PHTHALATES AND BISPHENOLS IN KENYA

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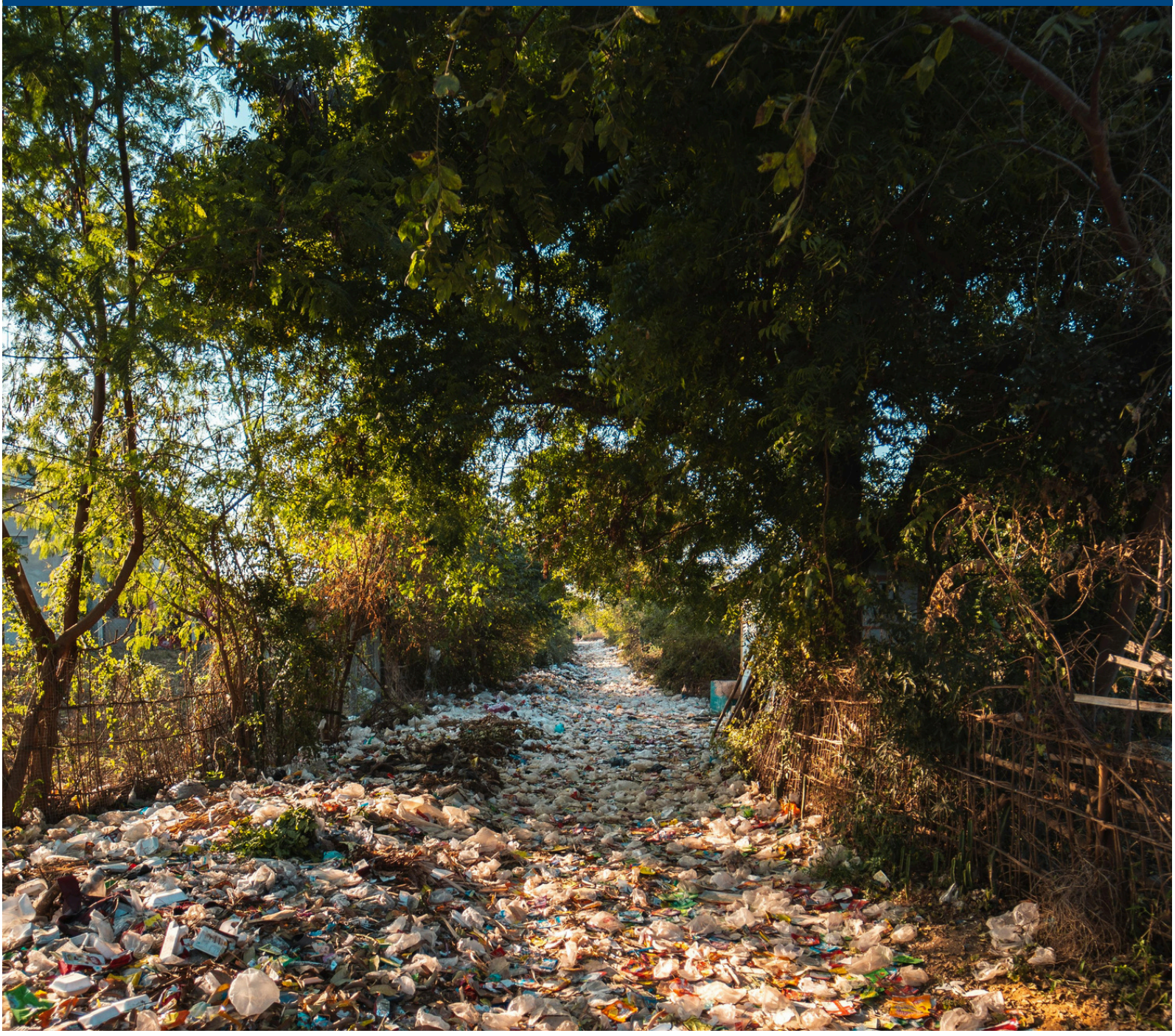

CENTRE FOR ENVIRONMENT JUSTICE AND DEVELOPMENT
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Phthalates and Bisphenols in Kenya

Centre for Environment Justice and Development (CEJAD)

Authors: Kipchirchir Benard, Dorothy Otieno, Aron Kecha, Griffins Ochieng

Executive summary

Phthalates and bisphenols are widely used synthetic industrial chemicals in plastics, consumer products, and packaging.[1] Phthalates such as di-n-butyl phthalate (DBP) serve as plasticizers in PVC. Other applications entail use in cosmetics, personal care items, medical tubing, toys, and household materials. Bisphenols, most notably bisphenol A (BPA), are used to produce polycarbonate plastics and epoxy resins found in food and beverage containers, can linings, dental sealants, and thermal paper.[2] Both chemical groups are endocrine disruptors linked to reproductive, metabolic, and developmental effects, with exposure occurring through ingestion, inhalation, and skin contact.[3] The two plastic chemical groups are not addressed by current international regulatory controls, leading to continued high production volumes and wide use. The Centre for Environment Justice & Development (CEJAD) conducted a country situation analysis on Phthalates and bisphenols

Methods

This study entailed a desk review of peer-reviewed and grey literature (2010–2025), legal and policy documents, and trade datasets. Trade and statistical data were drawn from Observatory of Economic Complexity (OEC), Trading Economics, Volza, World Integrated Trade Solution (WITS) and United Nations Institute for Training and Research (UNITAR). Empirical studies and Non-Governmental Organization (NGO) reports informed the mapping of environmental occurrence, product contamination, and exposure pathways.

Key Findings

Production and Use of Plastics, Phthalates and Bisphenols in Kenya

[1] Laura Monclús, Hans Peter H. Arp, Ksenia J. Groh, Andrea Faltynkova, Mari E. Løseth, Jane Muncke, Zhanyun Wang, Raoul Wolf, Lisa Zimmermann, Martin Wagner (2025). Mapping the chemical complexity of plastics, Nature

[2] Martin Wagner, Laura Monclús, Hans Peter H. Arp, Ksenia J. Groh, Mari E. Løseth, Jane Muncke, Zhanyun Wang, Raoul Wolf, Lisa Zimmermann (2024) State of the science on plastic chemicals – Identifying and addressing chemicals and polymers of concern,

[3] International Pollutants Elimination Network (IPEN). (2020). Guide to endocrine disrupting chemicals 2020.

Kenya remains a net importer of both raw plastics and finished plastic products. Raw materials constitute an estimated 65% of total plastic imports, with finished products accounting for the remaining 35%.[4] Domestic production is largely dependent on recycled feedstock and imported resins.[5] National estimates place plastic consumption between 525,317 to 576,189 tons in 2021–2022,[6] while other assessments indicate annual plastic waste generation of up to 1.28 million tons.[7] Recent import values have surpassed USD 800 million, contrasted with relatively low export volumes of plastic articles.[8] These trends highlight the country's continued reliance on imported polymeric materials to meet domestic demand.

There is no clear evidence of industrial-scale domestic production of bisphenols or phthalates in Kenya. These additives primarily enter the market either embedded in imported consumer products or as chemicals for industrial use. Customs datasets rarely disaggregate individual additive volumes. For example, a single WITS trade entry recorded a small BPA export in 2018, but routine import volumes of bisphenols and phthalates are not publicly available.

Policy and Regulatory Controls on Phthalates and Bisphenols in Kenya

Kenya currently has no regulations specifically limiting phthalates or bisphenols in products. Existing standards provide analytical tools and methods for testing Phthalates and Bisphenols, but do not set safety limits. Applicable regulations include:

1. **Management and Control of Plastic Packaging Materials (2024):** Requires plastic packaging to include producer contact details, resin identification codes, and the percentage of recycled content. However, it does not ensure transparency or traceability of chemicals used.
2. **Management of Toxic and Hazardous Chemicals and Materials (2024):** Provides a framework for classification, registration, import/export, disposal, and control of toxic or hazardous chemicals.

[4] Kenya National Bureau of Statistics. (2024). Economic Survey 2024. Kenya National Bureau of Statistics.

[5] Kenya Association of Manufacturers. (2019). Kenya Plastic Action Plan: Accelerating a Circular Economy in Kenya. Kenya Association of Manufacturers; United Nations Comtrade Database. (2022). Kenya Trade Statistics – Plastics and Articles Thereof. United Nations; Kenya National Bureau of Statistics. (2024). Economic Survey 2024. Kenya National Bureau of Statistics

[6] Kenya National Bureau of Statistics. (2024). Economic Survey 2024. Kenya National Bureau of Statistics.

[7] World Integrated Trade Solution [WITS]. (2025). *Kenya exports of 4,4-isopropylidenediphenol (bisphenol A), 2018*. World Bank.

[8] World Integrated Trade Solution [WITS]. (2025). *Kenya exports of 4,4-isopropylidenediphenol (bisphenol A), 2018*. World Bank.

3. The **Sustainable Waste Management Act (2022)** introduces a mandatory Extended Producer Responsibility (EPR) scheme obliging manufacturers, importers, and distributors of packaging materials to manage the full lifecycle of their products.

Overall, current legal frameworks emphasize recycling and waste management rather than controlling chemicals in plastics or ensuring chemical transparency.

Health and Environmental Impacts of Phthalates and Bisphenols

This Country Situation Report did not establish any documented studies on the direct human health impacts of phthalates and bisphenols, or any gender-specific health research. However, other environmental assessment studies show widespread presence and plausible exposure pathways. There is evidence of significant levels of bisphenol A (BPA) and di-n-butyl phthalate (DBP) in water, soil, sediments, and vegetation along [9]sediments.

Studies by CEJAD and partners reported that consumer plastics, including toys and food packaging, contain phthalates, phthalate alternatives, bisphenols, PAHs, organophosphate flame retardants, and UV-stabilisers that are above international safety limits[10]. Biomonitoring among waste collectors and recyclers revealed widespread exposure to bisphenol A, phthalates (DEHP, DEP, DBP), PAHs, and flame retardants.[11] Exposure is highest among informal waste workers and residents near dumpsites, or coastal hotspots, driven by direct contact, inhalation, ingestion, and reuse of recycled containers.

National Efforts and Challenges in Phasing Out Bisphenols and Phthalates

The study did not establish any specific projects targeting the phase-out of bisphenols and phthalates in Kenya. However, broader initiatives aim to reduce exposure to hazardous chemicals. The eliminating hazardous additives.[12]additives. Participation in international

[9] Karanja, E. (2023). *Assessment of the levels of Bisphenol A and Di-butyl Phthalates in water, soil, sediment and weeds along the coastal beaches of Kenya* [master's thesis, University of Nairobi]. University of Nairobi Repository.

[10] Brosché, S., Omukhango, J., Njoroge, G., & Petrlik, J. (2025). *Exposed to toxic plastics: Phthalates and bisphenols in Kenyan workers' wristbands*. Centre for Environment Justice and Development (CEJAD), Arnika, & IPEN

[11] Brosché, S., Omukhango, J., Njoroge, G., & Petrlik, J. (2025). *Exposed to toxic plastics: Phthalates and bisphenols in Kenyan workers' wristbands*. Centre for Environment Justice and Development (CEJAD), Arnika, & IPEN

[12] Global Plastic Action Partnership (GPAP). (2022). *Kenya Plastics Pact: National Action Plan*.

platforms, including the **Global Framework on Chemicals (GFC)** and **Global Plastic Treaty negotiations**, has also shaped national discussions on

Challenges

Efforts to phase out these chemicals face legal, technical, and socio-economic barriers. Key obstacles include regulatory gaps, limited capacity for monitoring and traceability, economic reliance on consumer plastics, low public and industry awareness, and constrained analytical and enforcement capacity. Hidden imports of contaminated plastics and textiles, along with global trade dynamics, further complicate substitution efforts. Critical evidence gaps including the lack of national inventories, limited environmental monitoring, and absence of biomonitoring or longitudinal health studies further hinder quantification of exposure and health risks. The absence of actionable data, therefore, makes phase-out of bisphenols and phthalates a challenging endeavor.

Recommendations

1. Develop a national-level inventory of plastic products and chemicals of concern in plastics, i.e. phthalates and bisphenols, in both locally produced and imported goods.
2. Strengthen the existing regulation by amending the Legal Notice 176/2024 (EPR) and Legal Notice 181/2024 (The Management and Control of Plastic Packaging Materials Regulations) and Legal Notice 182 of 2024(The Management of Toxic and Hazardous Chemicals and Materials Regulations, 2024) to explicitly include phthalates and bisphenols.
3. Development and capacity strengthening on analysis of chemicals of concern in plastics (Standards, Equipment, Expertise, and Infrastructure)
4. Strengthen additive-level labeling and disclosure for food contact materials, toys, and childcare products, and operationalize the Pollutant Release and Transfer Register (PRTR).
5. Use Extended Producer Responsibility (EPR) and fiscal incentives to drive industry compliance and safer alternatives.
6. Conduct public awareness campaigns and integrate chemical safety into education, prioritizing informal settlements and recycling communities.
7. Harmonize regulations within East Africa Community (EAC) member states on the importation, labeling, and restriction of hazardous plastic additives, including through the Bamako Convention.
8. Improve interagency coordination to address fragmented institutional roles.

Overall, Kenya faces a manageable but complex challenge of phthalates and bisphenols embedded in imported and domestic plastics. Addressing regulatory gaps, evidence deficiencies, and exposure pathways is critical for effective phase-out.

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LIST OF ABBREVIATIONS AND ACRONYMS

BPA - Bisphenol A
DBP - Di-n-butyl phthalate
KEBS - Kenya Bureau of Standards
CEJAD - Centre for Environment Justice and Development
OEC - Observatory of Economic Complexity
WITS - World Integrated Trade Solution
NGO – Non-Governmental Organization
PRTR - Pollutant Release and Transfer Register
NEMA - National Environment Management Authority
KRA - Kenya Revenue Authority
UNITAR - United Nations Institute for Training and Research
UNCTAD - United Nations Conference on Trade and Development
UNEP - United Nations Environment Programme
IPEN - International Pollutants Elimination Network
GPAP - Global Plastic Action Partnership
KAM - Kenya Association of Manufacturers
DOP - Dioctyl orthophthalate
EMCA - Environmental Management and Co-ordination Act
CAS - Chemical Abstract Service
HS - Harmonized System
MSDS - Material Safety Data Sheet
EPR - Extended Producer Responsibility
PAHs - Polycyclic aromatic hydrocarbon
DEHP - Di (2-ethylhexyl) phthalate
DEP - Diethyl phthalate
SAICM - Strategic Approach to International Chemicals Management
EDC – Endocrine disrupting chemical
PVC - Polyvinyl chloride
PET - Polyethylene terephthalate
KS – Kenyan Standard
ISO – International Organization for Standardization
FMCGs – Fast Moving Consumer Goods
AfCFTA - African Continental Free Trade Area

EPA - Economic Partnership Agreement

Name of Participating Organisation: Centre for Environment Justice and Development (CEJAD)

Authors: Kipchirchir Benard, Dorothy Otieno, Aron Kecha, Griffins Ochieng

Centre for Environment Justice and Development (CEJAD) is a public interest Non-Governmental Organization in Kenya. CEJAD works to promote sound management of chemicals and waste in order to protect the environment and human health, especially vulnerable populations. CEJAD is an accredited NGO to UNEP and undertakes advocacy programs seeking to eliminate exposure to toxic chemicals by both humans and the environment.

Centre for Environment Justice and Development (CEJAD)
3rd Floor, Ngong Hills Hotel Business Centre,
Opposite Bishop Magua Centre, Ngong Rd, Nairobi, Kenya
Tel: +254 0720 465 500
Email: info@cejadkenya.org
Website: www.cejadkenya.org

1 Introduction

Plastics are complex mixtures composed of fossil fuel–derived polymers and various additives that enhance flexibility, durability, and colour. Among these additives, **phthalates** and **bisphenols** are the most widely recognised chemicals of concern (Monclús et al., 2025).

Phthalates function primarily as plasticizers, making plastics more flexible and durable. Common examples include di(2-ethylhexyl) phthalate (DEHP), dibutyl phthalate (DBP), diethyl phthalate (DEP), di-isononyl phthalate (DiNP), and di-isodecyl phthalate (DiDP) (Wang & Qian, 2021). They are widely used in PVC plastics and products such as toys, food packaging, vinyl flooring, adhesives, inks, and synthetic clothing.

Bisphenols, most notably bisphenol A (BPA), are used in the manufacture of polycarbonate, epoxy, PVC, and PET plastics. They occur in food packaging, baby bottles, toys, medical devices, thermal paper, and consumer electronics. BPA is particularly concerning because it mimics estrogen and can disrupt hormonal function (IPEN, 2020).

In Kenya, phthalates and bisphenols typically enter the country as additives in imported plastic products or as industrial chemicals. Their extensive industrial use, widespread presence in everyday consumer items, and limited transparency in supply chains make human exposure difficult to avoid (Wagner et al., 2024).

Globally, the regulation of phthalates and bisphenols remains limited, and Kenya is no exception. The country currently has no laws that specifically target these chemicals. Existing frameworks, including the Environmental Management and Coordination Act (EMCA, 1999) and its 2024 subsidiary regulations, as well as the Sustainable Waste Management Act (2022) address plastics and hazardous substances more broadly. Although Kenyan standards outline analytical methods for detecting phthalates and bisphenols, they do **not** establish enforceable limits.

The study found no documented evidence of health impacts from these chemicals within Kenya. However, the country's heavy reliance on plastics, particularly single-use products (Karcher et al., 2020), creates multiple potential pathways for exposure.

1.1 Methodology

This study is based on a comprehensive desk review of literature, trade data, and legal instruments related to the production, use, trade, regulation, and impacts of plastics, phthalates, and bisphenols in Kenya. Both national and international sources were consulted.

Key national repositories included the **Kenya Bureau of Standards**, the **Kenya Gazette**, and **Legal Notice Nos. 176, 181, and 182 of 2024**. Trade data were obtained from **Trading Economics**, **WITS**, **OEC**, **Volza**, and **UNITAR**, while policy briefs and national reports from organizations such as the **Kenya Plastics Pact** and **CEJAD** were reviewed. International sources included United Nations Conference on Trade and Development (UNCTAD), the United Nations Environment Programme (UNEP), and the International Pollutants Elimination Network (IPEN).

A systematic literature review focused on peer-reviewed and grey literature from 2010–2025 containing Kenya-specific data on the production, trade, environmental presence, and human exposure to phthalates and bisphenols. Platforms consulted included **PubMed Central**, the **University of Nairobi e-Repository**, and **ScienceDirect**.

A scoping review was conducted to map the breadth of available information, identify key themes, and highlight knowledge gaps. Sources included NGO reports, policy documents, project descriptions (e.g., CEJAD and GPAP initiatives), and media articles. Findings were organized under five thematic areas: **regulatory controls; transparency and traceability measures; production and trade volumes; phase-out initiatives and challenges; and environmental and health impacts**.

2 Production and Use in the Country

2.1 Plastic Production and Use

According to the 2024 Kenya Economic Survey, the manufacture of plastic products grew by 16.2% in 2023, with production rising from 55,980 tons in 2022 to 63,037 tons (KNBS, 2024). Domestic production of plastics relies heavily on recycled and imported resins (KAM, 2019; United Nations Comtrade Database, 2022; KNBS, 2024). Local manufacturers rely almost entirely on imported raw polymer pellets due to the absence of large-scale petrochemical plants (KAM, 2023).

2.1.1 Imports

Kenya imports significant quantities of polyethylene, polypropylene, and other resins used in packaging and manufacturing (Kenya Plastics Action Plan, 2022; UN Comtrade 2022; Business Daily Africa, 2024). In 2023, the country imported 561,579 tons of plastics in primary and non-primary forms, up from 525,317 tons in 2022 (KNBS, 2024). Approximately

65% of these imports were raw materials, while 35% were finished plastic products. Data compiled by Volza (2024) shows that between October 2023 and September 2024, Kenya received 79,116 shipments of plastics from 16,363 exporters, with China (54%), India (16%), and the United States (8%) accounting for the majority. This marks a 41% increase over the previous reporting year, indicating growing domestic demand.

2.1.2 Exports

Kenya exported about 63,000 tons of plastic articles in 2023 (KNBS 2024). The Observatory of Economic Complexity (OEC, 2024) valued the exports at USD 158 million, ranking 85th globally. Raw plastic sheeting accounted for USD 17.3 million. Exports to the United States totalled only USD 139,920 in 2024 (Trading Economics, 2024), reflecting the modest international reach of Kenya's plastics sector.

2.2 Production, Import and Export of Phthalates and Bisphenols

2.2.1 Production and Imports

Kenya lacks significant domestic manufacturing capacity for synthetic organic chemicals, including BPA and DBP (UNITAR, 2012). There is no evidence of industrial-scale production of bisphenols or phthalates within Kenya, and no public records exist for individual compounds such as BPA or specific phthalates. Consequently, these chemicals enter the country almost entirely through imports, either as raw chemicals or as additives embedded in finished plastic products, mirroring trends in many developing countries. Most developing countries are primarily importers and end-users rather than producers of these compounds.

Government statistics indicate an upward trend in the importation of organic and inorganic chemicals, recording a rise from 363,202 tons in 2022 to 401,646 tons in 2023 (KNBS, 2024). However, the data is not disaggregated, making it challenging to isolate the quantities of synthetic organic chemicals within these totals. More specific trade data from the World Integrated Trade Solution (WITS, 2023) show that Kenya imported approximately **8.44 million kilograms of dioctyl orthophthalate (DOP; HS 291732)** in 2023, valued at USD 12.8 million. Key suppliers included China, Malaysia, South Korea, Vietnam, and India. These countries are considered as major global producers of plasticizers.

Kenya also imports other orthophthalates and phthalic anhydride derivatives, though in smaller quantities (WITS, 2023). These are used in local manufacturing of plastic packaging production, PVC products, and healthcare-related supplies. The Pharmacy and Poisons Board acknowledges the importation of hazardous health products and technologies but does not provide substance-specific Data on BPA or phthalates (Pharmacy and Poisons Board Kenya, n.d.).

2.2.2 Exports

Kenya recorded small but consistent exports of BPA to Uganda,1,223 kg in 2018, 925 kg in 2019, 1,001 kg in 2021, and 1,086 kg in 2022 under HS Code 290723 (WITS, 2019–2025). Broader phenols data (HS 2907) for 2023 show minimal but ongoing exports to Uganda, confirming Kenya's marginal role in the global BPA trade (WITS, 2023; Trendeconomy, 2023). The low volumes also underscore Kenya's limited involvement in the global bisphenol market and reinforce the conclusion that the country is predominantly a consumer rather than a distributor of such substances.

There is no evidence that the BPA exported was manufactured locally. Local companies like Kenya Chemical Company market themselves as a distributor, exporter, and supplier of BPA within Kenya and the region.

Exports of phthalate-related substances are even lower. In 2023, Kenya exported only 175 kilograms of phthalic anhydride under HS Code 291735 to Tanzania (WITS, 2025). This underscores Kenya's limited participation in the regional or global phthalate supply chain.

3 Control Measures on Phthalates and Bisphenol A in Kenya

Kenya has no regulations that directly target phthalates and bisphenols. However, existing laws on plastics and hazardous chemicals create a framework that could support future restrictions, including the possibility of imposing concentration limits or bans on these substances in plastic products. Applicable laws include:

I. **The Environmental Management and Co-ordination Act (EMCA) 1999** and its 2024 subsidiary regulations. Relevant regulations include:
    a. **The Management and Control of Plastic Packaging Materials Regulations, 2024 (Legal Notice 181 of 2024):** It requires all plastic packaging to include clear labelling that identifies the producer, resin identification codes, and the percentage

of recycled content. Although no additives are banned, the regulation strengthens oversight and consumer transparency.

b. **The Management of Toxic and Hazardous Chemicals and Materials Regulations, 2024 (Legal Notice 182 of 2024).** Establish a system for classification, registration, import, export, handling, and disposal of hazardous chemicals. This empowers NEMA to: Register, restrict, or ban chemicals based on hazard classification, including endocrine disruption properties; Enforce concentration thresholds set by KEBS; and Require producers to provide key documentation including the Chemical Abstract Service (CAS) number, Harmonized System (HS) code, and a Material Safety Data Sheet (MSDS) with each shipment. The Sixth Schedule **bans secondary plasticizers in flexible PVC**, except in toys and children's products.

II. **The Sustainable Waste Management Act, 2022**, which mandates a national **Extended Producer Responsibility (EPR)** scheme for all manufacturers, importers, and distributors of packaging materials. Key requirements include: post-consumer collection, sorting, recycling, and environmentally sound disposal. The circular economy approach embedded in the EPR framework, especially as operationalized in the **EPR Regulations, 2025**, indirectly reduces risks from hazardous additives by promoting material recovery and minimizing open dumping and uncontrolled incineration.

III. There is also a set of Kenyan standards that provide for analytical tools, methods, and procedures on phthalates and bisphenols by the Kenya Bureau of Standards (KEBS). These standards include:

Kenyan standards	**Role/Target Compound**
KS ISO 8124-6:2018	Safety of toys; certain phthalate esters
KS ISO 14389	Textiles; Phthalate determination
KS ISO 16181 series	Footwear; Determination of restricted substances
KS ISO/TS 16465:2024	Animal & vegetable fats and oils; Determination of phthalates
KS ISO 18857-2:2009	(Water quality; selected alkylphenols and bisphenol A)

Table 1: List of Kenyan standards and Target Compounds

These standards support testing and analysis, but do not set enforceable limits for phthalates or BPA. KEBS standards for plastics used in food contact settings like plates, forks, and packaging (KS 2453:2013; KS 2388:2012; KS 2361:2012) focus mainly on physical properties and allowed constituents, not endocrine-disrupting additives. KS 2361:2012 provides a positive list of constituents of polystyrene (crystal and high impact) in contact with foodstuffs, pharmaceuticals, and drinking water, covering basic resins, residual monomers, catalysts, emulsifying agents, suspension agents, inhibitors, process antioxidants, chain transfer agents, among others.

Toys are covered by KS ISO 8124-5:2015 based on ISO 8124-5. Part 5 covers the determination of the total concentration of certain elements in toys, while Part 6, deals with certain phthalate esters in toys and children's products. ISO has since revised the standards to ISO 8124-6:2018. The standard applies to toys and children's products which are manufactured from plastics, textiles, and coatings, etc., and covers phthalates in toys and children's products.

Most of these standards, however, are sector-specific, targeting products with high exposure risk, consumer contact, or environmental concern, rather than all polymers or plastic articles. This reflects a precautionary, risk-based testing approach rather than a comprehensive chemical surveillance system, which may open other avenues of exposure.

3.1 Regulations on Transparency and Traceability of Chemicals in Plastics

Although Kenya does not directly regulate phthalates and bisphenols, several laws can be used to strengthen chemical transparency in plastics.

I. The **Management and Control of Plastic Packaging Materials Regulations, 2024;** Regulations 18–21, Strengthens traceability by requiring all plastic packaging to bear permanent labelling of producer information, resin codes, and recycled content. While the regulation does not prohibit specific additives, it enhances regulatory oversight, supports traceability, and promotes consumer awareness. These measures create the groundwork for identifying and potentially restricting packaging materials that contain substances such as BPA and phthalates.

II. The **Management of Toxic and Hazardous Chemicals and Materials Regulations, 2024** . Key transparency obligations are covered as follows

a. **Labelling (Part III, Regulations 16–19):** All toxic or hazardous chemicals must be labelled in both English and Kiswahili. Labeling includes: CAS number, HS code, registration number, signal words, hazard pictograms, hazard statements, concentration, and instructions for safe handling, storage, disposal, and first aid.

b. **Chemical Registration and Permits (Part II, Regulations 7–9; Part IV, Regulations 20–25):** Importers, manufacturers, and exporters must register chemicals with NEMA and obtain the appropriate licence or permit before handling, distributing, or trading them, including hazardous plastics and their additives.

c. **Reporting and Record Keeping (Part VII, Regulations 45–47):** Manufacturers, importers, and downstream users must maintain detailed records for each chemical—including its identity, CAS number, HS code, quantity, and recipient—and make these records available to NEMA upon request.

d. **Part VI, Regulation 42 (Pollutant Release and Transfer Register):** Facilities handling toxic chemicals must submit annual reports on chemical releases and transfers. NEMA consolidates and publicly discloses this information through a national PRTR portal.

e. **National Chemical Inventory (Part VI, Regulation 40(2)(f)):** NEMA is required to maintain a publicly accessible national database containing each chemical's identity, hazard classification, quantity, use, and regulatory status.

Collectively, these provisions establish a strong legal foundation for chemical traceability and the public right-to-know, including lifecycle tracking of chemicals in plastic products. While these regulations strengthen chemical traceability, **they do not require disclosure of BPA or phthalate content on consumer goods**, which would require new enforcement instruments.

4 Impacts of Phthalates and Bisphenols in the Country

KS ISO 14389 notes that phthalates are controversial because studies on rodents exposed to high doses have shown hormonal activity and organ damage. In these studies, large amounts of phthalates caused damage to the liver, kidneys, lungs, and developing testes, showing that they are toxic to reproduction.

4.1 National Studies on Phthalates and Bisphenols in Kenya

The study did not come across documented human health impacts of phthalates and bisphenols in Kenya. Importantly, the study also did not come across any gender-differentiated health studies on phthalates and bisphenols. However, several studies have identified their presence in the environment and in consumer products.

A study by Karanja (2023) assessed BPA and DBP in water, soil sediments, and vegetation along five coastal beaches (Nyali, Bamburi, Pirates, Diani, and Shelly). Measurable concentrations of both chemicals were detected in all sample types, with the highest levels found in sediments and soil. Pollutant levels were consistently higher during the wet season, indicating increased runoff and leaching of contaminants during rainfall. In the dry season, BPA concentrations in soil samples exceeded levels in water, sediments, and seaweed, suggesting that soil may act as a reservoir for plastic-derived contaminants (Karanja, 2023). During the dry season, DBP concentrations in soils ranged from 9.10 to 69.20 µg/kg, while BPA levels ranged from 10.40 to 74.50 µg/kg in sediments (Karanja, 2023).

Studies by the **Centre for Environment, Justice and Development (CEJAD)** and **IPEN** found that plastic consumer products in Kenya, including children's toys and food packaging, contained toxic chemical additives such as BPA and phthalates at levels exceeding internationally accepted safety limits. Some plastic samples stored at 40°C leached endocrine-disrupting chemicals for more than 250 days, underscoring their long-term risk potential (CEJAD & IPEN, 2023).

In 2025, CEJAD, IPEN, and Arnika conducted a **wristband biomonitoring study** to evaluate occupational and general exposure to hazardous chemicals among plastic waste collectors, recyclers, and office workers. Participants wore pre-cleaned silicone wristbands for five days, which were analyzed for 73 substances, including phthalates, phthalate

alternatives, bisphenols, PAHs, organophosphate flame retardants, and UV-stabilisers. The findings revealed widespread chemical exposure. Phthalates, particularly DEHP, DEP, and DB, were detected in all the wristbands, and at the highest concentrations among plastic waste workers (Brosché, Omukhango, Njoroge, & Petrlik, 2025). This study highlights the widespread presence of phthalates and bisphenols in Kenya.

Collectively, these studies suggest that plastic pollution along Kenya's coastline and within consumer product supply chains contribute to the presence of DBP and BPA in various environmental matrices, including water, soil, sediments, and marine vegetation. The detection of these substances in coastal ecosystems and in human exposure assessments points to Kenya's vulnerability to global plastic pollution streams, including those arising from imported goods and industrial waste. These findings are significant given the absence of national limits on the use of BPA or phthalates in consumer goods or food contact materials, which may allow ongoing environmental and human exposure (Karanja, 2023).

4.2 Plastic Waste as a Vector for Chemical Exposure

Plastic waste is a major source of environmental contamination by bisphenols and phthalates. During use and when discarded, plastics are exposed to heat, mechanical stress and Ultraviolet radiation. This leads to plastic degradation, releasing phthalates and Bisphenols in the environment (GPAP, 2022). This process increases human and environmental exposure, particularly in coastal regions, peri-urban settlements, and communities living near dumpsites or landfills.

4.2.1 Link to Food and Water Contamination

Phthalates and bisphenols leach into food and drinking water from plastic containers, especially when exposed to heat, repeated use, or prolonged storage. In Kenya, many low-income households rely on recycled and repurposed plastic containers for food and water storage, significantly heightening ingestion-related exposure (FAOLEX, 2021). This highlights the urgent need for stronger consumer product regulations, improved standards for food-contact plastics, and public awareness campaigns on safe food storage practices.

4.2.2 Vulnerable Population

Certain groups face heightened risk from endocrine-disrupting chemicals (EDCs) such as BPA and phthalates. Expectant mothers, infants, and children are particularly susceptible due to their physiological sensitivity and developmental vulnerability. Exposure has been

linked to neurodevelopmental disorders, reproductive abnormalities, metabolic disease, and possible carcinogenic effects (ChemSec, 2022; WHO & UNEP, 2013; Braun, 2017). Despite these risks, Kenya's health surveillance systems currently do not monitor biomarkers of plastic-associated chemical exposure. This represents a critical gap in population health monitoring and limits the country's ability to assess and manage long-term EDC-related health impacts (UNEP, 2023).

4.3 Groups at Elevated Risk of Exposure

From the studies, the following groups can be identified as having elevated exposure

Urban populations, especially in informal settlements with heavy reliance on plastic-packaged goods and poor waste management. The risk is higher for populations living near plastic recycling facilities (CEJAD & IPEN, 2023).

Plastic waste workers, Occupational exposure is highest among individuals involved in plastic waste handling and informal recycling, including women and children, due to direct contact with contaminated materials and fumes. Women and children under this category are disproportionately affected, based on global associations between BPA/phthalate exposure and Reproductive health disorders, Endocrine disruption, Adverse pregnancy outcomes and Developmental toxicity (NIH, 2021; Science Direct, 2023; Green Science Policy Institute).

5 National Endeavors to Phase out Bisphenols and Phthalates

5.1 Projects and Campaigns to phase out Phthalates/and or Bisphenols

Kenya has not yet implemented national projects or campaigns specifically aimed at phasing out phthalates or bisphenols. However, several initiatives indirectly contribute to reducing exposure to hazardous plastic additives and promoting safer alternatives. Observables interventions include:

I. The **Kenya National Plastic Action Plan**, coordinated by the Kenya Plastics Pact under the Global Plastic Action Partnership (GPAP), outlines measures to advance sustainable plastic production and consumption. While not explicitly focused on bisphenols or phthalates, it recognizes the need to reduce chemical hazards associated with plastics by shifting towards safer additives (GPAP, 2022).

II. Kenya also participates in global chemical safety platforms such as the Global Framework on Chemicals (GFC**)** successor to the strategic Approach to International Chemicals Management (SAICM) and collaborates with organizations such as **IPEN**. IPEN's 2017–2019 progress reports highlight Kenya's engagement in regional dialogues on endocrine-disrupting chemicals (EDCs), including bisphenols and phthalates, and emphasize exposure risks among vulnerable populations such as women and children (IPEN, 2019; IPEN, 2020). These partnerships reinforce the importance of phasing out hazardous additives in plastics.

III. Civil society and research organizations continue to draw attention to toxic chemical exposures in Africa. A report by **The Intercept** warned that trade policies and large volumes of imported plastic goods, particularly from the Global North, introduce significant quantities of hazardous additives, including phthalates and bisphenols, into Kenya's markets and environment (The Intercept, 2020). Such findings have increased pressure on policymakers to strengthen chemical controls and adopt preventive measures.

5.2 Challenges to Phase-out Phthalates and Bisphenols

Despite regulatory progress, including the enactment of the *Management of Toxic and Hazardous Chemicals and Materials Regulations (2024)*, the *Management and Control of Plastic Packaging Materials Regulations (2024)*, and the *Sustainable Waste Management Act (2022)*, several systemic, technical, regulatory, and socio-economic barriers hinder Kenya's ability to phase out phthalates and bisphenols. The regulations still lack chemical-specific controls for plastic additives (BPA, phthalates). Key challenges include:

I. **Gaps in Regulation and Policy and the Absence of a Horizontal Framework** Kenya's current regulatory landscape on plastic management reveals notable gaps arising from the absence of a horizontal framework for chemical control across sectors.

- The Legal notice No. 182, and Legal Notice No. 181 of 2024 do **not** explicitly restrict or list phthalates, bisphenols, or other chemicals of concern. This regulatory shortcoming weakens enforcement, limits public awareness, and constrains the ability of agencies to monitor these chemicals across the plastic value chain.
- The EPR Regulations of 2025 address waste flows but do not provide chemical-specific guidance for additives such as BPA or phthalates.
- Regulation remains **sector-based**, limiting effective oversight across exposure pathways.

- Existing **Kenyan Standards (KEBS)** provide analytical methods but do **not** set enforceable concentration limits, creating significant loopholes.

Without clear bans, concentration thresholds, or listing in national hazardous substance schedules, the use of phthalates and bisphenols remains largely unregulated.

II. ***Fragmented Institutional Roles and Weak Interagency Coordination.***

Institutional fragmentation hampers effective implementation, with different mandates shared between NEMA (mandated to classify and regulate hazardous chemicals), KEBS (develops product standards and testing protocols). For example, the Management of Toxic and Hazardous Chemicals and Materials Regulations, 2024, empower NEMA to classify, register, and control hazardous substances; this mandate is not effectively linked with KEBS, which develops standards and testing protocols under the Management and Control of Plastic Packaging Materials Regulations, 2024. As a result, enforcement across the chemical and product life cycle remains disjointed. Similarly, the Sustainable Waste Management Act, 2022, introduces Extended Producer Responsibility (EPR) obligations but lacks strong coordination mechanisms with NEMA and KEBS to track chemical content in packaging materials. These institutional overlaps and regulatory autonomy limit data sharing, weaken traceability and monitoring systems, and hinder the development of unified guidelines on hazardous additives. Consequently, fragmented governance undermines effective enforcement and slows progress toward eliminating phthalates and bisphenols from the plastic value chain.

III. Limited Monitoring, Laboratory Capacity, and Traceability Infrastructure.

Kenya relies on **imported standards** without adequate domestic capacity to detect phthalates and bisphenols in products and the environment. The country lacks the technical capacity and laboratory infrastructure to regularly assess phthalate and bisphenol levels in consumer products. This creates enforcement gaps at customs and in market surveillance. While the new labelling requirements under Legal Notice 181(plastic labelling regulations) introduce resin identification codes and recycled content percentages, these do not mandate disclosure of specific chemical additives. This limits traceability and monitoring. Effective campaigning for the phase-out of these compounds requires robust monitoring mechanisms, including actionable standards, up-to-date and well-equipped laboratories and requisite expertise to detect their presence in products and the environment.

IV. **Hidden Plastic Waste and Additives Importation.**

Kenya continues to receive large quantities of imported plastic goods and second-hand synthetic textiles (e.g., polyester, nylon), many containing unregulated phthalates and bisphenols. Investigations by The Intercept (2020) and IPEN reveal that some imports enter as “donations” or cheap consumer goods, bypassing inspection. The cheap imports often bypass regulations and introduce concealed EDCs into local markets. These materials shed microplastics and leach toxic additives during use and disposal.

V. ***Economic Dependency on Fast-Moving Consumer Goods.***

Plastics continue to dominate Kenya’s manufacturing sector and fast-moving consumer goods, contributing to local employment and the economy at large (Karcher et al., 2020). Phthalates and bisphenols, which are crucial plasticizers, are widely used due to their low cost and availability, amidst limited affordable alternatives. Their ban may therefore face strong resistance from manufacturers and importers (The Intercept, 2020). Additionally, shifting to safer chemical substitutes could mean increased cost of production, procuring new equipment and potential loss of livelihoods, factors that may deter/delay transition to safer substitutes.

VI. **Limited Public and Industry Awareness**.

Awareness of the health risks posed by phthalates and bisphenols remains low, especially in rural, peri-urban, and informal urban settlements. Consequently, the consumer demand for safer alternatives is almost lacking. With no community-driven pressure, political will to enforce stricter chemical controls may wane (IPEN, 2019; IPEN, 2020).

VII. **Global Trade and Policy Influence.**

Kenya’s participation in major trade blocs may have implications for unilateral regulatory measures that may be considered restrictive and challenged by trade agreements, corporate lobbying, or foreign pressure, particularly from multinational manufacturers who dominate the global plastics industry (The Intercept, 2020). The country is a member of the EAC Customs Union and the African Continental Free Trade Area (AfCFTA), which promotes trade liberalization, and, thus, can constrain unilateral restrictions on chemical imports. Additionally, bilateral agreements such as the Kenya–United Kingdom Economic Partnership Agreement (EPA) and the ongoing Kenya–United States Strategic Trade and Investment Partnership (STIP) could expose Kenya to external trade and corporate lobbying pressures from multinational manufacturers that dominate the global plastics industry (The Intercept, 2020).

5.3 Recommendations and Project Ideas to Support Regulation

Recommendation	Project Idea	Output
Develop a national-level inventory of plastic products and chemicals of concern in plastics, i.e. phthalates and bisphenols, in both locally produced and imported goods.	A project on the scientific assessment of chemicals in plastics, and exposure pathways through food contact materials, textiles and packaging materials.	● A National Inventory on chemicals of concern, their risks and exposure pathways. ● Longitudinal Human and Environmental Health Studies ● Sufficient data is available on the impacts of phthalates and Bisphenols on the environment
Strengthen the existing regulation by amending the Legal Notice 176/2024 (EPR) and Legal Notice 181/2024 (plastic labelling regulations) and The Management of Toxic and Hazardous Chemicals and Materials Regulations, 2024) to explicitly include phthalates and bisphenols	A policy reform initiative to be implemented by NEMA, KEBS, Pharmacy and Poison Board and other regulators.	A regulatory framework in place that addresses phthalates and bisphenols in products, mandates disclosure requirements and sets clearly defined limits.
Development and capacity strengthening on analysis of chemicals of concern in plastics (Standards, Equipment, Expertise, and Infrastructure)	Institutional capacity building and technical assistance, and monitoring of chemicals of concern to KEBS and other regulators.	● Analytical laboratories with modern equipment ● Enhanced testing capacity ● Kenyan Standards with limits ● Trained experts

Raise public awareness on the health and environmental hazards of phthalates and bisphenols,	Awareness-raising campaigns and media sensitization.	• Targeted awareness campaign materials, media engagements
Harmonize regulations within EAC member states on the importation, labeling, and restriction of hazardous plastic additives, including through the Bamako Convention.	Harmonization of regulations within EAC member states to foster legal alignment and trade cooperation in chemical safety and plastic waste governance.	• Harmonized regulations on the importation, labelling, and restriction of hazardous plastic additives. • Domesticated harmonized regulations.
Improve Institutional coordination and governance	Strengthening of institutional coordination	• Cross-agency coordination mechanism (NEMA–KEBS–PPB–KRA) for monitoring and enforcement. • Integrated data reporting systems

Table 2: Recommendations and Project Ideas to Support Regulation

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