



AGRICULTURE AND FOOD AUTHORITY (AFA)

DRAFT REGULATORY IMPACT STATEMENT (RIS)

THE CROPS (BIXA) REGULATIONS, 2023

NOVEMBER 2023

1.0 Introduction

The Regulatory Impact Statement for the proposed Crops (Bixa) Regulations 2023 was prepared in accordance with the provisions of sections 6 and 7 (1) and (2) of the Statutory Instruments Act, 2013. Section 6 of the Act requires the Regulation Making Authority to prepare a Regulatory Impact Statement for the proposed regulations indicating the costs and benefits of the proposed regulations on the public and stakeholders. Section 7(1) and (2) of the Act set out the contents of a regulatory impact statement for the proposed regulations as follows:

2.0 A Statement of the Objectives and Reasons for the Proposed Regulations

The purpose of these Regulations is to guide the promotion, development and regulation of bixa and bixa products for the benefit of the Bixa growers and other stakeholders in the Bixa sub-sector. The objectives of these regulations are to—

1. set procedures and conditions for registration, licensing and issuance of permits;
2. enhance growth and development of the sub-sector;
3. ensure quality and safety of bixa and bixa products; and
4. promote good agricultural practices.

3.0 Statement on the Effect of the Proposed Regulations

The following are the effects of the proposed Crops (Bixa) Regulations, 2023:

3.1 Effects on the Public Sector

The proposed Regulations will have both direct (immediate) and indirect (incidental) impacts on the public sector in the following ways:

a). Direct (Immediate) Impacts

1. The Bixa sub-sector will now be formally organized with an enabling regulatory framework, industry structures that will include growers' associations, dispute resolution mechanisms, compliance and enforcement structures, a pricing formula committee, and the necessary supportive controls to support the promotion and development of the industry for the benefit of all Bixa sub-sector stakeholders and the country.
2. Bixa marketing which has remained mainly informal, unstructured, poorly organized, and ridden by unfair trade practices including having no quality and operations standards and being dominated by organized middlemen trading mainly in immature produce will be better organized and structured and have harmonized trade and operations standards. As a result, this will guarantee compliance with acceptable international Bixa standards to ensure Kenyan Bixa maintains and grows its market share globally.

3. All sub-sector actors will be registered and/or licensed. Bixa planting materials, production, aggregation, trading, processing and value addition, imports and exports will be documented. It will therefore allow for easy monitoring of sector performance and to allow for corrective interventions, improved sector regulation and effective compliance monitoring and enforcement across the entire sub-sector.
4. The improved documentation of development in the sub-sector including actual crop acreage, trading data, registration and licensing of all active sub-sector actors will provide reliable real-time data and other important details on production and price trends, market performance, trade volumes - both local and exports allowing for better planning, informed decision making and proactive interventions in the industry.
5. Promotion of the adoption of food safety, an effective traceability mechanism, and produce quality standards across the Bixa industry operations which will ensure the production of quality and healthy Bixa and Bixa products for the local and export markets and reduce health challenges resulting from the consumption of poor quality, contaminated and unhealthy Bixa, contributing to reduced local public health provision costs.

b). Indirect (Incidental) Impacts

1. The regulations will encourage and promote the introduction of other value-adding processes in the sub-sector such as produce sorting and grading, codes of practice, self-regulation within the growers' associations, contract Bixa farming and collective marketing by growers, and hence further market development in this value chain and improved earnings and contribution to the economy from the sub-sector.
2. The increased use of high-quality planting materials and the increased support from national research institutions and effective agricultural advisory services to Bixa growers will increase production, reduce field and post-harvest losses, improve produce quality and thereby increase produce volume and quality available for export. This will increase foreign exchange earnings.
3. The regulations will enable individual Bixa producing County Governments to develop and effectively implement county-specific Bixa value chain development strategies based on their identified priorities and points of intervention to meet their development objectives and the needs of their local communities in these value chains as per their CIDPs.
4. Implementation of the regulations will create employment opportunities to support the increased Bixa production, processing and value addition, trading and marketing and resultant auxiliary services, contributing to the Government agenda on employment creation, value addition in agriculture and industrialization.

5. The broader agricultural sector and national economy will benefit from the increased volumes of production, regional and export trade from the industry, reduced imports of food colour substitutes and thus increased foreign exchange earnings and savings for the country.

3.2 Effects on the Private Sector

The proposed Regulations will have both direct (immediate) and indirect (incidental) impacts on the private sector in the following ways:

a). Direct (Immediate) Impacts

1. The private sector actors in the industry will stand to benefit from the introduction of a well-structured, organized and regulated Bixa sub-sector which will provide a conducive operating environment for their different businesses, promote fair trade and shield them from the frequent negative effects of Government pronouncements and actions on the industry such as periodic trading bans and safeguard the industry from control and domination by cartels, brokers and middlemen.
2. The reduced control of Bixa trading and marketing by industry cartels, brokers and middlemen will increase margins and reduce price volatility, thus stabilizing markets and incomes for the different actors especially the farmers and processors who are victims of middlemen exploitation particularly during peak harvesting seasons or shortages.
3. Adoption and compliance with food safety and produce quality standards and establishing an effective traceability mechanism across the Bixa sub-sector will enable farmers, processors and industry entrepreneurs to better access alternative standards-sensitive niche markets locally, regionally and internationally.
4. Accurate and real-time data on industry actors, crop acreage, planting materials production, availability and distribution, Bixa production, produce trade volumes and prices, produce sources, and existing and potential markets will readily be available to the industry players for better business planning and operations.
5. The Bixa industry will be well streamlined and operate on common processes, procedures and standards thereby promoting fair trade practices and eliminating or reducing unscrupulous players in the industry especially the over-exploitative middlemen and monopolistic cartels.
6. The Bixa pricing formula committee comprising representatives from the different segments of the Bixa sub-sector stakeholder will determine the formula of Bixa pricing

and thus ensure fair Bixa and Bixa products pricing in the industry for the benefit of all actors and particularly the smallholder Bixa growers.

7. All Bixa growers and all other industry actors will be required to pay various requisite fees and levies and re-align their operations to the provisions of these regulations which shall be applied for sustenance, development, provision and the benefit of the Bixa industry subsector.

b). Indirect (Incidental) Impacts

1. Collective marketing through registered growers' associations and dealing with licensed dealers and agents will enhance smallholders' Bixa farmers' market access and provide effective negotiating platforms that will enable them to secure the best possible deals benefiting from the improved negotiation position, economies of scale and direct linkages with downstream buyers and financiers, and allow growers to overcome asymmetric power relationships within the market chain.
2. The increased use of quality and clean planting materials, increased industry support from national research institutions and enhanced provision of agricultural advisory services will increase production, reduce post-harvest losses, and improve the quality of produce thereby increasing incomes for farmers and traders from the increased volumes and quality of produce.
3. Increased production, local processing and value addition, reduced post-harvest losses, reduced price volatility and effectively regulated operations in the industry will increase the incomes of businesses in the Bixa industry. This will make them viable and sustainable enterprises as well as improve the livelihoods of the investors, employees and the local communities.
4. Implementation of the regulations will create stable employment opportunities in the increased agricultural production, the formalized industry operations, and resultant auxiliary services, thus improving the livelihoods of many families in the society.
5. A well-regulated Bixa subsector will enhance transparency in all the transactions across the operations and protect farmers, traders, and financial institutions and other actors from business risks associated with a lack of industry information, creating monopolies and industry domination or illicit transactions.
6. The general local Bixa consumers will be assured of quality natural products hence reducing consumption of imported synthetic substitutes, reducing health problems associated with ingesting unhygienic and synthetic materials and thus reducing medical expenses for households.

7. Bixa growers' associations and other Bixa industry actors will get recognition upon registration and licensing of their now informal businesses, thus allowing them more access to development and support services and opportunities available to MSMEs in other industries.

3.3 Effects on Fundamental Rights and Freedoms

The proposed Regulations shall have a positive impact on fundamental rights and freedoms in the following ways: -

i. Consumer Protection

Article 46 of the Constitution provides for consumer rights and in particular, that consumers have the right to goods and services of reasonable quality, information necessary for them to gain full benefit from goods and services for the protection of their health, safety and economic interests and to compensation for loss or injury arising from defects in goods or services. The draft regulations promote this right in several ways. Regulation 19(3) of the draft regulations states that the Bixa should be packaged, stored and transported in such a way that it is not contaminated. Regulation 20 of the draft regulations further provide for a traceability system where dealers are required to declare to the Authority the source and to whom it is sold, be responsible for the quality and safety of Bixa, and put in place a system that ensures that Bixa and Bixa products failing to meet food and safety standards can be identified, removed and withdrawn from the supply chain. Additionally, Regulation 22 authorizes inspectors to audit food safety management systems implemented by agents and processors. Regulation 23 further provides for the protection of consumers' economic interests by establishing a Bixa pricing committee that considers supply and demand forces, costs of production and any other prevailing factors to determine the Bixa pricing formula, therefore protecting both consumers' and growers' interests.

ii. Fair Administrative Action

Article 47 of the Constitution guarantees the right to fair administrative action that is expeditious, efficient, lawful, reasonable, and procedurally fair. The Regulations enhance this right by, for instance, providing timelines during which applications for registration, certificates, licences and permits must be considered and responded to as per Regulations 4, 5, 7, 8, 10, 11, 12, 14 15, and 16. Regulations 5, 6, ,7, 8, 11 and 12 further stipulate that the Authority or the County Government must give written reasons for declining an application for a certificate or licence.

However, no dispute resolution mechanism has been provided for in the regulations. There is also no process described for the revocation of a licence, which is contrary to fair administrative action because there should be a set procedure and an opportunity to be heard before such a decision is made.

iii. Right to privacy

Article 31 of the Constitution provides for the right to privacy. This can possibly be affected by the draft regulations. Regulation 4 provides that members of a growers' association should submit their particulars and update them every financial year. These particulars are collected through Form Bx1, which lists some personal data fields such as name, ID number, telephone number, age, gender, title number, and geo-location. Thus, without a strong data protection framework, this data may be leaked, and the privacy rights of the data subjects infringed. The regulations need to provide that all the data shall be collected and stored in line with the provisions of the Data Protection Act, 2019 to mitigate this impact. The Authority should also ensure that there are strong mechanisms within its systems to enforce this.

iv. Freedom of association

Article 36 of the Constitution provides for the freedom of association. Regulation 4 of the draft regulations protects this right by providing for the registration of growers' associations, whose purpose is to enhance economies of scale for small-scale growers.

v. Access to Information

Article 35 of the Constitution provides for access to information. The draft regulations enhance this by requiring the Authority to publish information in the Gazette regarding the intended grant of a licence for establishing a processing factory and appointment of inspectors in Regulations 8, and 22 respectively. In Regulation 10, the information from the gazettelement gives the public an opportunity for consultation and objection while in Regulation 22, the public is given a notification of the appointment to enable them to know who the official inspectors are.

vi. A clean and healthy environment

Article 42 of the Constitution provides for the right to a clean and healthy environment. Regulation 19 of the draft regulations protects this right by providing that all produce handling facilities such as warehouses, stores, and collection centres, as well as working areas and designated points are to be kept free of waste materials.

4.0 Statement on Regulatory & Non-Regulatory Options

This section highlights other regulatory and non-regulatory options that may be adopted to achieve the same intended objectives of the Bixa regulations in Kenya.

4.1 Option 1: Maintaining the *Status Quo*

Before considering new interventions, it is important to consider whether the problem could be resolved by making changes to practices within the existing regulatory framework, thus maintaining the status quo. Examples of this are:

1. Making use of existing laws, regulations and/or guidelines
2. Simplifying or clarifying existing regulations.
3. Improving compliance and enforcement of existing regulations; or
4. Making legal remedies more accessible or cheaper.

It is however noted that the current status of the Bixa sub-sector has not been conducive nor supportive to revamping the growth of this sub-sector nor demonstrated the capacity to support the sustainable development of the sector into the future despite the fast-growing demand for Bixa products both locally and in the global markets. The Bixa sub-sector and industry have continued to operate almost unregulated in the country for many decades now to the disadvantage of all and this needs to be changed if the positive transformation of the sub-sector is to be realized.

4.2 Option 2: Passing the Regulations

The Government can achieve its policy objectives by using taxpayer's money or through a range of non-spending interventions, including regulation. The purpose of these Regulations is to guide the promotion, development and regulation of Bixa and Bixa products for the benefit of the Bixa growers and other stakeholders in the Bixa sub-sector. These Regulations aim to set rules to protect and benefit all Bixa sub-sector actors, and businesses, stabilize markets to address production and market failures to support the development of the sub-sector. Regulations could, however, also create costs for businesses and the public sectors and could, if overused, poorly designed or poorly implemented stifle competitiveness and growth.

Adoption and operationalization of the proposed Regulations will:

1. Facilitate renewed growth and sustainable development of the Bixa sub-sector in Kenya and establish the necessary support structures and an enabling sub-sector environment.
2. Enhance quality standards and guidelines for Bixa industry operations including production and post-handling processes, produce traceability and produce quality standards, thus improving product safety while reducing price volatility and market supply fluctuations.

3. Promote the development of organized and better-structured Bixa and Bixa products markets with standard produce/products quality, operations standards, and an effective traceability mechanism.
4. Develop and maintain a real-time database on the Bixa sub-sector including registers of all the different industry actors, nurseries' seedlings production and distribution, crop acreage, volumes produce and traded, produce sources and prices, markets, among others for better coordination, control and planning in the industry.
5. Streamline Bixa and Bixa products marketing for a coherent, organized, and regulated market environment, for effective oversight and improved management and to remove marketing hurdles that have negatively impacted this industry in the past.
6. Enhance quality and safety of produce from the farms and processed products during handling, transportation, and trading to better promote human and environmental health.
7. Create new business opportunities in the Bixa sub-sector, from the farms, other industry operations, agro-processing, financial, insurance and other supportive services for innovative private sector investors.
8. Increase participation of the private sector to support the countries and counties' agricultural development agenda as envisaged in the Vision 2030 and the national agriculture policies including the Agriculture Sector Transformation and Growth Strategy (ASTGS) and individual Counties Integrated Development Plans (CIDPs), policies and other strategies to make the agricultural sector a key driver of economic growth and value addition.
9. Create employment opportunities in the increased Bixa production, Bixa processing and industry operations and resultant auxiliary services, thus improving the livelihoods of many families within this value chain.
10. Reduce the post-harvest losses of Bixa and improve the quality of Bixa produced, thereby increasing incomes and thus livelihoods for farmers, traders, dealers, and agents from the sale of increased volumes and prices of Bixa and Bixa products.
11. Provide smallholder Bixa growers with a market window that can help them access reliable markets and secure the best possible trade deals, especially during peak Bixa harvesting seasons.
12. Increase Bixa sub-sector information access by all interested parties, especially smallholder farmers, dealers, agents, processors, traders, financial institutions,

government agencies and prospective investors for informed on-farm, policy, and investment decisions.

13. Promote fair trade practices and eliminate unscrupulous actors in the Bixa sub-sector marketing, and especially the over-exploitive middlemen and brokers.
14. Establish a Bixa pricing formula committee to determine the prices of Bixa and Bixa products comprising representatives from different segments of the Bixa sub-sector stakeholders to ensure fair Bixa pricing in the industry for the benefit of all actors and particularly the smallholder farmer.

The Regulations are thus important for the renewed growth and development of the Bixa industry for the benefit of all industry stakeholders specifically Bixa growers and for further development of the agricultural sector in the producing counties and the country in general.

4.3 Option 3: Other Practical Options

Alternatives to regulation include information and education, market-based structures, self-regulation and co-regulation. In addition, existing policies can be improved, without further regulation, using techniques such as behavioral insight or changing enforcement practices to improve compliance. Such approaches may be better or worse for business and the economy than an equivalent regulatory measure.

Alternatives to regulation include:

- i. **No new intervention/do nothing:** This may include making use of existing laws (or none) and regulations; simplifying or clarifying existing laws and regulations; improving enforcement of existing laws and regulations, or making legal remedies more accessible or cheaper and as discussed in the section above status quo in the sector is likely to remain since the current regulatory framework has not effectively been able to transform this sub-sector and support its renewed growth and its sustainable development to take advantage of the fast-growing market opportunities both locally and in the global markets, and instead the sub-sector has been on the decline in recent years in terms of Bixa production, exports and foreign exchange earnings while synthetic imports into the country of synthetic substitutes to Bixa are on the rise.
- ii. **Information and education:** Information and education can be used to empower Bixa sub-sector actors including farmers, dealers, agents, processors and other industry actors and stakeholders to make their own decisions, improving choices for the mutual benefit of all. However, there are potential risks associated with this, information and education can take time to make an impact. Access to information on the Bixa industry is a big challenge as documentation in the sub-sector and industry has remained limited to use and still even the ability to use the little available information can vary within a community and actors and may not reach all equally. It may also not be straightforward to assess how people will react or change their behavior in response to the information

provided. It will also increase costs for the government and businesses that will be providing the information and education required.

- iii. **Incentive/market-based structures:** The government can use economic instruments, such as taxes, subsidies, quotas and permits, vouchers etc. as initiatives to realize the desired objectives. These initiatives, however, are only practically possible in well-developed and efficiently functioning sectors that have well-defined structures unlike in the Bixa sub-sector which is still underdeveloped and poorly established in the country. Further, often these sorts of systems need their own regulation to establish the framework and may have additional costs to the government and are unlikely to be effective in the Bixa sub-sector.

4.4 Option 4: Alternatives models of regulation

i. Self-regulation.

Self-regulation entails industry players developing a framework to self-regulate a sector. This could be done using codes of conduct or practice, customer charters, standards or accreditation. In many cases, rules and codes of conduct or practice will be formulated by the industry representatives or organizations under their own initiative. In the absence of well-developed and all-inclusive industry organizations as in the Bixa sub-sector, self-regulation currently may not be effectively possible.

ii. Co-regulation.

Co-regulation is an intermediate step between state-imposed and self-regulation that involves some degree of explicit government involvement where the industry may work with the government to develop a code of practice whose enforcement would be by the industry or a professional organization and accredited by the government. In the absence of well-developed and all-inclusive industry organizations as in the Bixa industry, effective co-regulation may not be possible currently in the country.

5.0 Costs-Benefit Analysis (CBA)

This section analyses the economic, environmental and social impacts as well as the administrative and compliance costs of adopting the proposed Regulations. It also assesses and quantifies the return on investments of the proposed Regulations and how the impact of the proposed Regulations is likely to be distributed between the public and private sectors.

5.1 Economic Impacts of the Regulations:

The following are the economic impacts of the Bixa regulations:

5.1.1 Economic Benefits

The economic **benefits** of the proposed regulations include: -

1. Increased Bixa production: The increased access to quality planting materials for farmers, industry support from research institutions, improved agricultural advisory services, and improved markets and returns will see increased investment in the production and quality of Bixa which will contribute to increased agriculture and national GDPs and reduce fluctuations in supply and prices of Bixa to processors and the local markets.
2. Increased processing of Bixa products: The increase in production of Bixa in the country will increase the supply of raw Bixa to the existing processors and serve to incentivize increased investment in Bixa processing in the country.
3. Employment creation: The well-developed and regulated Bixa sub-sector in the country will create new and sustainable employment opportunities both on-farm and off-farm. On-farm employment opportunities will be created by a need for increased labour in Bixa nurseries and to support the increasing Bixa production because of producers' enhanced access to support services and an enabling environment; re-investment in Bixa farms and engaging the rural population in production including crop establishment and management, harvesting, drying, grading, packaging and marketing. Off-farm employment opportunities will arise from produce aggregation, processing and value addition transportation and marketing. The Bixa industry auxiliary support services including financial and insurance services, supply of farm inputs, machinery and equipment etc. will also create more employment opportunities in these respective fields.
4. Increased farm incomes: A streamlined marketing structure with no exploitation of farmers by cartels, increased production, and sales of Bixa and Bixa products to the different market segments and better produce prices from improved produce quality

coupled with reduced price volatility through the interventions of the pricing committee will increase incomes for farm families engaged in Bixa production.

5. Increased trading both in terms of volume and quality and increased processing and value addition of Bixa produced will further contribute to increased agriculture and national GDPs.
6. Reduced health risks: The general improved health of the Bixa product consumers because of improved access to quality natural Bixa products that meet food safety and quality standards and reduced consumption of cheap imported synthetic substitutes of natural Bixa.
7. Increased foreign exchange earnings from increased regional and international trading and export of Bixa and Bixa products and reduced importation of synthetic substitutes of natural Bixa, further saving the country's foreign exchange.
8. Increased savings and investment by the different actors within the Bixa sub-sector including Bixa growers, Bixa agents and dealers, warehouse operators, traders, processors, exporters, Bixa industry auxiliary services providers etc. due to a conducive policy environment, improved profitability across the industry, enhanced institutional support to the sub-sector and renewed confidence in the sub-sector.

5.1.2 Economic Costs

The implementation of the proposed regulations will however have some economic **costs** including:

1. Effective implementation of the Regulations will require increased investment in production, grading, processing, packaging, transportation, and marketing in the Bixa industry.
2. The registrations, certifications and licenses proposed will increase the cost of doing business. This cost is likely to be transferred to the consumer thus increasing the Bixa and Bixa products' prices.
3. Implementation of these regulations will require concerted efforts and investments to support a rigorous and effective regulatory system from the Authority, County Governments and other complimenting agencies.
4. The National and County Governments have to invest in Bixa sub-sector stakeholders' sensitization, mobilization and education to introduce the regulations to them for their total buy-in before their full and effective implementation.

5. Effective monitoring for compliance across all nodes of the Bixa value chain and industry will require significant investment to realize and sustain the benefits of the regulations.
6. The Regulations will introduce additional transactional costs and bureaucracy due to the many processes envisaged in the Regulations resulting in increased costs of doing business and time delays for businesses.
7. Levies and fees prescribed in the regulations will generate additional revenue for the different levying agencies.

5.2 Social impacts of the proposed regulations

The following are the social impacts of the proposed Regulations:

5.2.1 Social Benefits

The social **benefits** of the proposed Regulations are:

1. Source of livelihoods: Bixa is of extreme importance to many resource-constrained rural households in the Bixa growing region because it is drought tolerant and has low production costs, thus a valuable source of livelihood in these regions. Increased production and incomes from Bixa production will contribute to transforming the lives of such households significantly.
2. Income diversification for families: Bixa production, trading, and provision of other support services in the Bixa sub-sector can be a suitable alternative source of income for other smallholder farm families in the Bixa growing regions.
3. Improved income distribution among the farm families and the communities in general and thus reduced inequalities due to the increased production and participation in the industry by smallholder farmers, traders, agents, and dealers.
4. Improved education levels and reduced illiteracy in the societies due to improved incomes and thus improved social well-being of the rural communities.
5. The reduced tide of rural-urban migration in search of employment opportunities.
6. Reduced food aid dependency and poverty in the Bixa-producing counties in general due to increased families' incomes.
7. Improved Bixa product consumer health due to enhanced access to quality natural Bixa products and reduced risks associated with the consumption of cheap imported synthetic substitutes of natural Bixa.

8. Employment creation: The well-developed and regulated Bixa sub-sector in the country will create new and sustainable employment opportunities both on-farm and off-farm, hence providing dependable livelihoods to the Bixa industry and related services employees' families.

5.2.2 Social costs

The social **costs** of proposed Regulations are:

1. An attractive Bixa sub-sector may result in farmers putting more land into Bixa production at the expense of food production thus increasing food and nutrition insecurity among families in the Bixa growing regions.
2. Increase in child labour engagement in the revamped and financially attractive industry. This may lead to violating the rights of children in Bixa's growing regions.
3. Attractive Bixa prices may encourage harvesting and theft of mature Bixa from farmers' fields to benefit from quick earnings as has been witnessed in other lucrative cash crop value chains in the country.

5.3 Environmental impacts

The following are the environmental impacts of the proposed regulations.

5.3.1 Environmental Benefits

The environmental **benefits** of the proposed Regulations are:

1. Reduced soil degradation due to improved crop cover from the increased land area under Bixa production and recycling of Bixa crop waste and residues back in the farms.
2. Improved land utilization and management especially in otherwise idle, underutilized, or low-potential lands.

5.3.2 Environmental Costs

The possible **negative** impacts of the Regulations may include:

1. Increased soil degradation due to increased soil operations and increased use of agrochemicals to support increased agricultural produce production.
2. Poor disposal of increased Bixa processing waste

However, with proper and effective implementation of these regulations, these negative environmental impacts can be significantly mitigated, and impacts reduced.

5.4 Quantification of the Benefits

There are limited studies or documentation of the household and national economic benefits and costs of the Bixa industry or its contribution to the Country's economy because Bixa since its introduction into the country has not been considered an important commercial crop despite its potential compared to other commercial crops in the country. It is however not in doubt that Bixa's contribution has a very significant impact on the households' livelihood in the Bixa-producing regions in the Country and despite its current low contribution to the national economy, it has the potential to become an important crop economically in the country.

From the available data, the economic benefits of the industry include:

1. There are at least 26,000 Bixa farmers across the Coast, according to Kenya Bixa Ltd, a company that buys and processes Bixa for export and who derive their livelihoods from Bixa production.
2. Kenya produces and exports about 1,500 tonnes of annatto seed extracts annually and is the second largest exporter after Peru which exports about 4,000 tonnes.
3. In 2020, Bixa production in Kenya was 2,200 Tons and the value of Bixa exports was estimated to be Kshs. 186.4 M compared to 2021 when the production declined to 1884 Tons, but the value of exports increased to Kshs. 214.7M.
4. The only Bixa processing plant provides about 500 jobs directly and many others indirectly engaged in the provision of necessary auxiliary and support services.

Based on data from the Bixa baseline survey undertaken by AFA and published research papers on Bixa production in Kenya, it is evident that returns in the sub-sector can significantly be increased by a change in the following parameters that will be transformed with the implementation of these regulations:

1. Access to improved quality planting materials.
2. Improved agronomic practices (Good agronomic practices).
3. Harvesting of only mature crops (and not immature seeds) for quality.

By simulating the expected changes in Bixa fields' productivity and produce prices on transforming the parameters in the current situation to their ideal levels as established in the published research papers onto the gross margin analysis established in the Bixa baseline survey undertaken by AFA in 2019, then it is possible to quantify some of the expected benefits of these regulations to the farmers as demonstrated below:

Comparative gross margin analysis for standard and ideal management levels of mature Bixa					
	Standard Field			Ideal Field	
	Description	Total		Description	Total

a) Yield/Income				
Bixa Trees per Acre	250 trees per Acre	250	250 trees per Acre	250
Spacing (4x4M)	4x4M		4x4M	
Production per Tree	Kgs	8	Kgs	14
Current Price per Kg	Kshs. 50/Kg	50	Kshs. 70/Kg	70
Production per Acre	(250*8)	2000	(250*14)	3500
Total Income per Acre	(2000*50)	100,000	(3500*70)	245,000
ADD BONUS per Kg	(2000*5)	10,000	(3,500*5)	17,500
TOTAL REVENUE PER YEAR		110,000		262,500
b) Expenses per Acre				
Weeding (4Times @3,000/=Per Acre)	4 Times @3,000/Acre	12,000	4 Times @3,000/Acre	12,000
Pruning (2Times @1,250/=Per Acre)	2 Times @1550/Acre	2,500	2 Times @1550/Acre	2,500
Harvesting (2Times@2,500/=Per Acre)	2 Times @2500/Acre	5,000	2 Times @2500/Acre	5,000
Thrashing & Sieving	2 times@5,000/Acre	10,000	2 Times@5,000/Acre	10,000
Total Cost per Acre per Year		29,500		29,500
c) Net Revenue per Year				
Total income per Acre per Year		100,000		245,000
Add Bonus per Acre per Year		10,000		17,500
Gross income per Acre per Year		110,000		262,500
Less Expenses per Acre per Year		29,500		29,500
Gross Margin per ACRE/ YEAR		80,500		233,000
Benefit-cost ratio (BCR)		2.73		7.90

From the above data, at the standard management level, an acre of Bixa has a benefit-cost ratio of 2.73 which means that for every shilling invested a farmer gets a margin of 1.73 shillings (2.73-1), while in an ideal management level which will be enabled by a well-regulated and efficient

Bixa industry, an acre of the crop will have a benefit-cost ratio of 7.90. This means that for every shilling invested a farmer will get a margin of Kshs. 6.90 (7.90-1) which represents an increase of 189.4% in the farmer's margins.

On the same note, from the calculation above, the gross margin of Bixa production in an ideal and well-regulated industry can be increased from the current Kshs. 80,500 per acre to Kshs. 233, 000, representing a 189.4% increase in returns to the farmer.

In addition, there will be other benefits accrued from an ideal Bixa industry in the country across Bixa aggregation and trading, processing and marketing but these are difficult to quantify due to lack of verifiable data in the industry.

It can therefore be concluded that a well-regulated Bixa sub-sector operating efficiently across all nodes of the value chain from the production of quality planting materials, employing good agronomic practices with well-developed value addition capacities and a well-structured and functioning market which will be created by the implementation of these proposed regulations will transform this sub-sector making it more profitable to the farmers and other industry actors and reverse the decline in the growth of the sub-sector realized over the last two decades.

5.5 Costs, Benefits Analysis and Assumptions

From the above discussions, it is quite clear that the expected economic, social, and environmental benefits from the implementation of the proposed Regulations heavily outweigh the corresponding costs. The analysis of the cost and benefits of implementation of the draft Regulations is however based on the following assumptions: -

1. Implementation of the Regulations will be undertaken in a holistic manner where all provisions of the Regulations will be implemented, and not partially selected provisions being implemented.
2. The country's and producing counties' development strategies, and political and policy environment will continue to prioritize and support the development of the Bixa value chain.
3. The climatic conditions will remain favourable for Bixa production.
4. Bixa sub-sector value chain actors and all other industry actors in general including processors will respond rationally to the implementation of the proposed Regulations and voluntarily comply with the proposed Regulations.
5. The additional revenue generated from the various fees and levies will be used for the further development of the Bixa value chain.

5.6 Administration and Compliance Cost

The RIA noted that resources would be required for the operationalization of the Regulations. This will include human resources and operation costs for inspections and enforcement as well as for the creation of awareness on the Regulations to all the Bixa sub-sector and industry players. It is assumed that additional resources will go to the implementation of the wider national agricultural, industrialization and trade policies which support Bixa production, Bixa varieties, products research and development, provision of advisory services to Bixa farmers for strengthening knowledge transfer and technology distribution among the farmers and capacity building of industry actors. Resources will also be required, and in the implementation of the Regulations, individual national Bixa, agricultural, industrialization and trade strategies, Vision 2030, County CIDPs and other relevant sector national policies and strategies.

5.7 Assessment of Return on Investment (Benefit)

Passing and operationalization of the proposed Regulations will be critical in facilitating the development, promotion, and regulation of the Bixa sub-sector for the benefit of the Bixa growers and other stakeholders in the Bixa sub-sector in the country. This will significantly transform especially the marketing of Bixa and Bixa products which is currently inefficient, poorly structured, dominated by unfair trade practices and declining product quality. The regulations also seek to promote crop research and crop development using high-quality Bixa varieties and improve farmers' access to quality planning materials. This coupled with enhanced capacity building of farmers on good agricultural practices (GAPs) and other key technical areas in Bixa production including crop harvesting and post-harvest management of the produce through the provision of industry-targeted agricultural advisory is expected to increase Bixa production and the productivity of farmers' Bixa fields. It is also expected to improve the quality of the produce while reducing the current high post-harvest losses. This will result in increased volumes of quality Bixa seed available for the market, meaning increased earnings for the farmers, traders, dealers, agents and processors and also increased foreign exchange earnings for the country. The increased availability of affordable Bixa products in the local market will reduce the need for the importation of cheap synthetic Bixa substitutes and thus save the country's foreign exchange. The promotion of collective action among the farmers through the formation of growers' associations produces aggregation at the association's levels and marketing contracting will give the farmers better-negotiating positions enabling bargaining for better prices and other terms of trade and thus allowing them to benefit from the economies of scale in the marketing their produce collectively.

The regulations will also create a level playing field for all industry players and promote transparent and fair-trade practices in the industry to support Kenya's agricultural development and manufacturing pillars as envisioned in Vision 2030, the ASTGS and individual counties' CIDPs and the various county policy instruments to harness the potential of the industry to spur economic development in the Bixa producing areas and thus contribute to the nation's development.

The regulations will strengthen the application of applicable food safety and quality standards in the Bixa industry. This will ensure that the quality of Bixa and Bixa products produced in Kenya meets the set quality standards and thus assuring the consumers of quality products. Compliance with these standards and the establishment of an effective traceability mechanism also envisaged in the regulations will make Kenya's Bixa and Bixa products more competitive in the global market and enable the development of new markets across the world. The regulations will also regulate Bixa imports and exports thus controlling illegal trade actions that have in the past negatively impacted the local Bixa and export markets by distorting demand and prices and presentation of poor-quality products to export markets which has dented the image of Kenyan Bixa products.

Implementation of the regulations will also create numerous employment opportunities both on-farm to increase production and off-farm in the industry and for the provision of auxiliary services in the industry.

In broad terms, the RIA noted that the following broad benefits and returns on investment will be achieved:

1. The Regulations will support the establishment of a well-structured, streamlined, and regulated Bixa sub-sector in the country that will transform and improve Bixa production, processing, and marketing for the benefit of all Bixa stakeholders and the country.
2. Support the organization of Bixa farmers into growers' associations to enable farmers to collectively market their Bixa and/or contract marketing and to optimize economies of scale for farmers.
3. The introduction of quality standards and an effective traceability mechanism will improve the competitiveness of Kenya's Bixa and Bixa products in the world market and support the growth of existing markets and the development of new markets in the fast-growing global Bixa market.
4. Support the development of viable agro-enterprises, especially by smallholder farmers and traders, most of whom have faced challenges to establish themselves in the cartel-dominated industry to increase or intensify production and trade.
5. Improve production and productivity of Bixa with improved farmers' access to effective agricultural advisory services, increased crop research and improved access to quality planting materials.
6. Improved access to comprehensive reliable data and information continuously maintained by the different actors in the industry and by other service providers will

provide planning and decision-making basis both for the Government and private sector businesses in the Bixa sub-sector.

7. Promote the production and consumption of high-quality Bixa and Bixa products while creating a level playing field for all industry actors and promote fair trade in Bixa in the country.
8. Reduce Bixa price volatility through the interventions of the Bixa pricing formula committee.
9. Create numerous employment opportunities both on-farm and off-farm across the Bixa sub-sector and supportive industry auxiliary services, trading and marketing, processes within the industry.
10. Increase incomes for farm families resulting from the increase in Bixa production and good and stable prices, and thus improved livelihoods and social well-being of the rural communities in Bixa-producing regions.
11. Increased Bixa production, trade and exports will translate into increased agricultural and national GDP and increased foreign exchange earnings and reduced import of cheap synthetic substitutes further saving the country's foreign exchange.
12. Regulating Bixa imports and exports will control illegal trade actions that can negatively impact the local Bixa and export markets thus distorting demand and prices.

6.0 Reasons Why Other Regulatory Options Are Not Appropriate

This section highlights reasons why other regulatory options identified above may not be appropriate for the Bixa subsector.

6.1 Option 1: Maintaining the *Status Quo*

Maintaining the status quo will mean the country does not establish a legal and regulatory framework to guide the development, promotion, and regulation of the Bixa sub-sector for the benefit of growers and other stakeholders in the industry which will deny farmers, traders, dealers, agents, processors and other interested parties the prospects to benefit from the many opportunities in the Bixa industry thus curtailing realization of the country's development objectives, including the following:

1. The development, promotion and regulation of the Bixa sub-sector will not be realized in the country which will leave the Bixa industry unorganized, unstructured and not effectively regulated allowing the continued decline in production, shrinking of markets, continued operation of unscrupulous quick-for-profit players including brokers and cartels who do not necessarily comply with set quality standards resulting

to the poor quality Bixa and Bixa products in the market which dents the image of Kenyan Bixa products that cannot compete effectively in the growing Bixa world markets.

2. Bixa farmers, in general, will lose the opportunity to increase their income and thus improve their livelihoods through increased production from their farms and better produce prices.
3. Low production and produce quality will continue, increasing losses for farmers, processors and traders, resulting in declining returns and thus livelihoods for farmers and other actors who rely on Bixa for income.
4. Declining incomes will further reduce capital access for smallholder farmers and small Bixa agents, dealers and traders will continue to be limited, denying them the much-needed capital to re-invest in their businesses to increase production and trade.
5. Public and household health costs will continue to increase with increasing incidences of related health problems from the use of imported cheap synthetic substitutes food colours caused by low production of natural Bixa in the country.
6. In the absence of accurate reliable real-time data and information on the Bixa sub-sector, planning for the industry will continue to depend on unverifiable and unreliable data and information.
7. In the absence of crop research, quality planting materials and agricultural advisory services Bixa production and productivity, processing, value addition and quality in Kenya will remain low leaving the Bixa industry in the country stagnant or even on a decline.
8. The non-formation of effective growers' associations will leave individual Bixa growers still with limited access to the market and in poor negotiation positions and at the mercy of cartels or brokers in the industry.
9. In the absence of the Bixa pricing committee, Bixa price volatility will continue and Bixa farmers will remain price takers controlled by industry cartels and brokers, and their incomes remain fluid.
10. Illegal trade actions through uncontrolled Bixa imports and exports can still be used by unscrupulous traders to negatively impact the Kenyan local Bixa and main export markets by distorting demand and prices that can even lead to total loss of such markets.

11. The anticipated employment opportunities to be created by the increased Bixa production, processing, trading, and other complimenting services will not be created.

The situation is undesirable, and the RIA recommends that the proposed Regulations be implemented to realize the optimal development, promotion, and regulation of the Bixa sub-sector for the benefit of growers and other stakeholders in the industry in the country for this industry to effectively contribute to the realization of the objectives of the Vision 2030, the Agricultural Sector Transformation and Growth Strategy, the National Agriculture Sector Strategy, and the respective Counties' CIDPs, policies and strategies on agricultural transformation.

6.2 Option 2: Other Practical Options

Alternatives to regulation include:

i. No new intervention/do nothing.

This may include making use of existing regulations; simplifying or clarifying existing regulations; improving enforcement of existing regulations or making legal remedies more accessible or cheaper. However, with this approach, the status quo is likely to remain as the Bixa sub-sector in the country has had no specific regulation in the past and existing applicable regulations have failed to effectively regulate this sub-sector to stir its growth and development and the sub-sector has been on a decline. In the absence of any new intervention, the industry would therefore likely remain as it currently is, and this will be to the detriment of all the sector stakeholders and the country in general.

ii. Information and education

Information and education can be used to empower stakeholders to make their own decisions, improving choices for the mutual benefit of all. However, information and education can take time to make an impact and still may not be acceptable. This approach may also increase costs for the government and businesses that will be providing the information and education required. The desired objectives are unlikely to be realized within a reasonable time for the common good of all.

iii. Incentive/market-based structures.

The government can use economic instruments, such as taxes, subsidies, and initiatives to realize the desired objectives. These initiatives however are only practically possible in well-developed and efficiently functioning sectors that have well-defined structures and often these sorts of systems need their own regulation to establish the framework and may have additional costs to the government and are unlikely to be effective in the young Bixa sub-sector and industry in Kenya as it is yet to be well established.

6.3 Alternatives Models of Regulation

The alternative modes of regulating the Bixa sub-sector include the following:

i. Self-regulation

The Bixa sub-sector in the country does not have an all-inclusive industry representative(s) that could formulate and implement codes of conduct or practice, customer charters, standards, or accreditation system acceptable to all sector actors for self-regulation and the necessary mechanisms to monitor the effective implementation of such self-regulation. This makes effective self-regulation in the Bixa industry currently not possible.

ii. Co-regulation.

Co-regulation is an intermediate step between state-imposed and self-regulation that involves some degree of explicit government involvement where the industry may work with the government to develop a code of practice whose enforcement would be by the industry or a professional organization accredited by the government. The Bixa sub-sector in Kenya currently has no universally acceptable and all-inclusive industry representative organization(s) that can mobilize and organize the actors towards this and thus co-regulation is practically not possible currently.

7.0 Conclusion

The proposed Regulations if approved and effectively implemented will introduce formal controls and regulations in the Bixa industry and establish the necessary structures and environment including compliance enforcement structures and a Bixa pricing formula committee to support the promotion and development of the industry for the benefits of the Bixa growers and other stakeholders.

The proposed Regulations shall facilitate the development, promotion, and regulation of the Bixa sub-sector for the benefit of the Bixa growers and other stakeholders in the Bixa sub-sector in the country. This will significantly transform especially the marketing of Bixa and Bixa products which is currently inefficient, poorly structured, dominated by unfair trade practices and declining product quality. The regulations also seek to promote crop research and crop development using high-quality Bixa varieties and improve farmers' access to quality planting materials. This coupled with enhanced capacity building of farmers on good agricultural practices (GAPs) and other key technical areas in Bixa production including crop harvesting and post-harvest management of the produce through the provision of industry-targeted agricultural advisory is expected to increase Bixa production and the productivity of farmers' Bixa fields as well as to improve quality of the produce while reducing the current high post-harvest losses.

8.0 Recommendation

The Regulatory Impact Assessment recommends the passing and operationalization of the proposed Regulations.