-registered until a PPP supplier initiates the registration process. On the other hand, field visits revealed that some PPP suppliers sell PPPs – containing ingredients banned for sale and use in conventional farming (e.g. mancozeb and chlorpyrifos) in the EU.

The placing of PPPs on the market is subject to restrictive conditions: Interviews suggest that PPPs sales to final users are subject to license requirement, but not to technical competences in PPP handlings and management. Moreover, PPPs are not subject to any record keeping regarding the name and license of the seller, the name and the amount of the sold PPP, and the date of sale. Although some interviewees reported that they provide minimum information and instructions to their PPPs buyers and that the use of protective products (e.g., protective masks, gloves and protective clothing) among farming workers and PPPs shops' assistants is very limited. Availability of such protective products for sale in the market is also limited. Furthermore, interviewees reported that they provided voluntary training aimed at strengthening farmers' technical capacity to prevent and mitigate environmental risks emanating from use of PPPs. However, it remains unclear whether such training covered measures for handling and preparation of the PPPs prior to application (like storage in a locked room with restricted access, calculating dosage, preparing the mixture) and afterwards (like borrowing out to neighbors, cleaning and management of the wastewater).

Identification of PPPs permitted for use in organic production: The EU and USA organic regulations contain lists of permitted products and active ingredients for use in organic production in each respective market. However, PPPs on the shelves of farming input shops in Mozambique usually refer to their commercial names rather than their active ingredients. This makes it very difficult for farmers to identify PPPs being sold in the Mozambique market and authorized for use in organic production to be supplied to the EU and USA markets. Interviewees indeed stressed that the absence of the lists of the commercial names of the EU- and USA-permitted PPPs – supplied by the international certification bodies operating in Mozambique – is an important constraint faced by Mozambique-based operators producing organic products in compliance with the EU and USA organic regulations.

3.3.1.2 AGRONOMIC CONSTRAINTS

Eight agronomic constraints were identified:

High sensitivity of crop yields to climatic shocks: Mozambique is prone to recurrent natural disasters specially floods, droughts, cyclones, landslides and earthquakes. These frequent climatic shocks – coupled with climate change (increasing temperatures, rising sea level, decreasing rainfall) – have lasting devastating negative impacts on agricultural productivity. High pre- and post-harvest losses further exacerbate agricultural productivity. Data from IAI 2020 show that 53.1 percent and 12.4 percent of smallholder farmers reported that they experienced, respectively, pre- and post-harvest losses in the 2019/2020 agricultural season. The same data also reveal that smallholder farmers identified pests and diseases as the main cause of pre- and post-harvest losses. Hence, reliance on crop varieties resistant to both biotic and abiotic stress becomes more important, especially among farmers who produce organic products as they cannot use synthetically produced substances such as fertilizer and pesticides.

Limited availability of crop varieties suitable for organic production: Although evidence indicates government’s promotion of integrated pest management (IPM) practices, organic farming systems have limited coverage on ongoing private and public research programs. Existing literature and interviews suggest that ongoing public research focuses predominantly on the selection of crop varieties based on increased potential for productivity. Private and public research programs on the agronomic performance and profitability of organic cropping systems (e.g. intercropping systems, crop rotation, agroforestry systems) in relation to commercial organic production are lagging behind. Private and public research initiatives on various stages of the value chains for organic commodities are also scant. For instance, interviews revealed that local fruit varieties are usually more adapted to the local climatic conditions and therefore more suitable for organic production. However, scientific studies about local fruit varieties’ taste, appearance, preservability and processing performance (e.g. for juice, dried products, and puree) – especially to meet consumers’ preferences from the export market – are basically nonexistent.

By way of example, local fruit varieties have different qualities than what is demanded in the export market: (i) local mango varieties are rich in fiber but consumers from the export markets do not generally prefer mangos with fiber and (ii) local mango varieties deteriorate easily, arriving in poor conditions in export markets.

Increased vulnerability of perennial crops during conversion period: Interviewees reported that the conversion of mature trees from conventional to organic production practices caused a lot of stress due to the changed soil fertility management. Being used to chemical fertilizers, the trees’ root system was no longer able to take up enough nutrients when farmers switched from soluble to insoluble fertilizer(s). This caused a lot of stress for the mature trees, leading to much lower yields as pointed out by interviewees:

“At the moment, we face a lot of pests and disease pressure (e.g. the tea mosquito) as a result of switching to organic farming practices”

Some currently available organic fertilizers do not provide suitable nutrition for plants: For commercial production and export markets, large scale production using scientifically based cropping systems is needed. However, absence of reliable data about the impact of intercropping with nitrogen-fixing leguminous crops prevents large-scale operators from being interested in such intercropping systems. On the other hand, the need for certain specific nutrients on a smaller scale

(for example potassium in coffee production) is a good reason for farmers to rely on chemical fertilizers when they want to increase their productivity. This happens despite the availability of natural and/or traditional alternatives which require more work and time and are less effective, but also less costly. For instance, Mueller (2022) reports that

“Regarding maintenance and improvement of soil fertility: except for the members of the CARI cooperative, none of the farmers do anything to actively improve the soil fertility in their cashew tree orchards. CARI members not only strategically use cover crops to improve soil, but they produce natural fertilizer. The so-called bokashi – an anaerobic fertilizer invented in Japan – can be produced with local ingredients.⁷ These are easily, and cost effectively transported via bicycles or with local buses. The CARI members report the bokashi fertilized their soil immensely in recent years ... The vast majority of all interviewed farmers have never heard about DYL fertilizer”

Limited availability of plant reproductive materials (PRMs) suitable for organic production: As indicated earlier, available PRMs are predominately suitable for conventional production systems.⁸ Hence, interviewees reported that farmers who pay attention to the importance of using crop varieties most suitable for organic production are obliged to establish their own nurseries.

Limited availability of PPPs to control selected pests/diseases: Interviewees mentioned that Neem oil (authorized for use in organic production in the EU and USA) is not permitted for use in coffee production in Mozambique because it is not registered for use on the coffee plant. Hence, local farmers choose between (i) the application of chemically produced insecticides like e.g. chlorpyrifos known to have huge impact and killing all insects and (ii) being even more innovative than organic farmers subject to the EU and USA requirements. Furthermore, some interviewees reported that the use of unregistered PPPs was possible thanks to the granting of experimental licenses for testing purposes on a temporary and small-scale basis. This represents only a small scale and temporary solution as regard to the availability of PPPs. As a result of the current scenario, in the long run, the existing and functioning PPPs permitted for use in organic production in other countries cannot be found in Mozambique. Interviewees mentioned that

“For the moment, huge campaigns encourage farmers to use chemical pesticides to control the powdery mildew disease (PMD), but such campaigns have a huge problem ... in recent years, we suffered a lot from natural disasters including elephant invasion”

Strong conventional farming’ practices: As mentioned earlier, smallholder farmers still remove and burn crop residues on the fields for several reasons, reducing soil fertility and biodiversity, and increasing erosion especially on sloppy fields due to land degradation emanating from no replacement of nutrients and organic matter. Interviews revealed that

“Please be aware that farmers prefer to burn thousands of hectares of land area just to be able to catch some mice (to eat) more easily. Everybody knows that this

⁷ The farmers mix 25 kilograms (kgs) of cassava, 25 kgs of sweet potato, each 50 kgs of coal dust, cow manure, bran as well as eggshells, molasses and virgin earth with microorganisms from an untouched part of the local forest. The ingredients all get put into a black canvas where they get humidified and then remain closed for 90 days before being ready to use. A few inputs the cooperative members buy from a place only 7 km away: the cow manure (100 MZN) and the bran (150 MZN).

⁸ Plant reproductive materials refer to plants or part of plants capable of and intended for producing or reproducing other plants. These include seeds, tubers, cuttings, rootstocks, seedlings and young plants.

practice is not good, but it cannot be stopped. Then, how to make the local population understand and act as if organic production is the future? That is the real question.”

Interviewees revealed that government policies promote and facilitate use of chemicals as good agricultural practices, while delegating alternative solutions offered by organic farming to the second plan. This is consistent with Mueller (2022) who points out that

“By definition of the Nuts Institute of Mozambique (IAM), the main good agricultural practices (GAP) for cashew nuts production are ground cleaning, spraying chemicals and pruning. This definition is a major problem because it implies that all methods of ground cleaning, including burning vegetation and herbicide application is considered GAP and also, not spraying (mostly chemically synthesized insecticides and fungicides) is not considered GAP, and completely ignoring proven methods and techniques with natural predators, distraction methods, traps, increasing biodiversity, choosing the appropriate variety, crop rotation, and other production methods like sowing/planting association of plants, mixed or in rows”

On the other hand, smallholder farmers (as parents) usually ask their children to work in their fields. Although such practice is culturally accepted, this practice should be openly discussed with smallholder farmers to identify acceptable alternative practices. Furthermore, at the farmers’ organization (FO) level, interviewees mentioned that SMETA certification highlighted problems with child labor which blocked their further economic activity.

Limited availability of suitable farming and processing equipment: large-scale organic production requires specific equipment, for example, for weed control but also harvesting. Compared to the application of chemically produced herbicides, manual and/or mechanical weed control in organic production usually is slower and more expensive and requires frequent applications. However, specialized equipment for weed control is generally not available for sale in the domestic market. Neither are accessories or technically qualified labor for repairs. Interviewees pointed out that

“We imported sprayers’ parts from Spain, and it took a long time for them to arrive. We had to buy new equipment to spray against pests and diseases while waiting for the imported parts”

The same scenario applies to suitable equipment for harvesting. For instance, macadamia producers highlighted that harvesting in conventional production is initiated by the application of ethephon, a chemically produced substance. However, use of ethephon is not permitted for organic production because it artificially accelerates the ripening process of the nuts. The impact of not using ethephon would be to pass more often with the shaker because unripe nuts will not drop the first time, or to place nets under the trees for another type of harvesting. For instance, Mueller (2022) documents that

“Farmers alone would not be able to plant new orchards. They would have to hire outside contractors and buy heavy-duty equipment [...], and they would need electricity [...] – a costly operation as opposed to simply starting a fire. If nature conservation and protection of biodiversity is desired here by the buyers from Europe, the additional work must also be paid for, according to the view of the farmers”

3.3.1.3 LOGISTICAL CONSTRAINTS

Five logistical constraints were identified:

Limited infrastructure development: Mozambique has about 30 thousand kilometers of roads of which a sizable share is unpaved. Transport infrastructure is very poor and fragmented generally slowing down traffic and affecting maintenance and types of vehicles more effectively and efficiently driven on the roads. Interviews pointed out that the time to take fresh products (usually from remote zones) to processing centers and to ports – coupled with limited logistical infrastructure such as refrigerated transportation means – has devastating impact on the shelf-life of such produce. Interviewees mentioned that

“The main problems are logistics and certification”

“Logistics is a problem: bumpy roads but also frequent delays and cancellation of trains”

Furthermore, post-harvest activities – such as washing, sorting, cleaning, cold-storage, packaging and labeling for fruits and vegetables – are limited. This suggests that either such post-harvest activities are very small scale, located remotely or simply do not exist. Interviewees indeed stressed that

“We are only exporting crude products because we cannot do the final sieving. This is done in South Africa. Consequently, our buyers are not in the EU or USA, but in South Africa. It is our South Africa client that takes the premium for a product sold as 100 percent organic in the EU and USA market, not us. Small packaging and branding require high-quality final product. We cannot reach that stage due to lack of suitable equipment in Mozambique.”

“Due to the final processing step in South Africa, our products become also too expensive for the domestic market. The negotiations with the government to finalize our processing in Mozambique are ongoing and the aim is to receive financial support to purchase the missing equipment”

“The company does not process completely (only basic processing). Additional processing is done in South Africa because the cost of setting up an entire processing unit in Mozambique is very high”

Limited availability of suitable packaging materials: specialized packaging materials (e.g. the jars and lids) are imported from Asia and Europe because such materials are either unavailable or extremely expensive on the domestic market. This is also a reflection of the above-identified logistical constraints. Interviewees mentioned that

“We import everything not produced in Mozambique and it is a big challenge for our business”

Various processed products (juices, purees and dried products) require specific packaging material, usually of non-recyclable or biodegradable nature which will inevitably increase pollution. Moreover, in the EU and USA markets, the official organic standards do not impose specific requirements for the packaging materials. However, some private organic standard certification bodies may impose

additional requirements as regard to the type of packaging material (e.g. the Biogarantie® standard does not accept packaging material containing PVC or other chlorine-containing components).

Issues related to compliance of labeling requirements: linked with the high price of the packaging materials, the total cost including design and attaching the label to the packaging represents a non-negligible percentage of the price of the finished products, making them substantially more expensive for the final consumers. Moreover, development of the organic market requires design of labels specific for organic products (indicating for example the claim “organic” but also the codes specific to organic certification). Labels containing references to organic cannot be used for conventional products, although the reverse is allowed. Labeling-related concerns are also applicable to PPPs. For instance, the labeling of certain PPPs are not printed in Portuguese although required by law and for others, the active ingredient and the mode of action are not identifiable. Most PPPs sold in Mozambique were packaged in and imported from predominantly Africa, Asia and Europe; and consequently, holding labels printed in English.

Short shelf life of products produced by smallholder farmers: this is associated with a combination of logistical constraints listed in this section. For instance, it is related to the limited availability of processing facilities constraining the possibilities to add value to products produced remotely. Interviews stressed that

“Our company is seeking funding to support cooperatives in strengthening their processing capacity”

Time-consuming inspections: Although no domestic organic certification scheme exists, operators involved in processing are subject to various types of inspections: LEAF and SMETA just to mention a few. However, lack of coordination among various inspectors leads to considerable inspection time allocated by the private operators’ staff responsible for such inspections.

3.3.1.4 CONSTRAINTS RELATED TO COMPLIANCE

Seven constraints as regard to compliance (emanating from the co-existence of organic and conventional production) identified include:

Technical difficulties to ensure continued quality assurance: Mozambique-based operators’ main challenges with organic certification include (i) difficulties with traceability and food safety measures both relying on documentation of procedures; (ii) development of a system to monitor production (including incoming and outgoing procedures); (iii) difficulties with record keeping; and (iv) attraction and maintenance of qualified staff. These challenges are faced not only by organic operators but also by conventional operators. Moreover, Mueller (2022) points out that

“All farmers stated that they were working at the limit of their capacity and had no additional labor available. They could only invest more into management, the necessary workforce for an organic orchard, if the retail price would be higher”

Overcoming non-compliances to obtain organic certification: One of the main difficulties among farmers is to economically survive the conversion period. This is mainly because the investment and application of organic practices is a must, while it is too soon to gain the premium of organic production. By contrast, the main difficulty among handlers is to organize and ensure separation of organic from non-organic products. Risks for losing organic integrity are related to commingling and contamination of organic products with products that are not allowed to be used in organic production. Therefore, separation of activities and products in time and/or in space shall be in place.

Continued investment to maintain organic certification: Once certified, continued investment in updating the quality manual, as well as the practical implementation thereof, is required. Several changes should be under the operators' control: change of staff, new suppliers, new equipment, new product lines, new rules for organic production itself. In some circumstances, the designation of a quality manager could be the only option to ensure continued certification. Such measures have an important impact on the fixed costs and scale at which the activities shall be organized.

Absence of a governmental policy involving organic production: The existing system for placing of PPPs on the Mozambique market does not facilitate the establishment and further development of organic production (see also the subsection on legal constraints). Farmers face major difficulties obtaining the farming inputs needed to produce organically, while access to chemical inputs remains relatively easier. Moreover, no measures are taken to support and facilitate operators' application of alternative production methods when farming inputs for organic production are not available. As a result, the number of farmers willing to switch to organic production will continue to be very low and the (personal and environmental) problems arising from the use of such chemical inputs will only increase.

Limited availability of the conversion-period organic production methods by small-to-medium-scale enterprises: The requirement of separation of organic production from conventional production is particularly hard to comply with among small-to-medium-sized enterprises because of the high cost to ensure compliance, the necessity to combine organic and conventional processes and the proximity. Growing one crop under organic certification while also growing another crop under conventional production is particularly very difficult to combine on such a scale.

Issues from enforcing conventional farming methods: Experience from the EU shows that extensive use of chemicals in conventional farming affects organic farms. Examples of such practices are endless. An illustrative example includes the ban of chlorpyrifos in the EU because it is based on its devastating impact on the whole insect population in the area where the chemical was used. Extensive chlorpyrifos' application destroyed the ecological balance between plants and animals by destroying both worlds. Use of chemicals in conventional farming are promoted by several stakeholders including the government in Mozambique, while enforcement of PPPs regulations is basically nonexistent, representing a challenge for the development of organic farming.

Corruption and fraud: Once the organic sector starts to develop, operators will have to rely on documentation supporting transactions (e.g. certificates, invoices, transport documents, stock records, labels among others). Hence, falsification, bribery and other mechanisms to bypass control mechanisms need to be tackled by preventive and curative measures.

3.3.1.5 CONSTRAINTS RELATED TO KNOW-HOW

Five constraints related to know-how were identified:

Limited knowledge and skills about organic production principles: Organic agriculture is a systematic process ranging from production and acquisition of organic inputs to delivery of organic outputs to the intermediate and final consumers, going beyond the use of specific organic farming practices such as crop rotation and application of organic chemicals. Organic production systems are designed to promote environmental sustainability, enhance soil health, and reduce reliance on synthetic chemicals through optimization of social, ecological and economic practices in agroecosystems. Hence, transitioning to or improving organic production requires specialized knowledge and skills about the four principles of organic farming (e.g. health, ecology, fairness, and

care) as well as about organic certification to ensure compliance. For instance, organic producers should put in place record keeping procedures to ensure the traceability of organic products. These specialized knowledge and skills are not at the disposal of most farmers, especially smallholder farmers. However, interviews and secondary data showed that organic farming practices are in place despite the widespread inexistence of information and training about organic production systems provided beforehand to smallholder farmers. As mentioned earlier, nationally representative survey data illustrate that a sizable share of smallholder farmers used organic farming practices (such as intercropping, crop residues left on the field, crop rotation, and use of organic fertilizer among others) in the 2014/2015 and 2019/2020 agricultural seasons although they do not necessarily practice organic production. Interviews pointed out that

“Organic certification of smallholder farmers is very difficult in Mozambique because farmers do not understand the organic farming principles”

“Several farmers have access to service providers but lack money to pay for such services”

“The information about international organic certification services in Mozambique usually reaches Mozambique-based operators via importers. International certifiers do not have offices in Mozambique. They have, however, offices in Tanzania”

while Mueller (2022) documents that

“Most farmers think organic farming is “natural” to just not do anything, to leave the plant alone. They have never heard about the organic management of an orchard. Most people believe that not managed farming fields are organic by default”

“All farmers understand the importance of pruning (cashew nuts trees). Some farmers know how to prune; others have to employ/hire service providers. Farmers who do not prune lack manpower, technical knowledge and/or the appropriate tools.”

For handlers, the principles of producing processed organic food seem easier to follow as it is reduced to organizing separation between organic and conventional production. Unfortunately, the restrictions on processing as such are also hard to implement. Interviews demonstrated the massive use of additives (e.g. conservation agents, flavors enhancers and colorants) on existing processed products (e.g. a bag of crisps). This means that once agricultural products are subject to organic processing rules, the composition of the product must be revised which inevitably has a major impact on the appreciation of the final consumer. Interviewees indicated indeed that

“As a processing company, we have issues with traceability. We ask the collectors to bring organic products we buy from them, but they also bring other things.”

Operators’ lack of skills for observation, understanding, innovation and implementation of organic practices: Succeeding as an organic farmer requires first the willingness to move away from the application of chemical solutions, the willingness to experiment and an excellent observational capacity to ensure compliance with organic rules. Mueller (2022) points out that

“Regarding organic PPPs: Few farmers have ever used organic products to control pests and diseases. CARI members in Monapo-Ramiane have some years of

experience in producing a broader range of locally grown natural remedies (Neem, tobacco and others).”

Lack of qualified service providers for technical advice (startups) and continued guidance (quality assurance): Setting up a quality management system is a complicated process. The lack of qualified and affordable service providers further exacerbates the complications of the process.

Limited experience at the level of the competent authority as regard to market surveillance and supervision: In most countries, competent authority is usually responsible for market surveillance (for food safety and in the future also for organic certification). As mentioned earlier, market surveillance and enforcement for food safety measures are nonexistent in practice in Mozambique, suggesting that their effectiveness and efficiency could be enhanced by strengthening the competent authority’s capacity for undertaking these tasks. However, the MOR indicates that inspection and certification are not to be carried out by the competent authority (MADER). This proposed institutional arrangement still obliges the competent authority to invest in these tasks by acquiring more knowledge of the procedures, bottlenecks and problems before it can ever start developing its own procedures to ensure effective and efficient supervision of those who will carry out these tasks.

Limited experience at the level of inspection and certification of organic products: Inspectors for organic must be competent in organic production (including processing) and in applying the appropriate inspection techniques including typically, on-site inspection, documentary review, sampling and cross and traceability checks. Interviews revealed that the required qualifications for offering such services at both private and public levels are limitedly available. Interviews also stressed that

“No specific training for inspectors of groups of operators exists in Mozambique. This is also a concern in other African countries.”

“As processors, we find it easy to prove our processing abilities, but it is difficult to convince the external inspectors.”

3.3.1.6 MARKET CONSTRAINTS

3.3.1.6.1 Input market constraints

This subsection provides an overview of the main aspects that hamper the development of organic production due to issues associated with organic inputs. Several constraints mentioned below have also been mentioned earlier as other types of constraints. In such cases, the reader is just referred to those earlier-mentioned constraints. The 11 constraints related to the development of the input market include:

Lack of rules about wild collection of organic products: Despite the enormous potential for organic certification of products grown in natural areas without human intervention and simply collected (e.g. wild fruit), no rules governing production, collection and sales of such products exist in the domestic market.

Limited availability of farming and processing equipment: Refers to agronomic constraints (subsection 3.3.1.2 on page 34).

Ensuring cash-flow availability to pay suppliers: Based on the harvest or collection season, large amounts of cash should be readily available for acquisition of organic products (e.g. honey and baobab). Having access to such a large amount of cash on short notice is challenging per se, while keeping it secure makes the endeavor even more challenging. Interviews revealed that

“Farmers need to be paid in cash because they do not have banking accounts. Neither do they have access to mobile money services.”

Limited infrastructure development: Refers to logistical constraints (subsection 3.3.1.3 on page 37).

Corruption and fraud: Refers to constraints related to compliance (subsection 3.3.1.4 no page 38).

Lack of sufficiently qualified laboratories: Although sampling and testing are important methods to verify compliance with the EU and USA organic certification requirements, domestic laboratories are not testing organic products as required by the international certification bodies mostly because they are not ISO 17025 accredited and offer a limited scope of analytical methods. In addition, domestic laboratories have limited capacity – in terms of physical infrastructure, equipment, materials and qualified personnel – to take sampling and perform testing for food safety in general. Interviews revealed that

“Currently, the laboratory is only accredited (ISO / EN 17025) for the analysis of certain compounds in potable water. The accreditation body that granted this accreditation is IPAQ, national accreditation body from Portugal.”

Not being able to rely on domestic laboratories increases the cost of organic certification incurred by the organic operators because samples need to be shipped overseas (especially to South Africa, Portugal and Germany). Furthermore, the existing domestic laboratories, especially those owned by the private sector, have potential to verify compliance in accordance with the EU and USA regulations if those laboratories make investments to equip themselves mainly with physical infrastructure, equipment, materials and qualified personnel. However, these investments must be matched with increased demand for laboratory services driven by local organic operators. Laboratory managers reported that they do not make such major investments to build their capacity due mainly to reduced domestic demand for laboratory services. On the other hand, similar major investments are also required to strengthen the public sector’s laboratory capacity, leading to increased public sector’s capacity for market surveillance, an important aspect of organic and conventional food production as regard to enforcement of food safety measures. Interviews demonstrated that

“The South Africa client is testing our products to determine the nutritional content before they pay us. They are not testing the product for pesticide residues and other possibilities of contamination. We are thinking about analyzing our products for nutritional aspects because they are needed for the labeling on the international market.”

“In the past, the laboratory has invested in other services, but due to lack of demand, the investment did not give the expected return. Extension to additional services is hindered by a lack of demand for such analysis.”

High cost of organic certification: No sale of organic products legally occurs without third-party certification. Local organic operators obtain their organic certification from international service providers with no Mozambique-based office. This unfortunately comes with an additional cost to pay the service provider. Furthermore, organic certification also comes with additional costs related to implementation of traceability and quality-assurance systems, required highly skilled farming techniques, investments to maintain organic certification once issued, among others. Interviewees pointed out that

“Currently, the international organic certifier does not run an office in Mozambique. Auditors are flown in from their Kenya office.”

“We have customers (like Woolworths) requesting organic products confirmed by a third-party certification. They asked for our certificate, but we do not have it. Obtaining it is a very long process, and we prefer to wait.”

“We assessed our production: We do not use chemicals, preservatives or additives. However, we do not have organic certification. Clearly, from an agronomic perspective, there is a potential to obtain certification in line with organic production standards.”

while GIZ (2020) documents that

“In South Africa, the uptake of organic certification has remained low due to the absence of a structure at national level. Most farmers consider the input for organic farming and certification too expensive. Only a few, mostly large export-oriented companies, have had interest and resources to obtain organic certification.”

Limited resources to extend activities to cover a larger segment of the value chain: Most organic operators including farmers are not vertically integrated; usually operating in a small segment of the value chain. This happens because most organic operators lack financial resources to invest in vertical integration, benefiting from the resulting value addition and economies of scale. For instance, smallholder farmers do not process their products mainly because they lack processing facilities. Moreover, most processors do not extend their activities to farming mainly because they lack financial resources and know-how to do so. Limited financial resources also constrain operators’ capacity to implement and maintain quality-assurance systems.

“Another constraint is the lack of resource capacity in the Agrarian institute and in laboratories.”

while GIZ (2021) documents that

“BIOFRESH Uganda faced with high cost of airfreight for perishable products, the company’s medium to long term strategy is to expand its value addition capacity to produce more dried fruit, but also establish a frozen fruit production line.”

Finding and keeping suppliers of organic raw materials: Processed organic products are composed of organically produced ingredients. The EU and USA impose similar requirements for organically produced ingredients: The EU requires that use of organic ingredients in at least 95 percent of the total amount of agricultural ingredients, while the USA requires at least 95 percent of the total amount of ingredients. These requirements constrain the availability of suppliers of organic raw materials in terms of both quality and quantity. Interviews revealed that

“We had and no longer have active organic certification. The reason for that is the insufficient supply of organic raw materials.”

“Having access to sufficient organic raw materials is difficult.”

Getting smallholder farmers organized in functioning farmers’ organizations (FOs): As mentioned earlier, IAI 2020 data revealed that a substantial small share of smallholder farmers (about

3.0 percent) belonged to FOs in the 2019/2020 cropping seasons. Access to extension services (about 7.0 percent) and credit (less than 1.0 percent) among smallholder farmers are also very limited. Furthermore, access to extension services is considerably higher among smallholder farmers who belong to FOs compared to those who do not (33.3 percent versus 4.7 percent). This finding suggests that combining extension services with membership to FOs, as a package, could be an effective way to promote organic farming. However, it is worth noting that interviews indicated that FOs face difficulties in convincing more smallholder farmers to join as members. Organizing smallholder farmers in functioning FOs could potentially contribute to increasing sales volumes, farmers' bargaining power and product's backward traceability because smallholder farmers would market their products as a group rather than individually. Interviews pointed out that

“We collect the full numbered containers from the producers ourselves and we also take the empty numbered containers back to the producers.”

“After processing and repackaging the product by mixing the unprocessed product from different containers, we deliver the processed product to dealers in multiple locations. This could represent an obstacle for traceability from the point of view of the buyers.”

Furthermore, GIZ (2020) documents that

“In South Africa, processors play a relatively significant role in the organic sector. In the case of producer groups, the processors manage certification.”

while Mueller (2020) points out that

“The majority of farmers become members of an association to benefit from group sales. Together, the harvest is commercialized and thus a much better selling price is negotiated.”

“Half of the farmers were organized, the Northern more than Southern producers. Growers from the South achieve much higher retail prices, sometimes double the amount for their raw cashew nuts due to the good connection to the premium sales market in Maputo.”

Limited availability of plant reproductive materials (PRMs) suitable for organic production: Refers to agronomic constraints (subsection 3.3.1.2 on page 34).

3.3.1.6.2 Output market constraints

The previous subsection looked at the input market, while this one deals with issues constraining the development of output markets for organic products. If a constraint has been mentioned earlier, the reader is referred to the section in which the constraint was previously mentioned. Seven constraints related to output market development were identified:

Low level of consumer perceptions and expectations: organic products generally have a premium price compared to the conventional, representing an obstacle to consumers (especially among the poorest) associated with consumers' willingness to accept such higher prices. Accessing enough food to satisfy essential nutritional needs appears to be the highest priority among Mozambicans due mainly to high prevalences of poverty and stunting among under-five children, estimated respectively at 49.2 percent and 38.0 percent. Although some consumers are aware of the issues related to food and food production, consumers' perceptions and expectations towards food meeting minimum nutritional

quality and safety for consumption remain low. Furthermore, WFP (2017) estimated that 54 percent of households in Mozambique cannot afford a diet that meets minimum nutrient requirements. This finding suggests that a sizable proportion of households care first for affordability (price) of food products rather than their nutritional quality and safety.

High price volatility in the international market: price volatility is understood as unpredictable (sharp and pronounced) fluctuations of price from its mean after accounting for the usual trend movements. The effect of price volatility on production decisions could be felt through several channels, but we focus on one of those channels. Interviewees pointed out that price volatility could cause producers – who are majorly risk averse – to lack confidence in future income gains (to be realized during the harvest season) during the planting season, leading to suboptimal application of farming inputs and consequently lower productivity.

Sensitivity of price premium is commodity specific: the investment in organic certification usually comes with a higher price for organic products. Interviews revealed that organic products capture an average price premium of 20 percent compared to their conventional counterparts, depending mainly on the commodity and the time of sale.⁹ However, this premium is no longer guaranteed due to high price volatility, as described in the previous paragraph.

Terms of payment on the international market: Mozambique-based organic operators ship their organic products to EU and USA markets with full payment arriving several months later. This constrains the operators' capacity, especially small-to-medium scale, to cover operational costs before full payment arrives, limiting production and productivity. Interviews revealed that

“We face difficulties related to payment of our suppliers. When we export, we must wait 60-90 days to be paid. This is too long. We are not a big company, and the cash flow is not that big to bridge this gap.”

Limited market surveillance and enforcement of food safety management systems: refers to legal constraints (subsection 3.3.1.1 on page 31).

Lack of a legal basis for the claim “organic” to protect the (final) consumer: refers to legal constraints (subsection 3.3.1.1 on page 31).

Identifying and maintaining a client database: organic commodities represent a niche in the domestic market because price is usually more important than quality for most consumers, however there is a growth potential of the domestic organic sector. By contrast, organic commodities have generally moved from a niche market to a mainstream in the international markets (especially the EU and USA) because consumers are increasingly demanding healthier and more sustainable food options. However, local operators have limited knowledge about the international market dynamics to reap the benefits of the increasing demand for organic commodities in those markets. Interviews pointed out that

“Demand for organic products is limited in the domestic market. However, there is hope for improvement because consumption of organic products is increasing mainly due to an increased population of expatriates living and working in Mozambique.”

⁹ More detailed research is needed to investigate variability of price premiums for organic products across commodities and over time (seasonality).

“No sale of organic sugar in the domestic market.”

“We sell to South Africa, but we would like to sell to China and would like the government of Mozambique to help facilitate access to that market.”

Mueller (2020) documents that

“Producing organic certified raw cashew nuts (RCN) could be another big driver of competitiveness on the world RCN market. Consumers worldwide are gradually willing to pay a higher price for healthy, chemical-free food, and becoming conscious about the social and environmental impacts of their purchases. The whole cashew sector is open to moving towards sustainable production and the approach to “go organic” was well received by industry and farmers.”

3.3.1.7 CONSTRAINTS RELATED TO INTERNATIONAL TRADE

Four constraints related to know-how include:

Lack of international trade agreements with some high potential organic markets: interviewees indicated that a great deal of progress in the negotiations to sign a trade agreement between Mozambique and China has been made. This has been received as great news because it will facilitate export opportunities for both organic and conventional commodities. Interviewees also pointed out that for other export markets like Korea and Japan, the export opportunities are complicated because no trade agreements (for conventional agricultural products) exist.

Limited information about exemptions for fumigation for cross-border transport: international trade means cross-border transport. There is limited information on which rules and requirements for cross-border transport are applicable in general. Additionally, there is a lack of information on any exceptions for fumigation in the case of transport of organic products. Fumigation of organic products raises concerns about organic integrity.

Costly and time-consuming procedure to obtain the phytosanitary certificate: the current procedure for export of agricultural (organic and conventional) products imposes a physical visit of the competent authority agent. This has been referred to as a time-consuming and costly procedure. After the competent authority agent’s visit, online processing of the paperwork is initiated, reducing the time at this later stage but internet access and reliable connectivity are frequently problematic.

Limited market surveillance and enforcement of food safety management systems: refers to legal constraints (subsection 3.3.1.1 on page 31).

3.3.2 NEEDS ASSESSMENT

As mentioned earlier, constraints are conditions that hinder or slow down the development of organic production and needs as conditions that shall be met to create and sustain organic production. Constraints analyses were presented in the previous subsection, while this subsection is dedicated to need assessment. The needs were grouped into four categories: consumer level, government level, small-to-medium-scale farmers and medium-to-large-scale operators.

3.3.2.1 CONSUMER LEVEL

At consumer's level, four needs were identified:

Understand and accept the difference between the formal and informal market: The place in which (both organic and conventional) food is purchased (for example, supermarket and street vending business) affects consumers' willingness to pay. Duality between formal and informal markets poses several challenges for the intermediate and final consumers of both conventional and organic products.¹⁰ This is because neither of these markets is yet well structured to comply fully with organic production principles and regulations (for example, labeling and traceability; see previously presented discussions about these issues including discussions about consumers' perceptions and expectations). According to Aga et al (2021), despite the duality between formality and informality, informal market remains dominant in Mozambique, employing about 80 percent of the labor force and accounting for about 30 percent of the gross domestic product (GDP). Main challenges to transition from informal sector to formal sector include (i) lengthy, tedious and costly registration process, (ii) owner-perceived no benefit of being a formal enterprise, and (iii) lack of information about the registration process. Expecting that an organic certification system in Mozambique will affect the informal market is too ambitious. Hence, the envisaged organic certification system should be expected to affect and impact only the formal market.

Understand and agree on the difference between food safety and organic products: Consumers (of both organic and conventional food) – as well as governments and civil society organizations defending consumers' rights – are increasingly more concerned about their health and environmental sustainability, affecting considerably consumers' willingness to pay for and triggering increasing supply of food deemed tastier, healthier and safer for human consumption. Hence, installing an organic certification system in the formal market requires the market placement of (both organic and conventional) food qualified as safe for human consumption complimented with consumers' trust in the "safe-food" claims (e.g. retailers branding) because consumers are usually willing to pay more for food bearing labels they know and trust. However, this market placement is bound to be challenging because as discussed earlier, market surveillance and enforcement of food safety obligations are nonexistent in practice. Compliance with food safety measures – for both conventional and organic commodities – remains the highest government priority.

Design a traceability and verification system: As discussed earlier, given the dominance of the informal market and limited transport and logistical infrastructure, this system would facilitate the traceability and verification of transactions between operators, generating income for the government [through value-added tax (VAT)] where relevant. When operators purchase organic products, they shall be able to rely on information in documents (like the organic certificate, invoices, transport documents, delivery notes etc.), labels (food, seed, fertilizers, PPPs, additives among others) and other written communication (websites, price lists, technical specification sheets, etc.) referring to "organic" label.

Identify the supply and demand for organic products (inputs and outputs): demand for organic products remains at its incipient stages of development in the domestic market, while it is experiencing a rapidly increasing growth in the EU and USA markets. As a result, local organic operators are export oriented. Moreover, demand for organic products comes not only from final consumers but also from local operators who face tremendous challenges to reliably find organic PPPs and raw materials in the domestic market. Furthermore, engagement in export-oriented value chains is crucial to boost the development of the organic sector. An organic operator does not necessarily need to have its own

¹⁰ Intermediate consumers are those who purchase goods and services for resale, while final consumers do not sell, but consume, goods and services they purchase.

export activities, but they rather need to have clients who focus on the international market. Interviews indeed revealed that

“To be able to continue organic production, it is crucial to be able to export.”

3.3.2.2 GOVERNMENT LEVEL

At government level, the needs include:

Strengthening the government’s institutional capacity in relation to market surveillance and enforcement of food safety regulations: food safety regulations exist in Mozambique, but market surveillance and enforcement of such regulations are nonexistent in practice. The Ministry of Health (MOH) is the main government authority responsible for overseeing the implementation of such regulations with some sector-specific mandates delegated to the Ministries of Agriculture and Rural Development (MADER); of Industry and Trade (MIC); and of Sea, Inland Waters and Fisheries (MIMAIP). For an effective and efficient market surveillance and enforcement of food safety regulations, strengthening the institutional capacity of these key ministries are required in three interrelated dimensions: (i) technical capacity building (including technical assistance if necessary), (ii) strengthening interministerial coordination and complementarity, and (iii) availability of key required capital resources including infrastructure. Both organic and conventional food products would significantly profit from the resulting strengthened market surveillance and enforcement.

Establish an open-access database on operators and their transactions: the widespread lack of market surveillance – and consequently extremely limited enforcement of food safety obligations – complemented with very limited traceability makes unsafe food and non-food products hardly detectable in the market. This scenario strongly weakens the development of the food sector in general and the organic food sector in particular. To guarantee food safety in the formal market, operators should be registered and authorized. Not only must they be identifiable, but also their individual transactions must be subject to a system which allows them to verify that they meet the requirements to ensure the sale of safe food, seeds and other PRMs, fertilizers and PPPs. Only then may the possibility of fraud be kept under control.

Documentation of procedures and record keeping using internationally approved standards for (product) certification: For a continuous improvement of quality assurance at governmental level, working methods and record keeping shall be documented to ensure impartiality, confidentiality, transparency, fair competition and a level playing field. Such standards can be ISO/IEC 17020 (for inspection of food safety) or ISO/IEC 17065 (for future organic product certification).

Develop a regulatory framework for production and labeling of organic products: The government should ensure that organic and conventional production are both possible in the same region and at the same time. This requires minimal impact of one on the other outside of the respective area of production. In other words, co-coexistence between organic and conventional production shall be possible. Where relevant, governmental regulatory framework must also allow requirements to combine strategic initiatives for a stronger communication (e.g. “Organic” in combination with “Made in Mozambique”). The regulatory framework (to be understood as the combination of a regulation, designated staff and a working budget, support programs, an action plan, etc.) should include an organic regulation and a support program facilitating the transition from conventional to organic production methods.

3.3.2.3 SMALL AND MEDIUM-SIZED FARMERS LEVEL

Establish rules/procedures for the functioning of farmers' organizations (FOs) for placing safe food on the formal market: Given the high number of small- and medium-sized farmers representing a scattered but also huge potential for production of organic products, it is beneficial for them to join a FO. These farmers' organizations could play an important role in the development of the organic sector covering various areas: sensitization and implementation of good agricultural practices, but also data collection as regard to organic farm management practices, reducing logistical challenges for interested buyers through first-line collection and centralized (cold) storage in remote areas. Where FOs do not yet exist, their creation would boost the local production. Where they exist, upscaling their activities, means and organizational capacities will increase the living standards of the members of such FOs.

3.3.2.4 MEDIUM TO LARGE SCALE OPERATORS LEVEL

Five needs at medium-to-large-scale operators' level include:

Increase the interest in implementation of rules for organic production: local organic operators are very few and scattered across the country and the market is dominated by conventional operators. Technical feasibility and economic viability play a central role in the decision to transition from conventional to organic agricultural production. Likewise, technical feasibility and economic viability should be accounted for when combining post-harvest operations on conventional and organic products, while maintaining organic integrity. Hence, the government should create an enabling environment [for example, increasing consumers' and producers' awareness of the (health, social, environmental and economic) benefits of organic production, tax exemption for equipment and machinery imported for use in the organic industry, tax subsidies for conversion periods, among other measures] to attract some conventional operators to switch to organic production.

Facilitate access to land and water suitable for organic production: Organic farming requires improving and at least maintaining soil quality. This implies that farmers have long term guarantees to have access to land. IAI 2020 data shows that only 3.9 percent (2.7 percent) of smallholder farmers owned formal land certificates – denoted as DUAT – in the 2029/2020 (2014/2015) cropping season. This finding indicates that smallholder farmers face substantially lower land tenure security given that formal certification could improve land tenure security. Empirical evidence also shows that land tenure security and land-related investments (such as input usage, soil conservation structures, tree plantings, etc.) are positively associated. As such, smallholder farmers are expected to make lower land-related investments, leading to limited improvements and maintenance of soil health.

Like access to land, access to water for irrigation is also very constrained in terms of both quantity and quality. Data from IAI 2020 show that in the 2019/2020 agricultural season, only 3.5 percent of smallholder farmers used irrigation; while the total agricultural land irrigated by smallholder farmers amounted to about 190 thousand hectares (ha), representing only 3.4 percent of the total cultivated agricultural land. Of the smallholder farmers' total irrigated agricultural land in the same cropping season, the vast majority (65.9 percent) were manually irrigated using either hose, bucket or watering cans. This suggests that there exists an enormous untapped potential to improve smallholder farmers' irrigation usage in Mozambique. Furthermore, water used for irrigation purposes in the Maputo area sometimes contains many residues resulting from sanitation practices (hypochlorite) that leave burn marks on leafy vegetables.

Increase the willingness to invest in productive assets especially human capital: Succeeding in organic production in general requires an in-depth knowledge and understanding of plants, products

and practices based on an identification of risks and the implementation of accompanying measures. Compared to conventional agriculture, organic production requires more intensive and more specific observational skills because organic crops and their yields are more exposed to the impact of weather conditions due to the restricted authorized use of external (chemical) inputs. Organic production is bound to specific standards aimed at optimizing social, ecological and economic practices, while maintaining and promoting biodiversity in agroecosystems. Hence, the use of chemical products that can potentially endanger human health and the environment is not permitted. As such, pests, disease and weed are only prevented and controlled by natural methods and practices which require a completely different design and planning.

Increase the willingness to adopt a quality-based approach: In the EU and the USA, organic products are products characterized by a higher quality than conventional products.¹¹ This is expressed at the level of the products themselves, the production process and the market surveillance. Three quality dimensions are usually considered in organic production. First, regards to the products themselves, the difference in quality can be observed in taste, the lower amounts of residues of chemicals used during the production, higher amounts of nutrients, less additives and processing aids. Second, regards to processes to obtain organic products, organic production relies on processes which are not harmful for the environment, do not mislead the final consumer and do not repair or cover up for lost properties. Finally, regards to the placing of organic products on the market, everywhere in the world, organic products are subject to a much more intensive regime of controls and monitoring, ensuring much more compliance than for conventional products. On the other hand, due to various reasons, both organic and conventional operators face tremendous technical difficulties to ensure quality assurance due to a combination of factors. Key challenges constraining quality assurance include (i) difficulties with traceability and food safety measures both relying on documentation of procedures, (ii) development of a system to monitor production (including incoming and outgoing procedures), (iii) difficulties with record keeping, and (iv) attraction and maintenance of qualified staff.

¹¹ A quality-based approach means that the operator is consciously aware of what he/she is doing: The actions to produce organic products are documented (explained) and for each production run, records confirming the application of the documentation exist. For each action, each person, each machine, and each location, the operator has reflected on how this point can impact the organic production and be a risk or a problem for contamination with products and substances that the operator is not allowed to use or for commingling (mixing organic and non-organic products). And once the system is in place, it has to be maintained, updated and improved if changes occur (such as new suppliers, new staff, among others).

4 CONCLUSIONS AND RECOMMENDATIONS

Demand for organic products is still incipient in Mozambique, while it is rapidly growing in the international market especially in the EU and USA markets. Mozambique has potential to develop its organic industry to meet both domestic and international requirements. However, local organic operators face several challenges hindering the development of the organic sector. This assessment identified seven categories of constraints for organic farming and certification in the context of Mozambique. These interconnected categories are summarized as follows:

- 1) **Legal:** the existing legal frameworks and compliance with these frameworks are largely not conducive for promotion of organic farming and certification. For instance, operators are required by law to implement food safety management systems, but market surveillance and enforcement of such food safety obligations are non-existent in practice. Moreover, the regulatory framework requires that suppliers sell registered plant protection products (PPPs). However, obtaining such registration is a time-consuming and costly process, narrowing suppliers' interest in acquiring registration for PPPs permitted for use in organic production based on international standards due mainly to the limited scale of use of such PPPs in the Mozambique market;
- 2) **Agronomic:** limited availability of crop varieties suitable for organic production characterizes the organic sector in Mozambique. This is mainly because although government promotes the use of integrated pest management practices, ongoing public and private research programs focus predominantly on increasing potential for crop productivity, giving little attention to (i) the generation of technological packages suitable for organic farming systems especially in relation to commercial organic production and (ii) aspects related to various stages of the value chains for organic commodities (such as processing, conservation and packaging);
- 3) **Logistical:** local organic operators face limited availability of specialized and suitable packaging materials. These materials are generally imported from Asia and Europe because they are either unavailable or extremely expensive on the domestic market. This is due largely to the existence of very poor and fragmented transport and logistical infrastructure (such as roads and refrigerated transport means), which in turn also increases transaction costs and has devastating impacts on the self-life of organic products;
- 4) **Compliance:** the existing system for placing of PPPs on the Mozambique market does not facilitate the establishment and further development of organic production. Moreover, the requirements of separation of organic production from conventional production is particularly hard to comply with especially among small-to-medium-sized operators because of the high cost to ensure compliance, the necessity to combine organic and conventional processes and the proximity between the two production systems;
- 5) **Know-how:** organic agriculture is a systematic process ranging from production and acquisition of organic inputs to delivery of organic inputs to the intermediate consumers as well as organic outputs to the final consumers, going beyond the use of specific organic farming practices such as crop rotation and application of organic chemicals. Transitioning to or improving organic production requires specialized knowledge and skills about the four principles of organic farming (e.g. health, ecology, fairness, and care) as well as about organic certification to ensure compliance. For instance, organic producers should put in place record keeping procedures to ensure the traceability of organic products. These specialized knowledge and skills are not at the disposal of most farmers, especially smallholder farmers;

- 6) **Market development:** organic operators face major difficulties obtaining both PPPs and plant reproductive materials (PRMs) suitable for organic production, while access to chemical inputs remains relatively easier. Given that all local organic operators are export oriented (especially to EU and USA markets), they face restrictions imported by international markets. The EU requires that use of organic ingredients in at least 95 percent of the total amount of agricultural ingredients, while the USA requires at least 95 percent of the total amount of ingredients. These requirements constrain the availability of suppliers of organic raw materials and farming inputs in terms of both quality and quantity in the domestic market. Furthermore, organic products generally have a premium price compared to the conventional products, representing an obstacle to consumers (especially among the poorest) associated with consumers' willingness to accept such higher prices. This is mainly a reflection of limited consumers' perceptions and expectations towards food meeting nutritional quality and safety for consumption; and
- 7) **International markets:** information on which rules and requirements are applicable for cross-border transport is generally unavailable. Information on any exceptions for fumigation in the case of transport of organic products is also limited. Availability of such information is relevant because fumigation of organic products raises concerns about organic integrity. Furthermore, obtaining phytosanitary certificates is a time-consuming and costly process; constraining the development of the local organic sector;

This assessment also identified four levels of needs that shall be met to facilitate the establishment and maintenance of organic production and certification. These interconnected levels are summarized as follows:

- 1) **Consumers:** the place in which food is purchased (for example, supermarket and street vending business) affects consumers' willingness to pay. Duality between formal and informal markets – with dominance of the informal markets – poses several challenges for the intermediate and final consumers of both conventional and organic products. Consumers are increasingly becoming more concerned about their health and environmental sustainability, triggering an increasing supply of food qualified as tastier, healthier and safer for human consumption. This should be complimented with increased consumers' trust in the claim "safe-food" because consumers are usually willing to pay more for food bearing labels they know and trust. However, market placement of food deemed as safe is bound to be challenging because market surveillance and enforcement of food safety obligations are non-existent in practice;
- 2) **Government:** limited institutional capacity among government entities constrains market surveillance and enforcement of food safety measures, as well as the development of a regulatory framework for production and labelling of organic products. Furthermore, for a continuous improvement of quality assurance at government level, working methods and record keeping should be documented to ensure impartiality, confidentiality, transparency, fair competition and a level playing field. These standards could be implemented by adopting ISO/IEC 17020 for inspection of food safety and ISO/IEC 17065 for organic certification;
- 3) **Small and medium-sized farmers:** given that a sizable share of small-to-medium-sized farmers is scattered across remote regions but also has huge potential for organic farming, grouping them into farmers' organizations (FOs) where FOs do not yet exist and scaling FOs' capacity where they already exist would reduce transaction costs. Doing so by establishing rules and norms and strengthening their organizational capacity for the efficient and effective

functioning of such FOs would be beneficial for the development of the organic sector. This is so because these FOs could play an important role through mainly three channels: (i) sensitization and implementation of good agricultural practices, (ii) data collection as regard to organic farm management practices, and (iii) reducing logistical challenges for interested buyers through first-line collection and centralized (cold) storage in remote areas; and

- 4) **Medium to large scale operators:** succeeding in organic production requires an in-depth knowledge and understanding of plants, products and practices based on an identification of risks and the implementation of accompanying measures, demanding more intensive and more specific observational skills compared to conventional production. This is because organic crops and their yields are more exposed to the undesirable impacts of weather conditions because of the unauthorized use of chemical products and microorganisms that can potentially endanger human health and the environment. Hence, increasing the organic operators' willingness to invest in productive assets, especially human capital, is crucial. Furthermore, organic products are characterized by a higher quality at least at three levels (namely products themselves, production process and market surveillance) than conventional products. Consequently, increasing organic operators' willingness to adopt a quality-based approach is also essential;

The third chapter of this assessment presents the detailed findings by grouping them into seven categories of constraints and three levels of needs. Identification and analysis of those constraints and needs lead to 13 recommendations clustered into two groups: (i) adjustment and development of a government policy framework subscribing to organic production (consisting of eight recommendations), and (ii) capacity building actions (remaining five recommendations). Each recommendation emanated from a combination of some constraints and needs; no one-to-one match exists. A separate and complementary document – referred to as roadmap for organic production and certification in Mozambique – outlines the detailed content of each recommendation with actions spread out over four years (including the remaining months of 2024). The roadmap also presents the set of constraints and needs from which each recommendation was drawn. Hence, for the detailed understanding of each recommendation, the reader is referred to the roadmap.

The cluster on policy adjustment and development pursues the essential legislative framework for the successful establishment of organic production, labeling and certification, and includes eight interconnected recommendations:

- **Finalizing and publishing the organic regulation:** the Ministry of Agriculture and Rural Development (MADER), under the leadership of the National Directorate of Plant and Animal Health (DNSAB), drafted a regulation for organic production and certification in 2021 (latest version from August 2024); however, it has not yet been finalized and approved. Section 3.2 of this assessment compares – by pointing out the strengths and weaknesses – the current Mozambique draft regulation with the European Union (EU) and United States of America (USA) regulations (currently the two largest export markets for organic products originated from Mozambique); while section 3.3 of the assessment identifies constraints and needs for organic farming and certification in the context of Mozambique. These two sections suggest that the existing Mozambique draft regulation should be revised and published by mainly (i) adding missing information, (ii) introducing consistent use of technical terms and referencing, (iii) adding the specific production rules, (iv) making strategic choices (plant versus animal products), (v) identifying the competent authority as well as the control and certification

systems, (vi) introducing specific requirements for international trade (import and export of organic products) and (vii) establishing a national network and a task force for organic production;

- **Revising and developing the relevant complementary legislation:** as outlined in section 3.3, organic production and certification regulation should be placed in the context of complementary legislation. For instance, organic production and certification regulation should complement the existing food safety regulation regarding market surveillance and enforcement to avoid misunderstandings and conflicting principles and rules as well as taking advantage of synergies between the two regulations. Another example includes revision of the registration process and conditions for the use of PPPs and PRMs to provide private sector's incentives for investment in organic farming. This recommendation entails mainly (i) identifying topics from the existing legislation to be addressed to avoid conflicts between conventional and organic legislations, ensuring coexistence between the two legislations; (ii) upscaling market surveillance to better monitor the implementation of existing legislation through traceability and documentary checks, as well as upscaling enforcement when non-compliance and frauds are detected; and (iii) reaching out neighboring countries and main export and import markets to ensure alignment with regard to legislation which does not have to be unique to Mozambique such as authorized active ingredients and cross-border issues like fumigation;
- **Strengthening farmers organizations (FOs):** smallholder farmers cultivate on average 1.4 hectares of farmland and are scattered across remote regions, making it difficult to reach them and increasing transaction costs related to collection of organic products. This recommendation includes mainly (i) motivating farmers to join FOs; (ii) assisting existing and new FOs with the registration process; (iii) providing training for organic farming, participatory guarantees systems (PGSs) and internal control systems (ICSs); and (iv) expanding the scope of the current draft organic regulation with group certification;
- **Integrating “organic” into the agricultural research programs:** both public and private agricultural research programs focus predominantly on increasing potential for crop productivity under conventional production, leading to limited availability of technological packages suitable for organic production, especially large-scale production, as well as scant scientific knowledge about post-harvest technologies (such as processing, conservation, and packaging of organic products). This recommendation comprises mainly (i) identifying priority organic value chains for research, (ii) identifying needs for and conducting research involving organic production systems including post-harvest technologies, (iii) establishing (both on-farm and on-station) demonstration plots for organic production systems, (iv) publishing of and developing disseminating materials for relevant research results, and (v) designing and offering hands-on training to organic operators;
- **Developing support programs for organic operators:** organic production demands more in-depth knowledge and understanding of plants, products and practices compared to conventional production, requiring increased operators' willingness not only to invest in productive assets especially human capital but also to adopt a quality-based approach. This recommendation includes mainly (i) identifying resource to support the creation of the National Organic Agricultural Movement in Mozambique (NOAM), (ii) developing and implementing financial support programs for individual operators and FOs, and (iii) reflecting on the possibility for creation of price setting mechanisms for priority organic commodities, ensuring fair prices for organic farmers and operators;

- **Launching pilot projects:** transitioning to or improving organic production requires specialized knowledge and skills about the four principles of organic farming (e.g. health, ecology, fairness, and care) as well as about organic certification to ensure compliance, leading to a steep learning curve at the beginning. Observations from other countries reveal that successful operators are generally largely vertically integrated (e.g. the same firm having ownership of various stages of the value chain such as agricultural production, processing, packaging, conservation and marketing). This recommendation entails mainly (i) setting up the framework for the creation of public-private partnerships (PPP), (ii) documenting existing organic production schemes in the country, (iii) upscaling existing successful production schemes, (iv) identifying and designing strategic pilot project, and (v) publishing of and developing disseminating materials for lessons learned from the pilot projects;
- **Increasing consumers' awareness:** previous recommendations focused on the supply side; however, investing in the demand side is paramount to promoting organic products among final consumers as well as increasing consumers' trust in the claim "organic", facilitating organic products' sales to final consumers. This recommendation includes mainly (i) developing and launching a national information campaign about organic production and products; (ii) developing a communication strategy for the national information campaign, and (iii) providing support to NOAM and other impactful activities and events in favor of organic production and products;
- **Attracting private investors:** As stressed in all previous recommendations, organic production demands additional investment from the private sector compared to conventional production. This recommendation includes mainly (i) assessing the possibility of upgrading the brand "Made in Mozambique" to include standards for sustainability, quality and fairness, (ii) integrating organic production on (future and ongoing) trade agreements, (iii) developing and launching organic investors portal at various government websites, and (iv) developing fiscal and other financial incentives to invest in organic production including acquisition of land for organic production;

Having a legal framework will help to materialize envisaged developments; however, investments in people's knowledge and skills, in quality systems, and in equipment and facilities are also required at all levels (namely operational, inspection and certification, and supervision). Hence, the cluster on capacity building encompasses the remaining five interconnected recommendations:

- **Designating (technical, financial and infrastructure, among others) resources to the supervision of organic production:** as discussed earlier, limited institutional capacity among government entities constrains market surveillance and enforcement of food safety measures, as well as the development of a regulatory framework for production and labelling of organic products. Moreover, supervision means that the competent authority (MADER) should have its own auditors to verify compliance of tasks delegated to private certification bodies, demanding qualified human resources as well as financial and capital resources and infrastructure. This recommendation includes mainly (i) establishing and operationalizing a government department for leading organic production and certification, and (ii) developing and providing hands-on training about verification of compliance of organic production and certification;
- **Adopting international certification standards at government level:** export markets – especially the EU and USA – are presently undoubtedly the main driver for the development of organic production and certification in Mozambique. Organic certification in

the EU countries is based on the international standard ISO 17065, while the USA organic regulation (NOP) does not explicitly refer to this standard but adopts its principles. ISO 17065 – especially its chapter 7 – outlines a robust and harmonized system for third party certification, which is relevant to be adopted in the Mozambique context. This recommendation entails mainly (i) developing and providing hands-on training about ISO 17065 for all relevant stakeholders, (ii) developing an internal quality manual aiming at carrying out “product certification”, and (iii) submitting request for recognition of the Mozambique organic certification standards to the EU commission and the United States Department of Agriculture (USDA);

- **Increasing the effectiveness and efficiency of public services for implementation:** succeeding in the implementation of organic regulation depends crucially on the effectiveness and efficiency with which the supporting public services are delivered to organic operators. Working methods and record keeping at government level should be documented to ensure impartiality, confidentiality, transparency, fair competition and a level playing field, leading to a continuous improvement of quality service assurance in terms of effectiveness and efficiency. This recommendation includes mainly (i) identifying all inspections foreseeably required by the legislation in terms of production and placement of food in the market (e.g. food safety, LEAF, SMETA, MOZPOPA, among others), (ii) identifying existing qualified inspectors and recruiting additional inspectors if deemed necessary, (iii) developing and launching specialized training programs for qualified and competent inspectors, (iv) developing simplifying steps and documentation used to verify compliance, and (v) facilitating quick information exchange among inspecting parties involved in the organic certification;
- **Facilitating accessibility of organic production:** as previously discussed, knowledge and skills about principles of organic production and certification at all levels are crucial for the successful implementation of organic regulation. This recommendation includes mainly identifying, developing and providing specific training modules for organic operators (e.g. farmers, processors, and others), inspectors, certifiers, and staff of both the competent authority and national accreditation body.
- **Obtaining international recognition for the domestic certifying entity:** this recommendation complements the previous one and includes mainly (i) reaching out to potential donor agencies and experts to support Mozambique certifying entity to obtain international recognition especially in the EU and USA markets, and (ii) setting up a technical working group responsible for developing procedures, documentation, infrastructure, and exchange programs with the EU and USA entities.

ANNEX I: CONSULTED DOCUMENTS

1. The world of Organic Agriculture, Statistics and emerging trends 2024, FiBL <http://www.organic-world.net/yearbook/yearbook-2024.html>
2. Guidelines for public support to organic agriculture, IFOAM Organics International, September 2017, version adapted to Sub-Saharan African Countries.
3. Wealth of organic policy options for national governments. Paul Holmbeck, April 2023, <https://paulholmbeck.com/wealth-of-organic-policy-options-for-national-governments/>
4. Boosting organic Trade in Africa, Market analysis and recommended strategic interventions to boost organic trade in and from Africa: Product market for coffee, GIZ, 2020
5. Boosting organic trade in Africa, Market analysis and recommended strategic interventions to boost organic trade in and from Africa: Country market brief for South Africa. GIZ, 2020
6. Sector brief Uganda: Organic agriculture, GIZ, August 2021
7. Assessment of organic certification in the coconut oil value chain in the Philippines, 2020, United Nations conference on Trade and Development (available at <http://creativecommons.org/licenses/by/3.0/igo/>)
8. Mozambique Country Climate and Development Report (CCDR), World Bank group, December 2023 (<https://www.worldbank.org/en/country/mozambique>)
9. Step-by-step to organic and climate change adapted agriculture in Mozambique – Practitioner’s guide (Technical report, November 2020, University of Natural resources and Life sciences, Vienna, <https://boku.ac.at/en/nas/ifoel>, corresponding author Bernhard.freyer@boku.ac.at)
10. Feasibility study for organic cashew production in Mozambique (ProEcon Technical Feasibility Study to Establish Organic Cashew Production in Mozambique, Sabine Lydia Mueller (2022), GIZ Nampula, Mozambique.
11. The Mozbio story, How Mozambique’s Conservation Areas can support ecosystems, increase economic development, and improve community livelihoods, 2020, International Bank for Reconstruction and Development / The world bank. (<https://documents1.worldbank.org/curated/en/396531619165338914/pdf/How-Mozambique-s-Conservation-Areas-Can-Support-Ecosystems-Increase-Economic-Development-and-Improve-Community-Livelihoods.pdf>)
12. Interesting websites (own internet research)

ANNEX II: DETAILED OVERVIEW OF THE INTERVIEWS

#	Stakeholder (type)	Date (start – close)	Remarks
1	Control Union Certifications (International certifier)	July 1 st (10:00 – 11:15)	Online interview
2	Malamba comercial (operator)	July 2 nd (16:00 – 17:15)	Online interview
3	Swiss Labs (laboratory)	July 3 ^d (14:00 – 14:45)	Online interview
4	Condor Anacardium (operator, surrendered NOP)	July 7 th (12:00 – 13:15)	Online interview
5	Mocuba Honey	July 8 th (10:00 – 11:30)	On-site interview
6	Cha de Magoma (Muguma Tea)	July 9 th (9:35 – 10:30)	On-site interview
7	Cha de Gurué	July 9 th (11:50 – 12:35)	On-site interview
8	Murrimo Macadamia	July 9 th (13:50 – 14:50)	On-site interview
9	Eco Farm	July 11 th (8:50 – 11:00)	Online interview
10	Eco Farm president (member of the coop Eco Farm)	July 11 th (13:00 – 14:00)	Online interview
11	National Parc de Gorongosa	July 15 th (9:30 – 11:00)	On-site interview + Visit coffee fields
12	Sabine Lydia Müller (consultant for organic production)	July 15 th (19:00 – 20:00)	Online interview
13	SPAE	July 16 th (9:30 – 10:00)	Courtesy visit
14	Shoprite	July 16 th (10:45 – 12:15)	On-site interview + Visit shop (fruit & veg dept only)
15	SPAR	July 16 th (12:30 – 13:45)	On-site interview + Visit shop (processed food, incl baby-food)
16	Micaia (Baobab and honey)	July 16 th (14:45 – 16:00)	On-site interview + Visit of factory (baobab) and bottling unit (honey)
17	Café Vumba e Manica	July 16 th (17:45 – 18:30)	Online interview
18	Café Chimanmani	July 17 th (10:00 – 13:15)	On-site interview + Visit of two coffee fields and composting and plant protection “unit”
19	MaxiMoz	July 18 th (9:00 – 10:45)	On-site interview + visit of the plantation and factory
20	Vermicompost	July 18 th (13:15 – 14:00)	On-site interview on the production site
21	Fruitcentro	July 18 th (16:20 – 18:10)	On-site interview
22	Westfalia	July 19 th (8:20 – 10:00)	On-site interview
23	Local farm shop (Chimoio)	July 19 th (10:45 – 11:45)	On-site interview
24	Chef of the restaurant of Radisson blu hotel in Maputo	July 26 th (9:00 – 9:20)	In-person interview